OKLAHOMA CITY AREA

COST OF NONATTAINMENT ANALYSIS SCOPING REPORT

4205 N. Lincoln Blvd. | OKC

2020

acog

AQ AIR QUALITY

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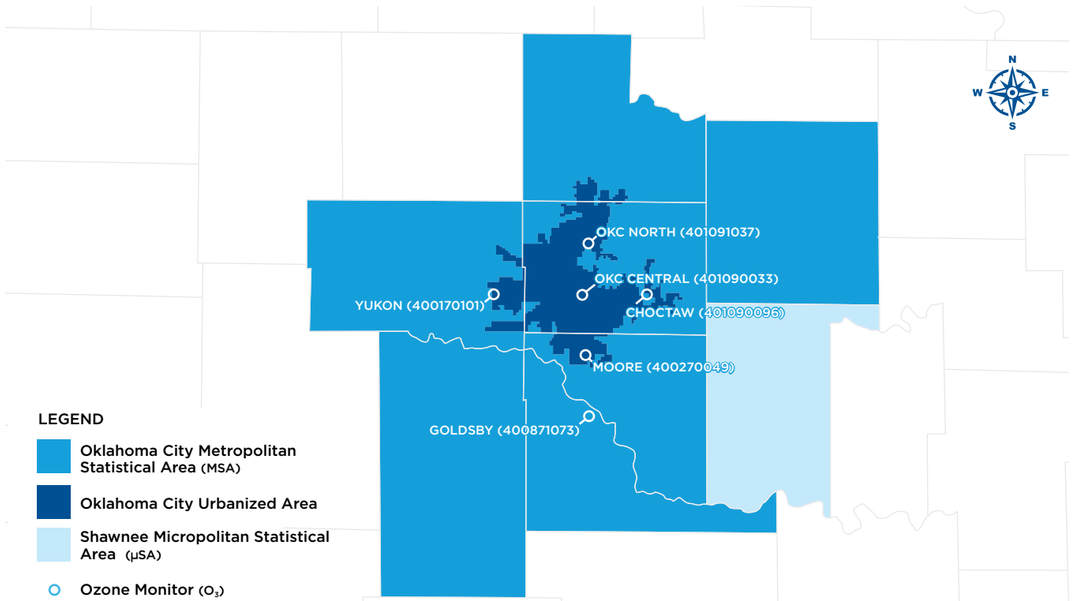
1 EXECUTIVE SUMMARY

Ground-level ozone (O_3) concentrations in and around Oklahoma City have been high enough in recent years that the region runs a significant risk of violating federal air quality standards known as National Ambient Air Quality Standards (NAAQS).

Under the Clean Air Act, the U.S. Environmental Protection Agency (EPA) sets "primary" and "secondary" NAAQS for carbon monoxide (CO), lead (Pb), nitrogen oxides (NO_x), O_3, particulate matter (PM), and sulfur dioxide (SO_2). Primary NAAQS are pollution limits that are considered necessary to protect human health with an adequate margin of safety, while secondary NAAQS are pollution limits that are considered necessary to protect public welfare (i.e., vegetation, ecosystems, visibility, physical structures, climate change, or any other public good other than public health) from known or anticipated adverse impacts. EPA's primary and secondary O_3 NAAQS, most recently revised in 2015, limit the three-year average of the annual 4th-highest daily maximum daily 8-hour average (MDA8) to no more than 70 parts per billion (ppb). The Clean Air Act requires EPA to review and consider revising the NAAQS every five years with input from its Clean Air Scientific Advisory Board (CASAC).

While all counties in Oklahoma are designated "attainment/unclassifiable" for all NAAQS, O_3 "design values" (statistics used to compare monitoring data to the NAAQS) from stations in and around Oklahoma City from 2016-2018 and from 2017-2019 indicate that the area's O_3 concentrations are at the maximum allowable levels. Specifically, the "OKC North" monitor had a 2016-2018 design value of 70 ppb, and the "Yukon" monitor had a 2017-2019 design value of 70 ppb. A map showing locations of the O_3 monitors located in the Oklahoma City area that collected data in 2019, along with the boundaries of the Oklahoma City Urbanized Area, the Oklahoma City Metropolitan Statistical Area (MSA), and the Shawnee Micropolitan Statistical Area (μSA) is shown in Figure 1-1.

Figure 1-1. O_3 Monitors in the Oklahoma City Area in 2019



According to EPA's 2013 *Integrated Science Assessment [ISA] of Ozone and Related Photochemical Oxidants*,[1] some of the known and potential health and public welfare effects from ground-level O_3 include the following:

- Public health O_3 impacts:
  Particularly for individuals with asthma, younger and older age groups, individuals with certain dietary deficiencies, and outdoor workers.
  - Respiratory effects
  - Cardiovascular effects
  - Mortality
- Public welfare O_3 impacts:
  - Damage to vegetation
  - Damage to ecosystems
  - Contribution to global climate change
    i.e., classified as 3rd-most important greenhouse gas

Since attainment and maintenance of the NAAQS is considered necessary to protect public health and welfare, the Clean Air Act requires that EPA designate areas as "nonattainment" if they are violating the NAAQS or contributing to a violation nearby, and imposes a number of regulatory requirements on these areas in order to ensure that the area attains the NAAQS as expeditiously as practicable and thereafter is able to maintain the NAAQS.

While these regulatory requirements provide a public benefit insofar as they reduce or control air pollution levels, they also come with a cost to the community's economy and flexibility in pursuing development. For example, a business evaluating where to build a new manufacturing facility may rule out a nonattainment area due to the added regulatory requirements. A violation of the O_3 NAAQS puts the entire county, core-based statistical area (CBSA), or combined statistical area (CSA)[2] at risk of being designated a "nonattainment" area by EPA. Communities like Oklahoma City that are close to violating the O_3 NAAQS can both protect public health and welfare and protect the regional economy by taking action now to reduce O_3-forming emissions in order to remain in compliance with the O_3 NAAQS, rather than being forced to do so under a nonattainment designation.

In that spirit, the Association of Central Oklahoma Governments (ACOG) has undertaken a study to help its local stakeholders better understand the regulatory and economic risks associated with a nonattainment designation, and the corresponding potential benefits of taking action to help avoid an O_3 nonattainment designation.

The study has been funded by the Federal Transit Administration (FTA) (Section 5303) and meets FTA's requirement to "enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns." Financial match funds for the study have been provided by City of Oklahoma City, Environmental Federation of Oklahoma, Greater Oklahoma City Chamber of Commerce, Oklahoma Department of Commerce, Oklahoma Department of Transportation, Oklahoma Gas & Electric Company, ONE Gas, Sierra Club – Oklahoma Chapter, and Tinker Air Force Base.[3]

ACOG contracted with the Capital Area Council of Governments (CAPCOG) in Austin, Texas, to assist it in its initial scoping this study. CAPCOG completed a similar study in 2015 and helped advise the Alamo Area Council of Governments (AACOG) in the San Antonio area for a similar study they completed in 2017. This scoping report was prepared by CAPCOG in order to assist ACOG and its stakeholders:

[1] U.S. EPA. Integrated Science Assessment for Ozone and Related Photochemical Oxidants. Research Triangle Park, NC. National Center for Environmental Assessment-RTP Division, Office of Research and Development. EPA 600-R-10/076F. February 2013. Available online at: file:///C:/Users/ahoekzema/Downloads/OZONE_FINAL_ISA_2013.PDF

[2] As defined by the Office of Management and Budget (OMB).

[3] Tinker Air Force Base Department of Defense federal funding not considered match.

1. Understand the nature of the regulatory risks of a nonattainment designation;
2. Develop data and methods for estimating the economic impacts of these regulatory risks; and
3. Identifying ways the local community could estimate the benefits of taking action to reduce O_3-forming emissions.

GEOGRAPHIC SCOPE OF A POTENTIAL NONATTAINMENT DESIGNATION

EPA's guidance for initial area designations for the 2015 O_3 NAAQS suggests that the eight counties that constitute the Oklahoma City-Shawnee CSA (Canadian, Cleveland, Grady, Lincoln, Logan, McClain, Oklahoma and Pottawatomie counties) would be at risk of being designated nonattainment if a violation of the O_3 NAAQS was recorded anywhere within the area.[4] The Oklahoma City-Shawnee CSA includes the Oklahoma City MSA (Canadian, Cleveland, Grady, Lincoln, Logan, McClain, and Oklahoma counties) and the Shawnee QSA (Pottawatomie County).[5]

In evaluating each of the eight counties in the CSA for determining the extent of any such nonattainment area, EPA would consider the following five factors:

1. Air quality data
2. Emissions and emissions-related data
3. Meteorological data
4. Geography/topography
5. Jurisdictional boundaries

While there are other narrower geographic areas that could be used for this study, based on EPA's guidance and consultation with ACOG and its stakeholders, CAPCOG recommends that this study cover all eight counties of the Oklahoma City-Shawnee CSA, since all eight counties would be potentially at risk of a nonattainment designation if there was a violation of the NAAQS within the region.[6]

REGULATORY RISKS

Depending on the outcome of the upcoming O_3 NAAQS review due to be completed by the end of 2020, and O_3 levels recorded in 2020 and 2021, it is possible that all or part of the CSA could be designated "nonattainment" for O_3 as soon as Fall 2022. EPA initially assigns one of five classifications to O_3 nonattainment areas based on their O_3 concentrations: Marginal (3 year deadline to attain the NAAQS), Moderate (6 year deadline to attain the NAAQS), Serious (9 year deadline to attain the NAAQS), Severe (15 or 17 year deadline to attain the NAAQS) or Extreme (20 year deadline to attain the NAAQS). Regulatory requirements increase with each classifications.

Assuming EPA sets the O_3 NAAQS at between 60 – 70 ppb (the range it considered during the last O_3 NAAQS review completed in 2015), Oklahoma City area's nonattainment initial classification would be expected to be either "Marginal" or "Moderate." An area is automatically "bumped up" to the next classification and its extra regulatory requirements if it misses its attainment deadline, so even if an area is initially classified as "Marginal," it still is at risk for facing "Moderate" nonattainment requirements if it fails to attain the NAAQS within 3 years.

MARGINAL AREA REQUIREMENTS

The following regulatory requirements apply to Marginal O_3 nonattainment areas:

- Nonattainment New Source Review (NNSR) permitting for major new sources (potential to emit ≥100 tons per year (tpy) of NO_X or VOC) or major expansions of existing facilities (net increase of ≥100 tpy NO_X or VOC), which requires:
  - The use of the "Lowest Achievable Emissions Rate" (LAER) regardless of cost (in contrast to "Best Available Control Technology" (BACT) for permitting in attainment areas, which can consider cost)
  - A 110% offset requirement
  - A review of alternative locations, processes, etc.
  - Federal review of the permit
- Transportation conformity, which applies to federal approval and funding of highway and transit plans and projects by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA)
- General conformity, which applies to all other federal actions applicable to the area.

The NNSR requirement can affect economic growth in two major ways:

1. It can be an impediment to existing businesses in certain sectors expanding
2. It can be an impediment to attracting new businesses in certain sectors

The transportation conformity requirement can affect a region in a number of different ways:

1. The Metropolitan Planning Organization (MPO) and the state Department of Transportation needs to dedicate resources to conducting these emissions analyses in order to ensure approval of transportation plans, TIPs, State Transportation Improvement Programs (STIPs), and amendments
2. The need to determine conformity can cause delays in project development or construction, particularly if the project changes
3. Depending on the timing of these delays, the MPO could face a risk of dollars being reallocated to other projects within the state so that the state does not miss out on federal transportation dollars or funds appropriated by the state that may need to be returned if unencumbered at the end of a fiscal year
4. The need for conformity determinations in general makes it more complex to secure approval for capacity expansion projects.

The general conformity requirement can affect certain key development projects:

1. Making major development that requires federal approval or funding less likely
2. Delays in federal approval of major development projects
3. Increased costs of major developments requiring federal approval

MODERATE AREA REQUIREMENTS

A Marginal classification does not require implementation of any new controls that are not already in place or development of a specific plan showing that the area will attain the NAAQS by its attainment date. The NNSR permitting, transportation conformity, and general conformity requirements effectively function as a limit on the growth of emissions from point or mobile sources within the region, but there is an implicit assumption in a Marginal classification that either existing downwards trends in emissions or discretionary action by the state or local community will enable the area to attain the NAAQS within 3 years. However, if this does not occur and the area is reclassified to Moderate, or if the area is initially classified as moderate, a much more significant suite of planning and pollution control requirements kick in:

1. A "reasonable further progress" (RFP) requirement that entails a 15% reduction in emissions of volatile organic compound (VOCs)
2. Reasonably Available Control Technology (RACT) for sources of VOC covered by one or more of EPA's 45 Control Technique Guideline (CTG) documents
3. RACT for any major sources of VOC not covered by a CTG
4. RACT for any major source of NO_X
5. A vehicle inspection and maintenance (I/M) program applicable to light-duty vehicles
6. Implementation of any other measures necessary for attaining the NAAQS by the area's attainment date
7. An "attainment demonstration" using air quality modeling to show that the area will attain the NAAQS within 6 years
8. An increase in NNSR offset requirements to 115%
9. Adoption of "contingency measures" that would achieve an additional 3% reduction in NO_X or

[4] Janet G. McCabe, Acting Assistant Administrator for EPA Office of Air and Radiation. Memorandum to Regional Administrators: Area Designations for the 2015 Ozone National Ambient Air Quality Standards. February 25, 2016. Available online at: https://www.epa.gov/sites/production/files/2016-02/documents/ozone-designations-guidance-2015.pdf. Accessed January 14, 2020.

[5] Office of Management and Budget. OMB Bulletin No. 18-04: Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas. September 14, 2018. Available online at: https://www.whitehouse.gov/wp-content/uploads/2018/09/Bulletin-18-04.pdf. Accessed January 13, 2020.

[6] ODOT did recommend a narrower geographic scope that would include only Canadian, Cleveland, and Oklahoma Counties based on the logic that these would be the most likely counties included in a potential nonattainment designation. However, all other stakeholders who voiced an opinion about this issue preferred to use the entire CSA in light of EPA's designation guidance.

VOC that would automatically go into effect if the area failed to attain the NAAQS by its attainment date or fail to achieve the required RFP emission reductions

The potential economic costs associated with a Moderate classification incremental to a Marginal classification include:

1. Increased operating costs and decreased profitability for existing facilities as a result of RFP and RACT requirements
2. Increased risk of lost business expansion or new business location due to higher offset requirements for NNSR
3. A shift in consumer spending as a result of I/M program fees and vehicle repair costs

SANCTIONS

For any nonattainment area, failure to submit or implement the required State Implementation Plan (SIP) revisions could also result in sanctions, which can include 200% NNSR offsets or the loss of federal transportation funding until the issue is remedied. This tool has rarely been used, but remains a risk associated with a nonattainment designation.

REQUIREMENTS FOR REDESIGNATION TO ATTAINMENT

An area can only be redesignated from "nonattainment" to "attainment" if the area attains the applicable NAAQS and EPA approves a 10 year "maintenance" plan for the area showing that the area's emissions will not exceed levels in its attainment year. After this initial 10-year maintenance period, the state must submit a 2nd 10-year maintenance plan for the area. Throughout this entire period, while the area isn't required to make any new emission reductions and is no longer be subject to NNSR, the state can only remove controls already in place if it can demonstrate that they won't interfere with maintenance of the NAAQS, and in any event would still be subject to transportation and general conformity requirements up until the end of the 2nd 10-year maintenance period. This is why Marginal and Moderate O_3 nonattainment areas should expect to face at least 21 – 27 years of regulatory consequences as a result of a nonattainment designation.

HOW THE 2020 O_3 NAAQS REVIEW WOULD IMPACT THESE SCENARIOS

There are several important ways that the 2020 O_3 NAAQS review could influence the analyses in this study:

- If EPA does not revise the NAAQS:
  - It makes it less likely that the region would record O_3 levels in the next few years that would violate the NAAQS
  - Since EPA would not be statutorily required to initiate a new round of area designations if it simply retained the current NAAQS, EPA would also be less likely to designate an Oklahoma City nonattainment area even if the region did record violations of the NAAQS in coming years; and
  - It would make it easier for the area to quickly attain the NAAQS if it was designated nonattainment;
- If EPA revises the NAAQS:[7]
  - EPA would need to initiate a new round of area designations by the end of 2022 or early 2023;
  - It would make it more likely that the area recorded a violation of the NAAQS, given the fact that EPA's approach to this NAAQS review appears to rule out loosening the NAAQS
  - It would make it less likely that the area would be able to attain the NAAQS quickly or by its attainment date
  - Depending on how stringent the new NAAQS was, it could also theoretically result in the region being initially classified as Moderate.

EPA's Draft Policy Assessment for the O_3 NAAQS review indicates that EPA staff believe the current scientific record does not call into question the adequacy of the current O_3 NAAQS to protect human health and the environment.[8] CASAC's review of this document indicated that the group was split on whether or not the current 70 ppb primary is stringent enough to protect public health with an adequate margin of safety, but concurred with the EPA staff assessment that the secondary standard should be retained.[9] Several of the CASAC members cited information suggesting health impacts at O_3 exposures as low as 60 ppb, which was the lowest end of the range CASAC had recommended for EPA's consideration for the 2015 O_3 NAAQS. Even if the O_3 NAAQS are retained in 2020, the continued assertion by some CASAC members that a 70 ppb primary NAAQS is not protective enough suggests that a tighter O_3 NAAQS in 2025 is certainly a real possibility.

SUMMARY OF ECONOMIC AND DEVELOPMENT RISKS OF A NONATTAINMENT DESIGNATION

BASIC STEPS FOR ASSESSING ECONOMIC IMPACTS

Assessing economic costs of a nonattainment designation is focused on assessing opportunity cost, and involves the following basic steps:

1. Translating the situation into an economic input that can be used in an economic input/output model such as jobs or sales
2. Calculating the output in terms of Gross Regional Product (GRP) impact
3. Multiplying the GRP impact by the number of years the impact would be expected to occur in order to obtain the full economic impact possible over that period (i.e., 1 year for a construction project, 20-30 years for a new industrial facility)
4. Multiplying the full economic impact by an appropriate percentage to reflect the probability of the situation occurring in order to obtain an "expected" economic impact.

CAPCOG's 2015 study covered all five counties in the Austin-Round Rock MSA using Emsi's Market Analyst input-output model for 2013.[10] At least two other economic input-output models that could be used for this study – one provided by Chmura[11] and the other by Regional Economic Models Inc. (REMI).[12] The Oklahoma Department of Commerce (ODOC) recommended that the use of REMI be considered for this study, stating that the economic outputs provided by Emsi may not be as extensive or comprehensive as REMI could provide. It's CAPCOG's understanding from independent consultation that while Chmura's model and Emsi's model are comparable with one another, the advantage of REMI is that it allows customized configuration of the model in ways that Chmura and Emsi do not.

SURVEYING ORGANIZATIONS

One way to help ensure that the study is based on sound regulatory and economic assumptions is to survey the businesses and organizations that would be most directly impacted by a nonattainment designation. Organizations operating "major" facilities in the Oklahoma City-Shawnee CSA would be the most directly impacted by the NNSR, RACT, and RFP requirements. The following organizations operate at least 1 facility in the Oklahoma City-Shawnee CSA that emitted at least 100 tpy of NO_X or VOC in 2017, which would mean that it would definitely meet the "major source threshold" of PTE at least 100 tpy:

- Armacell LLC: 1 facility
- Bimbo Bakeries USA Inc.: 1 facility
- DCP Operating Co. LP: 2 facilities
- Eagle Exploration Production LLC: 3 facilities
- Enable Oklahoma Intrastate Transmission LLC: 1 facility
- Metal Container Corp.: 1 facility
- Nemaha Gas Gathering LLC: 1 facility
- Oklahoma Gas and Electric (OG&E): 4 facilities
- ONEOK Gas Storage LLC: 1 facility
- Phillips 66 Pipeline LLC: 1 facility
- Plains Marketing LP: 1 facility
- Quad Graphics Inc.: 1 facility
- Shawnee Tubing Industries LLC: 1 facility
- Southern Star Central Gas Pipeline Inc.: 1 facility

[7] Based on EPA's Integrated Review Plan (IRP) for this review, EPA does not appear to be entertaining the possibility of loosening the NAAQS since it has formulated the policy question to be whether or not the scientific record calls into question whether the current primary and secondary NAAQS are "adequate" to protect public health.

[8] EPA. Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards, External Review Draft. Research Triangle Park, NC. Office of Air Quality Planning and Standards, Health and Environmental Impacts Division. October 2019. EPA-452/P-19-002. Available online at: https://www.epa.gov/sites/production/files/2019-10/documents/o3-draft_pa-oct31-2019-erd.pdf.

[9] EPA Clean Air Scientific Advisory Committee. CASAC Review of EPA's Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards (External Review Draft – October 2019). February 19, 2020. EPA-CASAC-20-003. Available online at: https://yosemite.epa.gov/sab/sabproduct.nsf/264cb1227d55e02c85257402007446a4/4713D217BC07103485258515006359BA/$File/EPA-CASAC-20-003.pdf

[10] https://www.economicmodeling.com/analyst/

[11] http://www.chmuraecon.com/

[12] https://www.remi.com/

- U.S. Air Force: 1 facility (also would be heavily impacted by general conformity requirements)

Some of these businesses and organizations are already involved in the study. Once ACOG hires a consultant to conduct a more detailed economic impact analysis for, ACOG and/or its consultant should try to set up interviews with senior operations staff from each of these facilities in order to gain an understanding of:

1. Any plans for major expansion of their facilities in the next 5-10 years
2. How regular operations would be affected by a nonattainment designation
3. How plans for expansion would be affected by a nonattainment designation
4. Any information useful for translating the answers to questions 1-3 into inputs for the economic input/output model
5. Any information about any plans to (or willingness to consider) installing new pollution control systems.

Depending on time and financial resources available, ACOG may also wish to survey facilities from existing nonattainment areas to determine what impacts a nonattainment designation has had on their business operations and decision-making.

In addition to point source operators, a number of other public entities and economic sectors would be affected, particularly by conformity and I/M program requirements:

1. MPO staff at ACOG;
2. Local governments with transportation projects in the MPO's long-range plan or TIP or the state's long-range plan or STIP (if outside of the MPO boundary)
3. EMBARK and any other transit agencies with operations within the CSA
4. ODOC
5. Oklahoma Department of Environmental Quality (ODEQ)
6. Oklahoma Department of Public Safety (ODPS)
7. Oklahoma Department of Transportation (ODOT)
8. Commercial Aviation (particularly Will Rodgers World Airport)
9. United States Air Force;
10. The industrial building construction sector;
11. The highway construction sector;
12. Used car dealers;
13. Vehicle repair facilities.

While modeling the impacts of regulations on these organizations and sectors is different from how it may be done for a point source, a similar methodology relying on strong assumptions translated into data that can used in an input-output model can be used for these actors as well.

One of the ways that a study like the one ACOG is undertaking can be beneficial is if it can help motivate the local community to take action to avoid a nonattainment designation, particularly through taking voluntary steps to reduce air pollution.

HOW BENEFITS OF ACTION CAN BE ASSESSED

BENEFITS OF AVOIDING ECONOMIC COSTS OF A NONATTAINMENT DESIGNATION

One set of benefits of taking action is avoiding the potential economic costs of a nonattainment designation (i.e., an opportunity cost avoided). In order to assess these costs, a number of probabilities would need to be estimated:

1. The probability of violating the NAAQS within a specific timeframe under a "business as usual" scenario
2. The probability of EPA designating the area "nonattainment" as a result of the violation
3. The probability that the emission reductions envisioned would reduce the probability of a violation
4. The probability that the emission reductions envisioned would reduce the probability of a nonattainment designation if a violation did occur.

The probabilities described under #1 can be calculated through relatively simple statistical methods, while the probabilities described under #3 can be calculated through a combination of photochemical modeling data and other statistical methods. However, the probabilities described under #2 and #4 are highly subjective and speculative. For example, if EPA chose to tighten the NAAQS in 2020, it would trigger a new round of mandatory area designations for the entire country by the end of 2022, which would make a nonattainment designation of at least one county in the Oklahoma City area highly likely if a violation of the NAAQS was recorded for 2019-2021. However, if EPA does not change the O_3 NAAQS, it would significantly reduce the probability of a nonattainment designation in 2022 because it would be a discretionary rather than mandatory action under the Clean Air Act. Likewise, EPA can consider the level of emission control in deciding whether to designate an area nonattainment if it's a discretionary designation (i.e., after the initial round of designations for the NAAQS), or whether to limit the geographic extent of a nonattainment area during the initial round of designations for NAAQS.

For many emission reduction strategies, cost-per-ton ratios are available to estimate the average cost per ton of NO_X or VOC emissions reduced. EPA's 2016 "Menu of Control Measures" provides one useful resource for developing such estimates.[13] These tools are particularly useful for specific firms to understand what the financial cost of implementing various measures may be, irrespective of how those financial costs to the firm impact the broader regional economy. This type of information may be critical to assessing how a nonattainment designation could influence business decisions by specific firms.

EPA's Regulatory Impact Analyses (RIAs) for various rule-makings also contain lots of valuable information that can be used to estimate the average cost per ton of NO_X or VOC reduced. CAPCOG used the RIA for EPA's O_3 NAAQS proposal, for example, to estimate the average cost per ton of VOC reductions needed to fulfill the 15% RFP requirement.

HEALTH BENEFITS OF REDUCING EMISSIONS

Sometimes in discussions about the benefits of avoiding a nonattainment designation for a local economy, it can be easy to lose sight of the fact that voluntarily reducing emissions to help avoid a nonattainment designation also provides a direct public health and welfare benefit to the communities. Measures that reduce NO_X or VOC emission rates reduce ambient concentrations of multiple pollutants, and measures that reduce emissions-forming activity reduces all manner of emissions, as well as fuel consumption.

For example, based on EPA's RIA for the 2015 O_3 NAAQS, the average health benefit from reduced ambient O_3 and ambient fine particulate matter (PM2.5) from NO_X reductions was about $25,000 per ton of NO_X reduced – about $5,000 of which was attributable to O_3 reductions and $20,000 of which was attributable to PM2.5 reductions, since NO_X is a precursor to both O_3 and PM2.5. EPA is likely to release a new RIA for the 2020 NAAQS review proposal in the spring, and this document can be used to help estimate the potential health benefits from reductions in NO_X or VOC.

Although the focus of this study is O_3, the 2015 O_3 NAAQS RIA showed that a large majority (about 80%) of the quantifiable health benefits from reducing NO_X emissions actually are attributable to reduced ambient PM2.5 emissions, since NO_X is a precursor for both O_3 and PM2.5, and the same strategies to reduce NO_X emissions can also result in reductions of other emissions. EPA has developed a series of tools that can be used to estimate the PM2.5 health benefit per ton of NO_X, SO_2, and direct PM2.5 emissions from various sectors, which can provide some additional granularity to these estimates.[14] For example, EPA estimates $6,700 - $15,000 in health benefits from reduced PM2.5 per ton of NO_X reductions from electric generating units (EGUs) nationwide in 2025, while reduction on NO_X emissions from on-road sources would achieve $9,400 - $21,000 in benefits per ton of NO_X.

In the course of this study, to the extent that ACOG or its stakeholders are able to calculate estimated emission reductions from implementation of various emission reduction strategies and measures, it may be valuable to use some of these "benefit-per-ton" ratios in order to approximate the public health benefits of reducing O_3 precursor emissions. ACOG may also want to consider contracting with a vendor such as AACOG or Ramboll-ENVIRON to conduct

[13] https://19january2017snapshot.epa.gov/criteria-air-pollutants/menu-control-measures-naaqs-implementation_.html

[14] https://www.epa.gov/benmap/reduced-form-tools-calculating-pm25-benefits

photochemical modeling to assess the O_3 impacts of specific emission control strategies in order to better understand the relative impacts of local controls.

RECOMMENDATIONS FOR CARRYING OUT STUDY

CAPCOG has identified a number of recommended tasks that ACOG and its stakeholders may wish to consider carrying out on their own as a part of this study, as well as recommendations for procuring vendors for the economic impact and transportation conformity segments of this study.

RECOMMENDED TASKS TO BE COMPLETED BY ACOG AND/OR STAKEHOLDERS

One item that ACOG requested for this report was to identify tasks that ACOG or other study stakeholders could complete to help move the project forward. These tasks may require or benefit from some specialized knowledge, but would not necessarily make sense to use a vendor for the economic impact or transportation conformity segments to complete. These tasks can also help narrow or better define the work that these vendors would need to complete.

1. Calculate the cumulative seasonal O_3 exposure index (W126) data for each monitor in the Oklahoma City-Shawnee CSA using hourly O_3 data and compare to the levels EPA staff and the CASAC indicated were necessary to protect vegetation in the 2015 O_3 NAAQS rulemaking:[15]
   a. Obtain hourly O_3 data from EPA's Air Quality System (AQS) database
   b. Use EPA's tools to calculate W126 index values[16]
   c. Compare values to various W126 levels cited in the final 2015 O_3 NAAQS rulemaking and CASAC's recommendations on the secondary standard for the 2015 O_3 NAAQS
2. Calculate probabilities associated with the region's O_3 design value in various years;
   a. Calculate the mean and standard deviation of the 4th highest MDA8 O_3 values for each monitor in the region 2016-2018 and/or 2017-2019
   b. Apply standard deviation ratios to projected O_3 values from 2020 – 2028
   c. Calculate the cumulative probabilities that the mean would be below various thresholds
3. Estimate the potential NO_X and VOC emission reductions from implementing RACT rules and other potential control options:
   a. Identify the universe of facilities within the study area with a PTE at least 100 tpy NO_X or VOC
   b. Identify the pollution control systems being used at these facilities and the level of control they are currently achieving
   c. Review RACT rules from other states and applicable RACT emissions rates
   d. Calculate the difference in emissions between RACT emissions rates and the facilities' emissions rates
   e. Multiply the difference in emissions rates by underlying activity data
4. Estimate the potential NO_X and VOC emission reductions from implementing an I/M program:
   a. Formulate a plausible scenario in terms of geographic applicability, model year applicability, testing frequency, failure rates, testing fees, and repair costs[17]
   b. Obtain an estimate of the total number of the light-duty vehicles that would be required to be subject to testing
   c. Use data from other studies or from an analysis of the change in the average emissions rates as a result of implementation of an I/M program using EPA's MOVES mobile source emissions mode
5. Calculate the costs to motorists of an I/M program:
   a. Testing fees
   b. Repair costs
6. Calculate the disposition of I/M program expenditures over time:
   a. To inspection and repair stations
   b. To any state or local government agencies
7. Estimate the anticipated VOC emission reduction deficit that would need to be fulfilled for a 15% VOC reduction after implementation of RACT and I/M
   a. Calculate expected 15% VOC reduction requirement for target year
   b. Calculate expected CTG RACT VOC emission reductions in target year
   c. Calculate expected major source RACT VOC emission reductions in target year
   d. Calculate expected I/M VOC emission reductions in target year
8. Identify projects or activities that would likely be impacted by Transportation or General Conformity Requirements over the next 5-10 years (i.e., complex highway construction projects, airport expansions, etc.);
   a. Updates to the MPO's long-range transportation plan
   b. Updates to the MPO's TIP
   c. Updates to the state's long-range transportation plan (for areas outside of the MPO boundaries)
   d. Updates to the STIP (for areas outside of the MPO boundaries)
9. Calculate the estimated health benefits associated with implementation of the various control measures described above (with the exception of the conformity requirement):
   a. Review the RIA for EPA's 2020 O_3 NAAQS review proposal when it is released in the spring
   b. Divide quantified health benefits in RIA by emission reductions to obtain benefit-per-ton ratios; and
   c. Multiply benefit-per-ton ratios emission reduction totals to estimate health benefits associated with emission reduction measures required as a result of implementation of the control measures
10. Estimate Congestion Mitigation for Air Quality (CMAQ) funding the Oklahoma City area could qualify for and use as a result of a nonattainment designation:
    a. Review CMAQ funding statutory requirements, rules, and allocations
    b. Calculate the estimated allocation of CMAQ funding to Oklahoma City-Shawnee CSA if designated nonattainment
    c. Calculate match requirements needed to qualify for CMAQ funding
    d. Identify any projects not currently funded that could be funded with CMAQ

POTENTIAL SOLUTIONS FOR ECONOMIC IMPACT AND TRANSPORTATION CONFORMITY SEGMENTS OF STUDY

Following completion of this scoping report, ACOG plans to contract with two separate organizations to conduct the economic impact analysis and the transportation conformity analysis phases of this study. One of the key considerations that ACOG communicated to CAPCOG staff regarding this contracting was a desire to procure the vendors either through an interlocal/intergovernmental agreement or through a cooperative purchasing agreement (such as the Houston-Galveston Area Council's (HGAC's) Buy Board) in order to move forward with the study expeditiously.

ACOG may wish to work with study stakeholders and/or an economics department from a local public research university that have access to statewide economic data through Emsi or other economic input-output models to conduct the economic impact analysis for this project.

For the transportation conformity analysis, CAPCOG recommends that ACOG consider contracting with a transportation research institute at a public research university (such as the Texas Transportation Institute (TTI) at Texas A&M University) with experience doing transportation conformity analyses and extensive knowledge of an experience with estimating costs of transportation projects in nonattainment areas.

REMAINDER OF THIS DOCUMENT AND NEXT STEPS

The remainder of this document provides additional details to each of the items listed above in this executive summary, and can be used to whatever extent ACOG wishes in support of its study. They were written so that ACOG could, if it chose, use some of the information as the first few chapters of a final report. Following the completion of this report, CAPCOG will assist ACOG in developing scopes of work for contracts to complete detailed analyses of the conformity requirements and the economic analysis portions of this study.

[15] This is relevant in the event EPA sets a separate secondary O_3 NAAQS. On August 23, 2019 in Murray Energy v. EPA, the U.S. Court of Appeals for the D.C. Circuit remanded EPA's decision to set the 2015 O_3 secondary standard identical to the primary standard due to statements by EPA in the rulemaking that the W126 index was the appropriate way to measure harm from O_3 to vegetation. This information could be useful to ACOG and stakeholders to understand the risks associated with a potential nonattainment designation for a separate secondary O_3 NAAQS.

[16] https://www.epa.gov/air-quality-analysis/ozone-w126-index

[17] ODOT has recommended limiting the I/M research to focusing on revenues and expenditures, relying on existing data from other state I/M programs and gathering data from the prior Oklahoma I/M program to generate cost estimates.

2 BACKGROUND

The Oklahoma City area's ground-level O_3 concentrations in recent years put it at risk of violating EPA's O_3 NAAQS and being designated a "nonattainment" area by EPA for the O_3 NAAQS. ACOG has initiated a study to characterize the regulatory and economic risks associated with a potential O_3 NAAQS nonattainment designation for the Oklahoma City area, and has contracted with the Capital Area Council of Governments (CAPCOG) – the Council of Governments for the Austin, Texas, area – to assist with this study. CAPCOG completed a similar study in 2015 for the Austin, Texas metro area, and participated in the initial planning for the subsequent AACOG "Cost of Nonattainment" analysis for the San Antonio, Texas metro area. The goals of this initial scoping report are to:

1. Recommend the geographic scope of the study
2. Identify and explain one or more scenarios in which EPA might designate all or a part of the geographic area covered by the study as nonattainment for the O_3 NAAQS that would form a key assumption or set of assumptions for the study
3. Identify and explain the various Clean Air Act regulatory requirements that would apply to an Oklahoma City nonattainment area
4. Identify which facilities, industries, processes would be most likely to be impacted by a nonattainment designation
5. Characterize, or provide a methodology for characterizing, the probabilities of various scenarios analyzed in the study
6. Provide a general description of methods that can be used to translate regulatory impacts into economic impacts
7. Identify aspects of the implementation of the Clean Air Act in which EPA has flexibility with respect to a nonattainment designation and associated regulatory requirements

This report is intended to help ACOG and its stakeholders better understand the risks associated with a nonattainment designation for the O_3 NAAQS and serve as a foundation for ACOG's study.

OKLAHOMA CITY AREA AIR QUALITY

All counties in Oklahoma are currently designated "attainment/unclassifiable" for the 2015 O_3 NAAQ.[18] An area's air pollution levels are considered in compliance with the NAAQS if each of its monitors records an MDA8, averaged over three consecutive calendar years, of 70 ppb or below. In fall 2017, EPA designated all of the counties in Oklahoma "attainment/unclassifiable" based on the 2014-2016 O_3 "design values" (the statistic used to compare ambient air pollution concentrations to the NAAQS) from all of Oklahoma's monitoring stations showing compliance with the NAAQS. However, one of the six "regulatory" monitors in the Oklahoma City region had an MDA8 O_3 value of 71 ppb in 2017, and in 2018, this same monitor had an MDA8 O_3 value of 72 ppb, while another three monitors in the region recorded MDA8 O_3 values of 71 ppb or above as well. Since the region's worst monitor is used to evaluate an entire region's compliance with the NAAQS, even a single monitor violating the NAAQS could put the whole region at risk of a nonattainment designation. The 2016-2018 design value for the region was 70 ppb, the maximum allowable for a region to still be considered in compliance with the NAAQS.

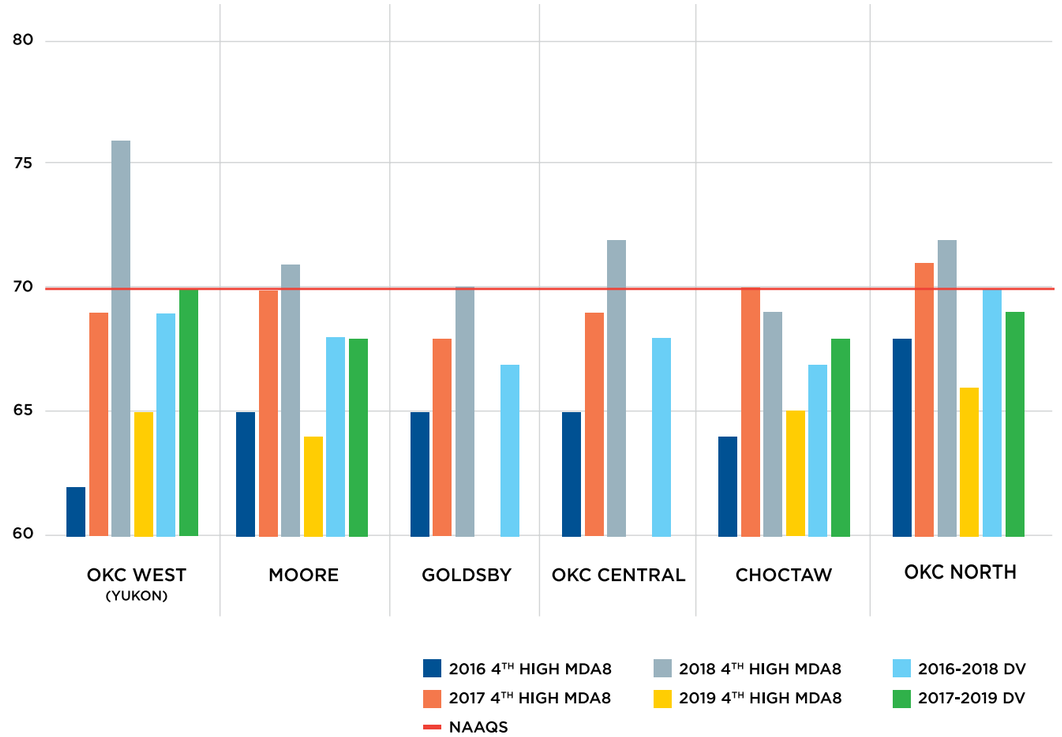
The high O_3 levels in 2017 and 2018 put the region at immediate risk of having a 2017-2019 design value that would violate the 2015 O_3 NAAQS. And while EPA does not automatically initiate the process of designating areas nonattainment if it violates the NAAQS after it completes its initial round of designations following a NAAQS review, there is no real legal protection from EPA proceeding with a nonattainment designating immediately in such circumstances. Furthermore, since EPA is required to review the NAAQS at least once every five years and it almost always results in a stricter standard, the high O_3 levels in 2017 and 2018 also suggest that the Oklahoma City region may struggle to avoid a nonattainment designation following future O_3 NAAQS reviews due in 2020 and 2025.

In 2019, the Oklahoma City area was fortunate to have a mild O_3 season, with no monitor recording a 4th-high MDA8 over 70 ppb. However, because of the high O_3 levels in 2017 and 2018, the region's O_3 design value for 2017-2019 remains at 70 ppb. A 2020 4th-highest MDA8 O_3 of 72 ppb or higher at the Yukon site in Cleveland County (AQS # 400170101) would cause that monitor to show a violation of the 2015 O_3 NAAQS for 2018-2020, which would in turn put the entire region at risk of a nonattainment designation. Considering that in 2018, its 4th-highest MDA8 O_3 was 76 ppb, despite the low O_3 in 2019, this remains a very real possibility.

CURRENT ATTAINMENT DESIGNATION STATUS

40 C.F.R. §§ 81.300 – 81.356 identifies designations for all areas of the country for all NAAQS. Designations for Oklahoma can be found in 40 CFR § 81.337. Oklahoma City and all of the other territory encompassed by the Central Oklahoma Air Quality Control Region (AQCR)/AQCR 184[19] are designated as attainment, attainment/unclassifiable, or unclassifiable/attainment for all NAAQS.

Figure 2-1. Oklahoma City Area 4th-Highest MDA8 O_3 Concentrations and Design Values



[18] Title 40, Code of Federal Regulations, Section 81.337 (40 CFR § 81.337)

[19] Defined elsewhere in 40 CFR Part 81 Subpart B and Appendix A as including Canadian, Cleveland, Grady, Lincoln, Logan, Kingfisher, McClain, Oklahoma, and Pottawatomie Counties.

OVERVIEW OF POTENTIAL NONATTAINMENT SCENARIOS

There are a number of different potential nonattainment scenarios the Oklahoma City area could face related to: a) the outcome of the 2020 O_3 NAAQS review; b) the geographic extent of a nonattainment designation; and c) the speed with which the area is able to come into compliance with the NAAQS.

In each of these scenarios, the basic threshold would be that at least one O_3 monitor in the Central Oklahoma Air Quality Control Region records a violation of the most stringent O_3 NAAQS in effect at that time.

- Outcome of the 2020 O_3 NAAQS review:
  - NAAQS revised and EPA initiates a new mandatory round of designations under discretion under Title 42, United States Code Section §7407(d)(1)(A) and (B) (42 U.S.C. §7407(d)(1)(A) and (B))
  - NAAQS retained, and EPA initiates a new round of designations under its own discretion under 42 U.S.C. §7407(d)(3)
- Geographic extent of the nonattainment area:
  - Counties included in a nonattainment area boundary
    - Only counties with violating monitors
    - Other counties "nearby" are added based on their contribution to the violation
  - Treatment of Indian lands
    - Indian lands grouped with counties in which they are located
    - Indian lands treated separately from counties in which they are located
- Coming into compliance
  - Area monitors compliance immediately following nonattainment designation
  - Area misses the attainment date for a Marginal area and is reclassified to Moderate, not coming into compliance until 6 years after designation

For this study, CAPCOG recommends the following:

- Assume that EPA completes a new round of O_3 area designations in winter 2022 – winter 2023 based on 2019-2021 or 2020-2022 design values, regardless of the outcome of the 2020 O_3 NAAQS review;
- Include two scenarios for coming back into compliance with the NAAQS after designation:
  1: The area comes into compliance with the NAAQS immediately after designation;
  2: The area fails to come into compliance with the NAAQS within 3 years of designation and is reclassified from a "Marginal" to a "Moderate" nonattainment area.

O_3 NAAQS REVIEW & IMPLICATIONS FOR DESIGNATION PROCESS

The current O_3 NAAQS was promulgated on October 1, 2015, and set the maximum allowable O_3 concentration at 70 ppb, with compliance assessed based on a three-year average of the 4th-highest MDA8 O_3. Under 42 U.S.C. §7409(d), EPA is required to complete a review of this NAAQS within five years with input from CASAC. Despite the statutory requirement to complete NAAQS reviews every five years, EPA has usually taken more time. For the O_3 NAAQS, after initial NAAQS were promulgated in early 1971, EPA completed reviews in 1979, 1993, 1997, 2008, and 2015.[20]

2020 O_3 NAAQS REVIEW TIMELINE

While it is possible that EPA again takes more than five years to complete the current O_3 NAAQS review, a memorandum issued by EPA Administrator Scott Pruitt in May 2018 directed EPA staff to complete the O_3 NAAQS review by October 1, 2020.[21] While leadership at EPA has since changed, EPA staff continue to work towards completing their review by the end of 2020. EPA's draft Policy Assessment for the O_3 NAAQS review released in October 2019 indicated that EPA currently plans to complete the NAAQS review by winter 2020.[22] Given the political calendar and the possibility of a change in administration in January 2021, CAPCOG assumes that current EPA leadership will ensure that the review is completed by January 19, 2021.

POTENTIAL OUTCOMES OF THE O_3 NAAQS REVIEW

Based on EPA's draft Policy Assessment and the CASAC's review of this document,[23] CAPCOG believes that the most likely outcome of the review of the 2020 O_3 NAAQS review is a decision to retain the existing primary and secondary O_3 NAAQS. While the PA acknowledges that human clinical studies indicate impacts from O_3 as low as 60 ppb for 6.6 hour exposures, and there are some CASAC members that do not believe that the current NAAQS provides an adequate margin of safety for children with asthma, unlike in 2014, the CASAC as a whole did not recommend a more stringent primary O_3 NAAQS and recommended retaining the existing secondary O_3 NAAQS.[24] Since EPA's approach to this review as described in the Policy Assessment involves first assessing whether the scientific evidence calls into question whether the current NAAQS are adequately protective of public health, and does not include any consideration of loosening the NAAQS, CAPCOG believes there is very little chance of any loosening of the NAAQS as part of this review. Based on CASAC's review of the Policy Assessment, it appears that for the time being, an 8-hour O_3 NAAQS in the range of 60-70 ppb would be the maximum extent of the possibilities EPA would plausibly propose for consideration as part of the current NAAQS review, and it is certainly a possibility that EPA could revise the NAAQS down to a range of 60-69 ppb in its next review even if it retains the current 70 ppb NAAQS in 2020.

[20] https://www.epa.gov/ground-level-ozone-pollution/table-historical-ozone-national-ambient-air-quality-standards-naaqs

[21] Pruitt, E. Scott; Administrator, EPA. "Memorandum to Assistant Administrators. Subject: Back to Basics Process for Reviewing National Ambient Air Quality Standards." May 9, 2018. Available online at: https://www.epa.gov/sites/production/files/2018-05/documents/image2018-05-09-173219.pdf

[22] EPA. Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards, External Review Draft. Office of Air Quality Planning and Standards, Health and Environmental Impacts Division. Research Triangle Park, NC. October 2019. EPA-452/P-19-002. Available online at: https://www.epa.gov/sites/production/files/2019-10/documents/o3-draft_pa-oct31-2019-erd.pdf

[23] EPA Clean Air Scientific Advisory Committee. CASAC Review of EPA's Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards (External Review Draft – October 2019). February 19, 2020. EPA-CASAC-20-003. Available online at: https://yosemite.epa.gov/sab/sabproduct.nsf/264cb1227d55e02c85257402007446a4/4713D217BC07103485258515006359BA/$File/EPA-CASAC-20-003.pdf

[24] Ibid

TWO PATHS TO A NONATTAINMENT DESIGNATION

EPA's decision as to whether or not to retain the current NAAQS affects not only the likelihood that Oklahoma City monitoring data will violate the NAAQS over the next several years, it also affects the discretion EPA would have in deciding whether or not to designate an area nonattainment if the area was violating the NAAQS. Under 42 U.S.C. §7407(d)(1)(A) and (B), EPA is required to complete designations for all areas of the country within two years of any revision to the NAAQS (or up to three if it lacks information necessary to determine if an area is attaining or not attaining the NAAQS). However, the Clean Air Act does not require EPA to immediately designate an area "nonattainment" if it records a violation of the NAAQS after it has already been designated an attainment or unclassifiable area. 42 U.S.C. §7407(d)(3) gives EPA discretion to redesignate areas to nonattainment after an initial designation of attainment or unclassifiable.

LEGAL QUESTIONS AND PRECEDENT REGARDING DISCRETIONARY DESIGNATIONS

Therefore, if EPA retains the current NAAQS and region's 2019-2021 and 2020-2022 design values violate it, there is the possibility that the area could still avoid a nonattainment designation. However, the issue of EPA's discretion to forgo or postpone an immediate nonattainment designation after an area's initial designation has not been fully litigated yet, and with the possibility of a different administration in 2021, it is possible that EPA could undertake a new round of area designations for the O_3 NAAQS after the next NAAQS review even if it did not revise the NAAQS.

EPA has not designated any area "nonattainment" for the 2008 O_3 NAAQS after May 2012, despite a number of areas recording violations of that NAAQS after the initial round of designations were completed. Similarly, EPA has not yet designated any area nonattainment for the 2015 O_3 NAAQS after completing its initial designations between fall 2017 and summer 2018, despite several additional areas violating the NAAQS after initial designation as attainment/unclassifiable.

In November 2013, Sierra Club petitioned EPA to designate 57 areas nonattainment for the 2008 O_3 NAAQS as a result of violations of the NAAQS in 2011 and 2012, after EPA had completed initial designations in Spring 2012 based on 2010 and 2011 data. EPA denied this petition, and in July 2014, Sierra Club sued EPA in the U.S. Court of Appeals for the D.C. Circuit over the matter (*Sierra Club v. McCarthy*).[25] The court rules in EPA's favor, finding that since the Clean Air Act does not mandate a specific time frame for redesignating an area to nonattainment after initial designations had been promulgated, EPA was not compelled to immediately designate those areas in question nonattainment as a result of a subsequent violation.

However, there is precedent for EPA designating areas as nonattainment for O_3 and other NAAQS after completing its initial round of area designations:

- In 2008, EPA formally issued notice of the Denver-Boulder-Greeley-Ft. Collins-Loveland, Colorado area as nonattainment for the 1997 O_3 NAAQS, more than four years after initial designations were completed in Spring 2004, as a result of its failure to attain the NAAQS by 2007 in accordance with the Early Action Compact program[26]
- In 1998, EPA designated the San Francisco Bay Area, California, as nonattainment for the 1979 O_3 NAAQS as a result of violations of the NAAQS since it was redesignated to attainment in June 1995, although it had initially been designated nonattainment after the 1990 Clean Air Act Amendments as well[27]
- In 1995, EPA designated Sunland Park, New Mexico, a new nonattainment area for the 1979 O_3 NAAQS[28]

There are also several examples of nonattainment designations occurring outside of the initial area designation window following promulgation of a new or revised NAAQS:

- In January 2018, EPA designated six areas as nonattainment for the 2010 1-Hour SO_2 NAAQS[29]
- In December 2016, EPA designated three areas as nonattainment for the 2010 1-Hour SO_2 NAAQS[30]
- In July 2016, EPA designated three areas as nonattainment for the 2010 1-Hour SO_2 NAAQS[31]
- In 2014, EPA designated the Hayden, Arizona nonattainment area for the 2008 Pb NAAQS[32]
- In 2011, EPA designated West Central Pinal, Arizona nonattainment area for the 2006 24-Hour PM2.5 NAAQS[33]

RECOMMENDED ASSUMPTION FOR NEW ROUND OF DESIGNATIONS

Due to this uncertainty, CAPCOG believes that it would be prudent for this study to assume that EPA completes a new round of area designations between Winter 2022 (2 years from the completion of the review of the O_3 NAAQS) and Winter 2023 (3 years from the completion of the review of the O_3 NAAQS), regardless of whether EPA revises the NAAQS, since it would cover both possibilities and provide a single starting point for the remainder of the analysis.

Within this range of dates, the Winter 2022 date would be more consistent with the expectation in the Clean Air Act that designations occur within two years of a NAAQS revision if EPA does have sufficient information to determine if an area is attaining or not attaining the NAAQS, while Winter 2023 would be consistent with EPA allowing some extra time for any newly designated nonattainment – this was what occurred for the 2015 O_3 NAAQS, for example, when EPA postponed completing designations for counties in the San Antonio-New Braunfels MSA until July 2018, after it completed designations for the rest of the country. If designations occurred in Winter 2022, the most recently certified design values would be for 2019-2021, while the relevant design value would be 2020-2022 if it occurred in Winter 2023.

CLASSIFICATIONS

42 U.S.C. §7511(a)(1), specifies five different O_3 nonattainment classifications with increasing numbers of years to attain the NAAQS accompanied by the more stringent regulations associated with the higher classifications. This classification scheme was instituted for the first time in the 1990 Clean Air Act Amendments, but EPA has adapted it for designations for the 1997, 2008, and 2015 O_3 NAAQS based on the ratios between O_3 design values for the 1979 1-hour O_3 NAAQS in effect in 1990 to the level of that NAAQS. Table 3-1 reflects the current approach.[34]

Given this approach, the ranges for Marginal and Moderate classifications under more stringent O_3 NAAQS between 60 ppb and 69 ppb are shown in Table 3-2.

Table 3-1. 2015 O_3 NAAQS Nonattainment Classification Approach

CLASSIFICATION	YEARS FOR ATTAINMENT	DESIGN VALUE % ABOVE THE NAAQS	70 PPB NAAQS DESIGN VALUE WHEN DESIGNATED (PPB)
MARGINAL	3	Up to 15% above	71 – 80
MODERATE	6	15 – 33%	81 – 92
SERIOUS	9	33 – 50%	93 – 104
SEVERE	15	50 – 58%	105 – 110
	17	58 – 133%	111 – 162
EXTREME	20	133% +	163+

[25] U.S. District Court, District of Columbia. Sierra Club v. McCarthy. Case No. 1:14-CV-01284. Filed 7/28/2014, Closed 12/23/2014.
[26] 73 FR 17897.
[27] 63 FR 37258
[28] 60 FR 30789
[29] 83 FR 1098
[30] 81 FR 89870
[31] 81 FR 45039
[32] 79 FR 52205
[33] 76 FR 6056
[34] 42 CFR §51.1302

Table 3-2. Classification Ranges for O_3 NAAQS at 65 ppb and 60 ppb

NAAQS LEVEL	MARGINAL	MODERATE
69 ppb	70 – 78 ppb	79 – 92 ppb
68 ppb	69 – 77 ppb	78 – 91 ppb
67 ppb	68 – 76 ppb	77 – 88 ppb
66 ppb	67 – 75 ppb	76 – 87 ppb
65 ppb	66 – 74 ppb	75 – 86 ppb
64 ppb	65 – 73 ppb	74 – 84 ppb
63 ppb	64 – 71 ppb	72 – 83 ppb
62 ppb	63 – 70 ppb	71 – 83 ppb
61 ppb	62 – 69 ppb	70 – 80 ppb
60 ppb	61 – 68 ppb	69 – 79 ppb

While it seems likely now that EPA will retain the current O_3 NAAQS in its 2020 review, these guidelines would likely also be used for the next NAAQS review that would be due in 2025, and the same issues would arise at that time as the issues could face now, particularly if EPA did tighten the O_3 NAAQS.

POTENTIAL GEOGRAPHIC SCOPE OF A NONATTAINMENT DESIGNATION

42 U.S.C. § 7407(d)(1) defines a nonattainment area as, "any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant." Due to both the regional nature of O_3 air pollution and the extent to which O_3 is affected by transportation, O_3 nonattainment areas often include multiple counties that are considered "contributing" to a violation "nearby" even if its own ambient air pollution is meeting the NAAQS.

Areas that are attaining the NAAQS and not contributing to a nearby violation of the NAAQS can be designated "attainment." If EPA cannot determine if an area should be designated attainment or nonattainment, it can also designate the area as "unclassifiable." Since there is no difference in the regulatory requirements for an area that has initially been designated "attainment" or "unclassifiable," EPA will often designate areas as "attainment/unclassifiable" or "unclassifiable/attainment."

OKLAHOMA CITY-SHAWNEE CSA

EPA's designation guidance for the 2015 O_3 NAAQS defined EPA's approach to determining the potential extent of the nonattainment area associated with a violation of the NAAQS: "for analyzing whether nearby areas contribute to a violating area, the EPA intends to consider information relevant to designations associated with the counties in the [CSA], or, where appropriate, the [CBSA] in which the violating monitor is located."[35] The most recent Office of Management and Budget (OMB) statistical area delineations issued in September 2018 identifies the Oklahoma City-Shawnee CSA as the Oklahoma City MSA (Canadian, Cleveland, Grady, Lincoln, Logan, McClain, and Oklahoma Counties) and the Shawnee μSA (Pottawatomie County).[36] Based on a EPA's guidance using current statistical area definitions, a conservative approach to scoping this study would cover all eight of these counties.

Even though OMB frequently updates statistical area boundaries, there is reason to doubt that they will do so before EPA completes the next designation process, and that even if they did, these same eight counties would still be grouped together in the same CSA with the same two CBSAs. The Oklahoma City-Shawnee CSA counties have been grouped together in the same CSA dating back to at least June 2003, which is the last date for which OMB has historical delineation files posted on their website.[37] And while OMB is expected to update statistical area standards and definitions again following the 2020 Census, this process would only occur after the Census Bureau finalizes the 2020 Urbanized Area boundaries (likely in the 2nd half of 2021), and based on the time frame for OMB to update statistical area standards and definitions following the 2000 and 2010 Censuses – both occurred three years later – it seems more likely than not that the current definitions would be used for the designation process for the O_3 NAAQS following the upcoming O_3 NAAQS review due in late 2020.

[35] Janet G. McCabe, Acting Assistant Administrator for EPA Office of Air and Radiation. Memorandum to Regional Administrators: Area Designations for the 2015 Ozone National Ambient Air Quality Standards. February 25, 2016. Available online at: https://www.epa.gov/sites/production/files/2016-02/documents/ozone-designations-guidance-2015.pdf. Accessed January 14, 2020.

[36] Office of Management and Budget. OMB Bulletin No. 18-04: Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas. September 14, 2018. Available online at: https://www.whitehouse.gov/wp-content/uploads/2018/09/Bulletin-18-04.pdf. Accessed January 13, 2020.

[37] OMB. Historical Delineation Files. Available Online at: https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/historical-delineation-files.html. Accessed January 14, 2020.

In addition to the Shawnee μSA, the following CBSAs are also adjacent to the Oklahoma City MSA, but do not have enough commuting interchange to qualify for inclusion in Oklahoma City's CSA:

- Ada, Oklahoma μSA (Pototoc County)
- Duncan, Oklahoma μSA (Stephens County)
- Enid, Oklahoma MSA (Garfield County)
- Lawton, Oklahoma MSA (Comanche and Cotton Counties)
- Stillwater, Oklahoma μSA (Payne County)

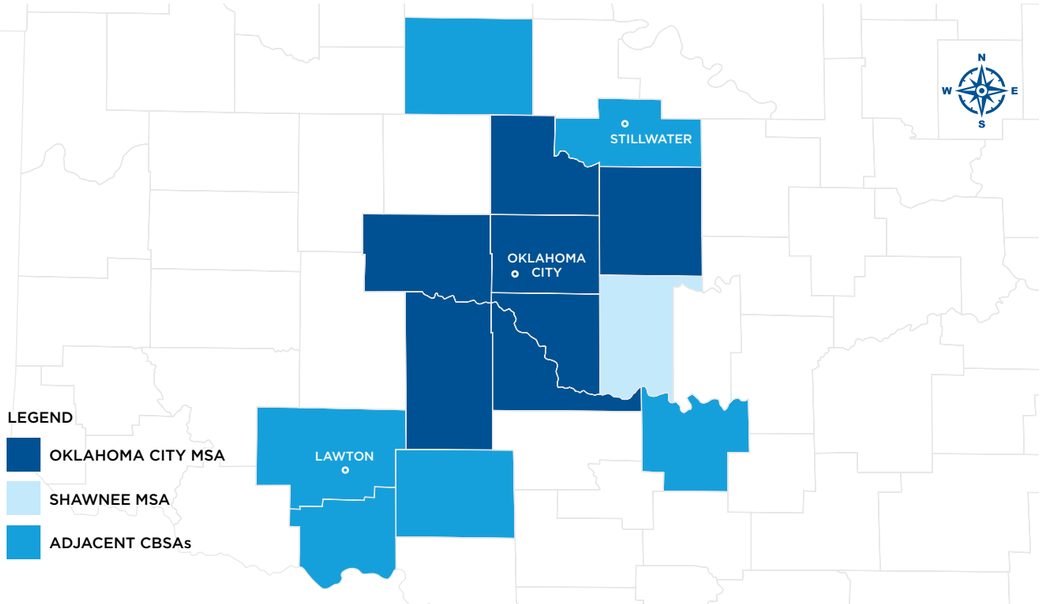
Figure 4-1 shows the boundaries of the Oklahoma City MSA, the Shawnee μSA, and the other adjacent CBSAs.

While including all eight counties identified by OMB in September 2018 as part of the Oklahoma City-Shawnee CSA would adhere most closely to current EPA guidance and current statistical area definitions, this study is assuming that a nonattainment designation would not be occurring until late 2022 at the earliest, and there may be good reasons from a practical standpoint to limit this study to just the seven counties in the current Oklahoma City MSA. Among these reasons are:

1. None of the counties designated "nonattainment" for the 2015 O_3 NAAQS in EPA Region 6 were located in a different CBSA within the same CSA;
2. There is a possibility that EPA guidance for area designations for the O_3 NAAQS could be updated following the next O_3 NAAQS review;
3. There is a possibility that statistical area boundaries could change prior to EPA's next round of area designations for the O_3 NAAQS;
4. Certain economic data may be available at the MSA level but not the CSA level; and
5. Economic models and assumptions that are valid at the MSA level may not be applicable to other areas within a CSA

The first set of considerations relate to the likelihood that any nonattainment area associated with an O_3 NAAQS violation in Oklahoma City would include the Shawnee μSA. Given the empirical evidence of EPA's actual application of its guidance to the 2015 O_3 NAAQS nonattainment areas in EPA Region 6, it is possible but not likely that EPA would designate Pottawatomie County nonattainment as a contributing area EPA were to undertake a new round of O_3 NAAQS designations and there was a monitor violating the O_3 NAAQS in the Oklahoma City MSA. However, it is also likely that EPA would still evaluate whether to include the Shawnee μSA in any such nonattainment area, making the risk considerable higher than the possibility of EPA adding a county outside of the Oklahoma City-Shawnee CSA to any Oklahoma City nonattainment area. While EPA may issue new guidance on area designations after the next O_3 NAAQS review as it did following the 1997, 2008, and 2015 O_3 NAAQS reviews, this may only occur if EPA revises the NAAQS, and it is unlikely that it would eliminate consideration of the entire CSA as part of the designation process. EPA's designation process for the 1997, 2008, and 2015 O_3 NAAQS all included consideration of a CSA.[38] Given this history, it seems unlikely that EPA would narrow its consideration to just the CBSA and not consider the CSA if a violating monitor was located in a CSA. Finally, while it is possible that OMB would update statistical area definitions prior to the next round of O_3 NAAQS designations, for the reasons indicated in the prior section, it appears unlikely that this would occur, and even if it did, it seems more likely than not that the same eight counties would still be grouped together in a CSA.

Figure 4-1. Oklahoma City MSA, Shawnee MSA, and Other Adjacent CBSAs



OTHER POTENTIAL GEOGRAPHIC AREAS FOR THE STUDY

CAPCOG has identified a few other potential geographic areas for this study, although for reasons explained in this section, CAPCOG does not believe that these choices would be much less preferable to the Oklahoma City-Shawnee CSA or Oklahoma City MSA:

- The Central Oklahoma Air Quality Control Region
- The ACOG Region
- The Metropolitan Planning Area for the Oklahoma City Urbanized Area
- Oklahoma County

42 U.S.C. §7407[39] includes provisions for state designation of AQCRs "for purposes of efficient and effective air quality management." These AQCRs include all areas of the United States, and are listed in 40 CFR Part 81, Subpart B (§§ 81.11 – 81.276). The AQCR that includes Oklahoma City is listed as the "Central Oklahoma Intrastate Air Quality Control Region" under 40 CFR § 81.47, and includes the entirety of Canadian, Cleveland, Grady, Lincoln, Logan, Kingfisher, McClain, Oklahoma, and Pottawatomie Counties. This AQCR is also identified as AQCR 184 in Appendix A to 40 CFR Part 81. The region effectively encompasses the entire Oklahoma City-Shawnee CSA, plus Kingfisher County.
At one time, AQCRs were an important part of the air quality planning process, and effectively formed "presumptive" boundaries for air quality planning areas. Since the 1977 Clean Air Act Amendments introduced the concept of a "nonattainment area," however, AQCRs have become less relevant for air quality planning purposes, and there is no reference to AQCRs in any recent EPA guidance on nonattainment area designations. One factor weighing in favor of including the entire AQCR would be that EPA's most recent guidance for area designations for the 2015 O_3 NAAQS makes it clear that, unlike the guidance for the designations for the 2008 O_3 NAAQS, "it does not intend the statistical area boundary to be a presumed nonattainment area boundary. The area-specific analyses may support nonattainment area boundaries that are smaller or larger than the CSA or CBSA."

Since ACOG is carrying out this study, it would make sense to consider a study area coinciding with ACOG's boundaries, which include Oklahoma, Cleveland, Canadian, and Logan Counties. These four counties constitute the four "Central" counties for the Oklahoma City MSA and therefore would – all else being equal – have a higher likelihood for being included in any Oklahoma City MSA than

[38] See March 23, 2000, Guidance from John Seitz, Director of Office of Air Quality Planning and Standards, "Boundary Guidance on Air Quality Designations for the 8-Hour Ozone National Ambient Air Quality Standards." See also 69 FR 23860 and December 4, 2008, designation guidance (Memorandum from Robert J. Meyers, Principal Deputy Administrator, to Regional Administrators, Regions I-X, titled, "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards.") In the 2008 guidance document, EPA indicated the CBSA or CSA would be the "presumptive" boundary for evaluating the geographic boundaries of an ozone nonattainment area.

[39] Section 107 of the Clean Air Act

Grady, Lincoln, and McClain counties, which area all considered "outlying" counties based on OMB's 2010 statistical area standards.[40] These four counties also account for 96% of the MSA's GRP and 90% of the MSA's population. Since EPA's guidance does involve evaluation of other relevant geographic/jurisdictional boundaries within a CSA or CBSA when establishing nonattainment area boundaries, it is possible that the ACOG boundaries could be a relevant factor in limiting the geographic scope of any such nonattainment area. However, the risk of being included in an Oklahoma City nonattainment area appears to be at least as high as it is for Logan County, which is the smallest county by population within the CSA and the smallest growth rate.

The Metropolitan Planning Area (MPA) for the Oklahoma City Urbanized Area is another relevant geography for this study. 42 U.S.C. §7504 requires coordination between the MPO or MPOs for any nonattainment area with the state, local officials, state air quality officials, and state transportation officials in the development and implementation of any SIP for that nonattainment area, and this process is required to be coordinated with the MPO's transportation planning process for its MPA. The MPA for the Oklahoma City area is known as the Oklahoma City Area Regional Transportation Study (OCARTS). OCARTS includes all of Oklahoma and Cleveland Counties, and portions of Canadian, Grady, Logan, and McClain Counties.[41] Since EPA's designation guidance points to major topographical features as the key reason for splitting a county for nonattainment designations, it seems unlikely that EPA would limit the boundaries of any Oklahoma City nonattainment in accordance with the boundaries of OCARTS.

SUMMARY OF RELEVANT GEOGRAPHIC AREAS

Table 4-1 identifies the counties included in each relevant geography discussed in this section. The geographies nested within the CSA are shown in Figure 4-2.

Table 4-1. Counties and Relevant Geographies

COUNTY	OKLAHOMA CITY /SHAWNEE CSA	OKLAHOMA CITY MSA	CENTRAL OKLAHOMA AQCR	ACOG	OCARTS
Canadian	Yes	Yes	Yes	Yes	Partial
Cleveland	Yes	Yes	Yes	Yes	Yes
Grady	Yes	Yes	Yes	No	Partial
Kingfisher	No	No	Yes	No	No
Lincoln	Yes	Yes	Yes	No	No
Logan	Yes	Yes	Yes	Yes	Partial
McClain	Yes	Yes	Yes	No	Partial
Oklahoma	Yes	Yes	Yes	Yes	Yes
Pottawatomie	Yes	No	Yes	No	No

[40] OMB. Standards for Delineating Metropolitan and Micropolitan Statistical Areas. June 28, 2010. 75 FR 37246. Available online at: https://www.govinfo.gov/content/pkg/FR-2010-06-28/pdf/2010-15605.pdf

[41] ACOG. Encompass-2040 Executive Summary. http://www.acogok.org/wp-content/uploads/2018/07/Encompass-2040-Executive-Summary.pdf

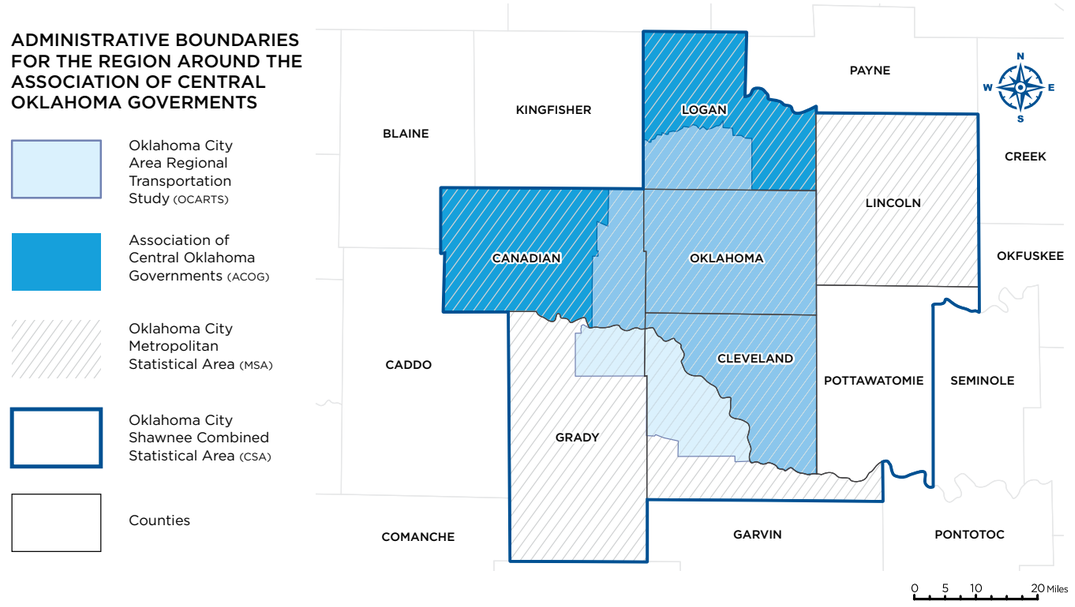
Among the counties within the Oklahoma City/Shawnee CSA, to the extent that each county has a different likelihood of being included within a nonattainment area if there was a violation, CAPCOG believes those risks can be characterized as follows:

- Highest risk: Canadian, Cleveland, and Oklahoma Counties
  - Explanation: each of these counties has a regulatory monitor that recorded a 4th-highest 8-hour O_3 average of 71 ppb or above in 2018, and therefore run a significant risk of having ambient air quality that violates the NAAQ
  - Even if one of these counties was not recording a violation and one of the other counties was, the larger population and higher quantity of NO_X emissions would make them highly likely candidates for consideration as a "contributing" county
- Medium risk: Grady, Logan, and McClain Counties
  - None of these counties have a regulatory O_3 monitor
  - All are located in the same CBSA as Canadian, Cleveland, and Oklahoma Counties, and have major point sources of NO_X emissions, and would therefore be at risk of being considered a "contributing" county to potential violations in Canadian, Cleveland, and Oklahoma Counties
- Lowest risk: Lincoln and Pottawatomie Counties
  - While Lincoln County is within the Oklahoma City MSA, it has the lowest population of any of the counties in the CSA, is not located within the MPO boundaries, and has no point sources of NO_X that emitted more than 100 tpy in 2017
  - While Pottawatomie County is located within the CSA, it constitutes a separate CBSA, which by definition means that its commuting ties to the central counties of the Oklahoma City MSA are weaker than some of the outlying counties within the MSA

TRIBAL AREAS

Beyond its standard designation guidance for the 2015 O_3 NAAQS, EPA's 2011 guidance on designation of Indian lands is also relevant to understanding the potential nonattainment designation scenarios the Oklahoma City area could face.[42] EPA's guidance offers tribes the opportunity to petition EPA to

Figure 4-2. Administrative Boundaries of CSA, MSA, ACOG, and OCARTS



[42] https://www.epa.gov/sites/production/files/2017-02/documents/12-20-11_guidance_to_regions_for_working_with_tribes_naaqs_designations.pdf

treat their lands located within a county, CBSA, or CSA under consideration for a nonattainment designation as distinct from the surrounding areas. This could result in situations in which Indian lands located in the Oklahoma City-Shawnee CSA could be designated as "attainment/unclassifiable" even if the rest of the CSA was designated nonattainment, or these areas could be treated as separate nonattainment areas with distinct regulatory requirements. Unless tribes exercise this option, their lands will be considered like any other land within the CSA when EPA evaluates the region for a potential nonattainment designation.

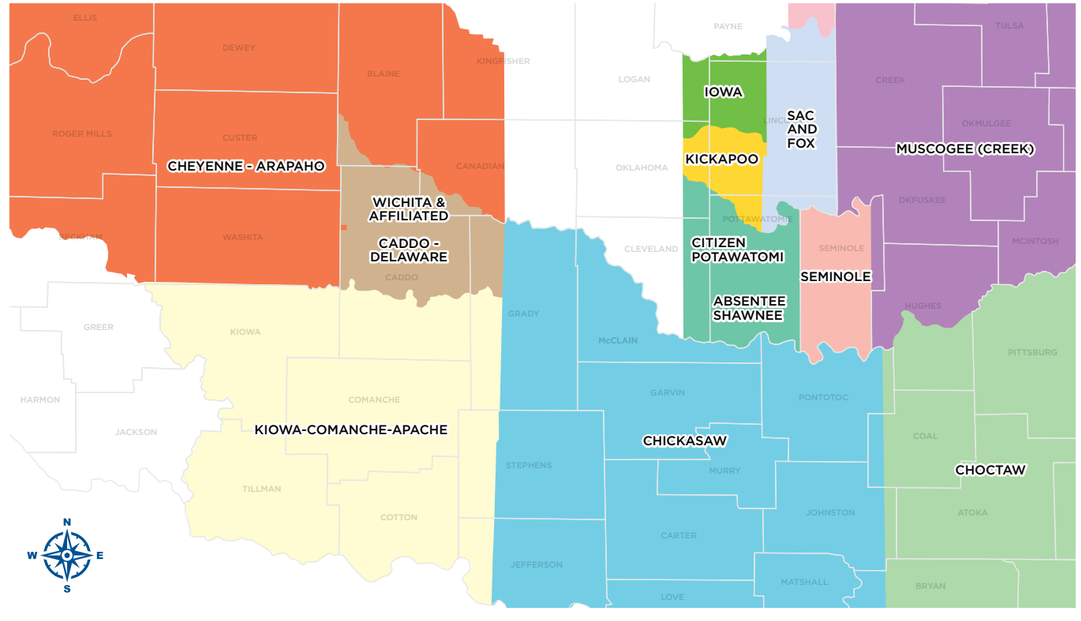
Since this process requires both a request by a tribe and EPA's concurrence, CAPCOG believes a conservative approach to the geographic scoping of the study that accounts for consideration of the entire CSA would make sense, while noting and enumerating data that may be specific to tribal areas where possible so that tribal stakeholders can understand the potential impact to their specific areas. CAPCOG also recommends that ACOG and other stakeholders conduct outreach to tribes with land that could qualify for consideration under EPA's policy and invite them to participate in this study. Figure 4-3 shows tribal jurisdictions in the vicinity of Oklahoma City:[43]

The eight different tribal jurisdictions in the Oklahoma City-Shawnee CSA include:[44]

1. Cheyenne – Arapaho Tribes of Oklahoma
2. Chickasaw Nation, Oklahoma
3. Kiowa – Comanche – Apache – Ft. Sill Apache
4. Iowa Tribe of Oklahoma
5. Kickapoo Tribe of Oklahoma
6. Sac and Fox Nation, Oklahoma
7. Wichita – Caddo – Delaware
8. Potawatomie-Shawnee Nations

In the event of a violation of the O_3 NAAQS somewhere within the Oklahoma City area, strategic partnerships with tribes could be useful in limited the geographic scope of a nonattainment area, thereby limiting the economic impact of a nonattainment designation.

Figure 4-3. Tribal Jurisdictions in the Oklahoma City Area



[43] https://www.odot.org/odot100/maps-spec/misc_tribaljurisdictions.pdf

[44] As identified in ODOT's related shapefile available at: https://okdot.maps.arcgis.com/home/item.html?id=22acdfb12c8141ee852499cc920fe8d3

5 SCENARIOS FOR ATTAINING THE NAAQS

One of the major considerations for this study is what type of situations it wishes to evaluate following an initial area designation, and in particular, if it wanted to evaluate the possibility of the area being classified as "Moderate," either initially or as a result of a reclassification. This section also lays out some of the specific timelines that the region could expect any such scenario to face if designated nonattainment.

ATTAINMENT DATES

Under 40 CFR §51.1303 and §51.1306, an area designated nonattainment for the 2015 O_3 NAAQS is required to attain the NAAQS within 3, 6, 9, 15, 17, or 20 years from the effective date of its nonattainment designation. This same approach was used for the 1997 and 2008 revisions to the O_3 NAAQS, and would be expected to be used again if EPA revised the O_3 NAAQS in 2020. Using the assumption that EPA completes its review of the O_3 NAAQS by December 31, 2020, and a round of area designations by December 31, 2022, the attainment dates for each classification and applicable design value years are shown below in Table 5-1.

EPA DETERMINATION OF ATTAINMENT OF THE NAAQS

42 U.S.C. § 7511(b)(2)[45] requires that, within 6 months of an O_3 nonattainment area's attainment date, EPA must make a determination that the area has or has not attained the NAAQS by its attainment date. This section also requires that if an O_3 nonattainment area fails to attain the O_3 NAAQS by the required attainment date, EPA must reclassify an area to it's the higher of: a) next-highest classification if it fails to attain the NAAQS, or b) the classification corresponding with its design value.[46] The area would then have the extra time to attain the NAAQS associated with the higher classification, but would also face the more stringent regulations required for the higher classification as well.

ATTAINMENT DATE EXTENSIONS

42 U.S.C § 7511(a)(5) allows EPA to extend an attainment date by up to two one-year periods if the state has submitted all required SIP elements for the nonattainment area and "no more than 1 exceedance of the [NAAQS] for [O_3] has occurred in the area in the year preceding the Extension year." For the 2015 O_3 NAAQS, an area can qualify for an attainment date extension if none of the monitors in the area have a 4th-highest MDA8 O_3 of over 70 ppb in the most recent year, and can qualify for a second one-year extension if the two-year averages of the 4th highest MDA8 O_3 for the attainment year and extension year are 70 ppb or below for all monitors in the region.

Table 5-1. Attainment Dates for Areas Designated Nonattainment Winter 2022/2023

CLASSIFICATION	YEARS TO ATTAIN	PROJECTED ATTAINMENT DATE	APPLICABLE DESIGN VALUE
MARGINAL	3	December 31, 2025	2022 – 2024
MODERATE	6	December 31, 2028	2025 – 2027
SERIOUS	9	December 31, 2031	2028 – 2030
SEVERE-15	15	December 31, 2037	2034 – 2036
SEVERE-17	17	December 31, 2039	2036 – 2038
EXTREME	20	December 31, 2042	2039 – 2041

[45] Section 181(b)(2) of the Clean Air Act

[46] Except for areas classified as Severe or Extreme

Once EPA has determined that an area has attained the NAAQS, it suspends planning requirements, pursuant to 40 CFR §51.1318. This enables an area to avoid a "bump-up" to the next classification once it attains the NAAQS. An attainment date extension does not, however, reset the clock for an area's attainment date if it subsequently fails to attain the NAAQS again and does not qualify for an extension. This compresses the time available for the state to complete all of the SIP requirements for a bump-up. For areas getting bumped up from marginal to moderate or moderate to serious, this leaves only one O_3 season before the area would be required to meet the new deadline.

CERTIFICATION OF MONITORING DATA

One critical milestone in the process of determining if an area has attained the NAAQS or not is the state's annual certification of monitoring data from the prior calendar year, which is due by May 1 of each year under 40 CFR § 58.16. This regulation requires quarterly submission of data for each quarter within 90 days, but then also provides for state certification of the data by May 1 so that EPA can review quality-assurance and control data for the monitoring data and assess compliance with the NAAQS. The certification states that the previous year's air pollution concentrations and quality assurance data are completely submitted and that the ambient concentration data are accurate to the best of her or his knowledge.

In a 2014 case, the U.S. Court of Appeals for the D.C. Circuit held that EPA must base determinations of attainment by an area's attainment date based on the most recent valid design value.[47] This means that an area's "attainment date" would be 2022-2024 if an area's attainment date was January 19, 2026, even though an entire extra year had elapsed since 2024, since that year's data would likely not have been certified yet. In Spring 2012, EPA designated some areas for the 2008 O_3 NAAQS based on 2008-2010 data and designated other areas based on 2009-2011 data, depending on whether the state had certified its 2011 data prior to May 1.

REQUIREMENTS FOR REDESIGNATION TO ATTAINMENT

42 U.S.C. §7407(d)(3)(E) specifies the requirements for redesignating an nonattainment area to an attainment area. EPA may only redesignate a nonattainment to attainment if:

1. EPA determines that the area has attained the NAAQS
2. EPA determines that the improvement due to "permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and Federal air pollutant control regulations and other permanent and enforceable reductions"
3. EPA fully approves a maintenance plan for the area pursuant to 42 U.S.C. §7505a
4. EPA approves on state containing the area has met all SIP requirements under 42 U.S.C. §7410 and Title I, Part D of the Clean Air Act applicable to the area

The maintenance plan required under 42 U.S.C. §7505a for redesignation must provide for maintenance of the NAAQS for at least 10 years after redesignation. A second maintenance plan is then required for an additional 10-year period. These two maintenance periods mean that the consequences of a nonattainment designation extend out for more than 20 years even if an area is only actually designated nonattainment for a short period of time.

ATTAINING THE NAAQS IMMEDIATELY AFTER DESIGNATION

The most optimistic scenario for attaining the NAAQS following a nonattainment designation would be for the next 3-year design value after the nonattainment designation to show that the area is attaining the NAAQS, thereby enabling a

[47] NRDC v. EPA. U.S. Court of Appeals for the D.C. Circuit. No. 12-1321. December 23, 2014.

redesignation to attainment. In 2019, EPA initiated its first redesignation to attainment for an area designated nonattainment for the 2015 O_3 NAAQS for the Columbus, Ohio area. The area was initially designated nonattainment on June 4, 2018, based on its 2014-2016 air quality data, and was redesignated to attainment on August 21, 2019, based on its 2016-2018 data and preliminary 2019 data.

- June 4, 2018: EPA designates Columbus, Ohio, area nonattainment based on 2014-2016 air quality data[48]
- April 23, 2019: Ohio EPA requests redesignation of Columbus, Ohio area to attainment based on 2016-2018 monitoring data
- July 3, 2019: EPA publishes formal notice that the Columbus, Ohio area has attained the 2015 O_3 NAAQS and makes a "Clean Data Determination" suspending further planning requirements, and proposal to redesignate area to attainment[49]
- August 21, 2019: EPA finalizes Columbus, Ohio area redesignation to attainment based on 2016-2018 monitoring data and preliminary 2019 monitoring data[50]

Assuming that the State of Oklahoma was able to act with similar speed as the Ohio EPA did and submit a redesignation request and maintenance plan at the same time it certifies data that would show attainment of the NAAQS, EPA could complete the redesignation process as soon as four months later, based on the time between Ohio's request and EPA's final action in 2019.

For this study, the following time table shows what this could look like for the Oklahoma City area if it was designated nonattainment following EPA's completion of its review of the O_3 NAAQS in 2020:

- December 31, 2022: EPA designates Oklahoma City area as nonattainment based on 2019-2021 data
- May 1, 2023: Oklahoma DEQ certifies 2020-2022 data showing area is attaining the NAAQS, a maintenance plan, and a request to redesignate the area to attainment for the NAAQS
- July 15, 2023: EPA makes attainment and Clean Data determinations and proposes approval of maintenance plan and request to redesignate to attainment
- September 1, 2023: EPA finalizes approval of maintenance plan and redesignation to attainment

For the purposes of assessing the economic impact of a nonattainment designation in this scenario would assume an 8-month period of nonattainment from December 31, 2022 – September 1, 2023. The maintenance periods would be expected to be 2024-2034 and 2034-2044.

MARGINAL CLASSIFICATION AND BUMP-UP TO MODERATE

While it is unlikely that the Oklahoma City area would face a situation in which it went from being designated attainment/unclassifiable to a Moderate nonattainment area for O_3, there is a much more likely situation that can result in a Moderate classification nevertheless: being classified as Marginal and missing the attainment date. As will be discussed later on in this report, the regulatory requirements for Marginal areas would best be described as mechanisms for trying to ensure that a region's growth doesn't make its O_3 problem worse, there is no requirement for any actual pollution reductions for a Marginal area under the Clean Air Act, which puts it in a difficult position vis-à-vis its attainment date. If an area fails to attain the NAAQS by its attainment date, it is reclassified to the next-higher classification (unless it's design value would put it in an even higher classification), but the time available to an area initially classified as Moderate to submit the required plan elements is much more compressed since new measures need to be in place by an area's "attainment year." A sample timeline for this is illustrated below:

- December 31, 2022: Marginal nonattainment designation
- May 1, 2025: Certification of 2024 data and 2022 – 2024 design value shows violation
- November 1, 2025: EPA notice of area's failure to attain the NAAQS by attainment date and reclassification of area to Moderate
- January 1, 2027: Submission deadline for SIP revisions for Moderate area; compliance deadline for RACT measures
- May 1, 2028: Certification of 2027 data and 2025 – 2027 design values; 2025-2027 design value shows attainment
- September 1, 2028: EPA finalizes redesignation to attainment

Under this scenario, the maintenance periods would be 2029 – 2039 and 2039 – 2050.

[48] 83 FR 25776
[49] 84 FR 31814
[59] 84 FR 43508

6 O_3 NONATTAINMENT AREA REGULATORY REQUIREMENTS

There are several sets of regulatory requirements that are triggered once an area is designated nonattainment. Some of these requirements apply only to areas that are under a Moderate classification that do not apply to Marginal areas, while other requirements continue to apply for 20 or more years even after an area is redesignated to "attainment" as a result of "maintenance" requirements.

MARGINAL AREA REQUIREMENTS

42 U.S.C. §7511a(a) defines the SIP requirements for Marginal areas. Unique to Marginal areas, unless specified in this section, Marginal areas are exempt from all "nonattainment plan provision" requirements detailed in 42 U.S.C. §7502(c) (attainment demonstration, RFP 15% VOC reduction, reasonably available control measures (RACM), RACT, and contingency measures). What remains are the other provisions of Title I, Part D, Subpart 1 of the Clean Air Act, and NNSR permitting with a 110% offset requirement for Marginal areas, as specified in 42 U.S.C. §7511a(a)(2)(C) and 42 U.S.C. §7511a(a)(4).

NNSR

42 U.S.C. §7502(c)(5) requires that SIPs for nonattainment areas, "shall require permits for the construction and operation of new or modified stationary sources anywhere in the nonattainment area in accordance with section 7503 of this title. §7503 specifies permits for major new facilities or major modifications of existing facilities located in nonattainment areas can only be issued if:

- The company is able to obtain offsetting emissions from other existing facilities within the same region
- The proposed source is required to comply with LAER
  - 42 U.S.C. §7501(3) defines LAER as, "the rate of emissions which reflect –
    - "(A) the most stringent emission limitation which is contained in the implementation plan of any State for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable.
    - "(B) the most stringent emission limitation which is achieved in practice by such class or category of source, whichever is more stringent."
- The company must demonstrate that all major stationary sources are subject to emission limits and are in compliance with all Clean Air Act emission limits
- EPA determines that the applicable implementation plan is not being adequately implemented for the nonattainment area where the source is proposed to be located
- The company conducts an analysis of alternative sites, sizes, production processes, and environmental control techniques for the proposed source that demonstrates that the benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification

Emission controls required as a precondition of issuance of an NNSR permit are federally enforceable.

Under 42 U.S.C. §7602 defines a "major stationary source" as one with the PTE 100 tpy or more of any air pollutant. 40 CFR §51.165 further defines major modification changes resulting in a net increase of at least 40 tpy (or 25 tpy for Serious or higher classifications).

The alternative to NNSR is Prevention of Significant Deterioration (PSD) New Source Review (NSR) permitting, which is described in Title I, Part C of the Clean Air Act, 40 CFR §§51.166 and 51.21. Under §51.21(b)(1)(i)(a) Major stationary sources are defined as any "listed" source (i.e., fossil fuel electric plants of more than 250 million British Thermal Unit (MMBtu) heat input capacity, Portland cement plants, etc.) with the PTE 100 tpy or more of any regulated new source review (NSR) pollutant, or "unnamed" facilities with a PTE of 250 tpy or more. The same 40 tpy threshold for modifications applies for PSD permitting. PSD permits do not require offset, and instead of requiring LAER, are required to implement BACT.

A comparison between some of the major elements of permitting between NNSR and PSD are summarized in the Table 6-1.

The permitting requirements can impact business decision-making in a number of ways:

1. Un-named sources with PTE between 100 and 250 tpy PTE are subject to major source NSR in a nonattainment area when they would only be subject to minor source NSR in an attainment/unclassifiable area. This difference means that in addition to a state-level permit review, there is also a federal review of the permit, which can double the length of time to obtain the permits. This delay alone can cause a company to choose not to build or expand in a nonattainment area if they have options to build or expand in other areas.
2. LAER requirements for nonattainment NSR requires the use of the most stringent emission rate achievable in practice for that type of facility, regardless of cost, whereas BACT means the maximum emissions limit achievable, taking into account energy, environmental, and economic impacts and other cost. If LAER is cost-prohibitive, it would provide an obstacle to new construction or expansion that BACT would not. In some cases, however, LAER may not actually necessitate substantially more than what BACT would require, particularly since new source performance standards (NSPS) still acts as a floor for emission control requirements. For example a new fossil fuel plant would likely be required to have selective catalytic reduction (SCR) NO_X controls.
3. Offset requirements can pose an obstacle to new construction if an area's point sources are already well-controlled. Companies like OG&E that have multiple facilities within a nonattainment area fulfill the offset requirement internally when they are ready to replace older facilities with few controls with newer facilities that equipped with state-of-the art controls. For a company that does not already own at least one older, high-emitting facility in the nonattainment area, the offset requirement could be a daunting obstacle to new construction or an expansion of an existing facility.

CONFORMITY

"Conformity" is the term used for ensuring that all federal actions "conform" to an EPA-approved air quality plan. The statutory conformity requirements are found in 42 U.S.C. §7506, and relevant EPA regulations are found in 40 CFR §§93.100-165. Unique among the regulatory requirements for a nonattainment area, conformity applies for the twenty-year maintenance periods following an area's

Table 6-1. Comparison of PSD and NNSR Permitting

PARAMETER	PSD PERMITTING	NNSR PERMITTING
MAJOR SOURCE DEFINITION FOR NAMED SOURCES	≥ 100 tpy PTE	≥ 100 tpy PTE
MAJOR SOURCE DEFINITION FOR UN-NAMED SOURCES	≥ 250 tpy PTE	≥ 100 tpy PTE
MAJOR MODIFICATION THRESHOLD	≥ 40 tpy PTE	≥ 40 tpy PTE
EMISSION RATE REQUIREMENT	BACT	LAER
OFFSET REQUIREMENT	None	≥ 110%
ALTERNATIVE SITE/PROCESS ANALYSIS	Not Required	Required

redesignation to attainment. EPA regulations have established one set of rules for federal actions related to the surface transportation system ("Transportation Conformity") and a different set of rules for all other federal actions.

TRANSPORTATION CONFORMITY

Rules for transportation conformity are found in 40 CFR §§93.100-129. This requirement applies to:

- Adoption, acceptance, approval, or support of long-range transportation plans and transportation plan amendments developed pursuant to 23 CFR part 450 or 49 CFR part 613 by an MPO or DOT
- Adoption, acceptance, approval, or support of transportation improvement program (TIP) (for the MPO), STIP (for areas outside of the MPO), or corresponding amendments developed pursuant to 23 CFR part 450 or 49 CFR part 613 by an MPO or DOT
- Approval, funding, or implementation of FHWA/FTA projects

There is a one-year grace period for new nonattainment areas. FHWA and FTA are required to give priority to the implementation of aspects of a SIP that relate to transportation. A "conformity determination" must be made of each transportation plan and TIP/STIP (or amendments), prior to approval by FHWA and FTA, and then thereafter "no less frequently than every four years." If more than four years goes by between conformity determinations, there is a 12-month grace period, after which the area is considered to be in a transportation conformity "lapse."

A new conformity determination is required each time the MPO or DOT updates a long-range plan or TIP/STIP applicable to a nonattainment area, unless the amendment only affects exempt projects. All FHWA/FTA projects must be found to conform before they are adopted, accepted, approved, or funded. Conformity must be re-determined if any of the following occurs:

- A significant change in the project's design concept and scope
- Three years elapse since the most recent major step (NEPA process completion, start of final design, acquisition of a significant portion of the right-of-way, and construction) to advance the project
- Initiation of a supplemental environmental document for air quality purposes

There are also other "triggers" for the need for a new conformity determination within 2 years of the following (or after the 12-month grace period) EPA either finds a motor vehicle emissions budget (MVEB) from a control strategy SIP revision or maintenance plan to be "adequate" or approving the plan itself.

During a lapse, individual projects may be found to conform if:

1. It is in the currently conforming transportation plan and TIP (or regional emissions analysis); or
2. It is included in the most recently conforming transportation plan and TIP (or regional emissions analysis)

Another trigger for new conformity determinations is the release of a new emissions model by EPA announced to be the "latest planning assumption." There are three different types of transportation conformity tests:

1. Below baseline test: (i.e., projected future emissions are less than emissions during a baseline year associated with the area's nonattainment designation, likely to be 2020 if EPA initiates new designations in 2022-2023.)
2. Build/no-build test: (i.e., projected future emissions in a "build" or "action" scenario do not exceed projected future emissions in a "no-build" or "no action" scenario.)
3. MVEB test: projected future emissions do not exceed the maximum allowable as expressed in the approved MVEB.

Figures 6-1, 6-2 and 6-3 on the next page illustrate examples for each of these tests based on illustrative summer weekday emissions in tons per day (tpd).

MVEBs are approved as part of a region's attainment demonstration plan, its RFP plan, and its maintenance plan. Until one of those plans is adopted for the region, the MPO or DOT must use one or both of the other tests on an interim basis:

- Moderate and above areas are required to use a "build/no-build" analysis to determine if emissions

Figure 6-1. Less Than Baseline Transportation Conformity Test (tpd on-road emissions)

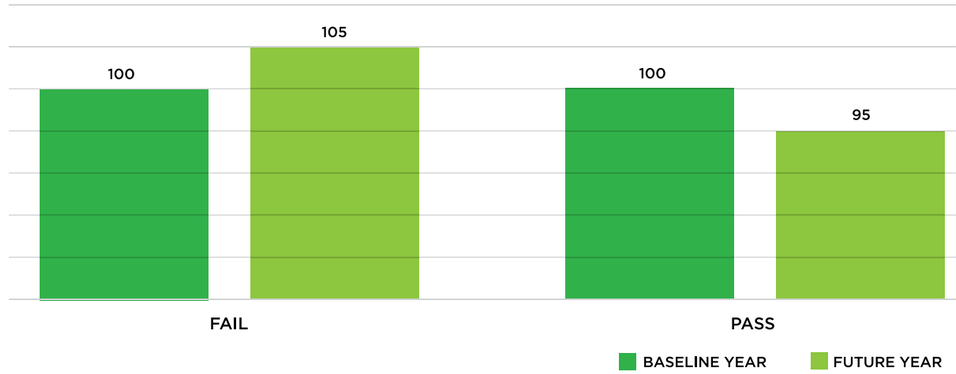


Figure 6-2. Build/No Build Transportation Conformity Test (tpd on-road emissions)

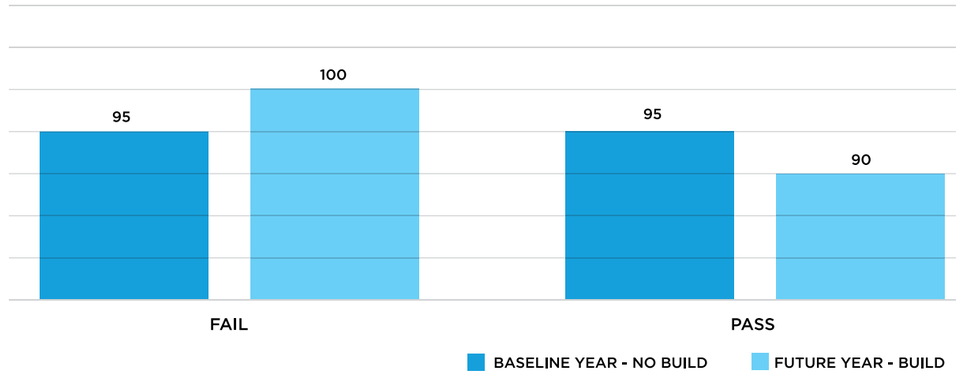
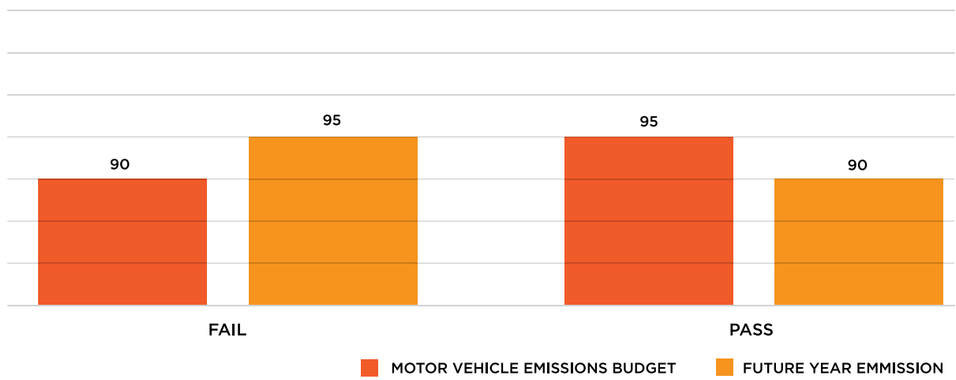


Figure 6-3. Motor Vehicle Emissions Budget Test (tpd on-road emissions)



from the "build" scenario exceed emissions in a "no-build" scenario and a "less than baseline" test.

- Marginal areas can use a "less than baseline" or a "build/no-build" scenario.

Since emissions reductions from on-road vehicle standards are expected to continue to reduce both VOC and NO_X emissions for quite some time the "less than baseline" test would likely be relatively easy for an area to pass. Due to the complex nature of doing "build/no-build" analyses, most MPOs that must do conformity for a moderate nonattainment area would prefer using a MVEB test as soon as possible. Two important considerations to consider for MVEBs, however, are:

1. They are pollutant-specific (i.e., there are budgets established for both NO_X and VOC and an area must stay within both limits); and
2. The tightest set of budgets apply (i.e., an area may have a tighter VOC budget associated with the RFP SIP than the attainment demonstration SIP).

If an area's projected emissions cannot meet the applicable test, it must implement transportation control measures (TCMs) in order to reduce on-road emissions in the relevant analysis year in order to reduce the emissions enough for the area to meet the relevant emissions test by:

- Reducing vehicle use
- Changing traffic flow
- Changing congestion conditions

Other technology-based measures such as accelerated fleet turnover or an I/M program (if not already in place) can also be used to enable a conformity determination.

GENERAL CONFORMITY

Rules for general conformity are found in 40 CFR §93.150-165. Broadly, the requirement states that, "no department, agency or instrumentality of the Federal Government shall engage in, support in any way, or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan" (40 CFR §93.150(a)). This requirement applies to all federal actions in both nonattainment areas and maintenance areas, starting 1 year after the effective date of the area's nonattainment designation (40 CFR §93.153(k)).

For Marginal and Moderate O_3 nonattainment areas and O_3 maintenance areas, general conformity requirements apply to actions that would directly or indirectly cause at least 100 tpy NO_X or VOC ("caused by" is defined as "emissions that would not otherwise occur in the absence of Federal action").

- "Direct emissions" are emissions "caused or initiated by the Federal action and originate in a nonattainment or maintenance area and occur at the same time and place as the action and are reasonably foreseeable."
- "Indirect emissions" are emissions "caused or initiated by the Federal action and originate in the same nonattainment or maintenance area but occur at a different time or place as the action; that are reasonably foreseeable; (3) that the agency can practically control; and (4) for which the agency has continuing program responsibility."

In order for a Federal agency to determine that its action conforms to the SIP, the total of direct and indirect emissions from the action are fully offset within the same nonattainment or maintenance area through a revision to the applicable SIP or a similar enforceable measure that affects emissions reductions so that there is no net increase in the emissions of that pollutant. The action also must be included in an area's long-range transportation plan and short-term transportation improvement program.

Under 40 CFR §93.157(b), the conformity status of a Federal action automatically lapses 5 years from the date a final conformity determination is reported under 40 CFR §93.155 unless the Federal action has been completed or a continuous program to implement the Federal action has commenced. Examples of the types of Federal actions in the Oklahoma City area that could trigger general conformity analyses include:

- Construction at Tinker Air Force Base
- Constriction at the Coast Guard Institute or Container Inspection Training facilities
- Construction at the Oklahoma National Guard Headquarters
- Construction at other Military facilities in the Oklahoma City area
- Approval of an expansion of the Will Rogers World Airport or one of the other Commercial airports
- Dredging of rivers
- Construction of reservoirs
- Expansion of the BNSF Flynn Railyard

Since General Conformity analyses are conducted on a case-by-case basis, ACOG and stakeholders should familiarize themselves with the types of activities that are considered exempt from a general conformity determination.[51]

RACT AND RACM

42 U.S.C. §7502(c)(1) requires a nonattainment area SIP to "provide for all [RACM] as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtaining through the adoption, at a minimum, of [RACT] and shall provide for attainment of the national primary ambient air quality standards."

42 U.S.C. §7511(a) exempts areas designated as Marginal nonattainment areas from the requirements for nonattainment areas described in 42 U.S.C. §7502(c)(1). 42 U.S.C. §7511(b)(2) requires areas classified as Moderate (and higher) to implement RACT for each category of VOC sources covered by a CTG and all other "major stationary sources" of VOCs located in the area. 42 U.S.C. §7511(f) further requires that RACT apply to major stationary sources of NO_X , except when a state is able to demonstrate that the net air quality benefits would be greater in the absence of reductions of NO_X from the sources impacted.

40 CFR §51.1312 requires a RACT SIP submission for any area initially designated as Moderate or higher within 24 months of the effective date of the designation. Areas reclassified from Marginal to Moderate may be required to submit a RACT SIP on a different timeline as established by the Administrator. For any new CTGs issued, states are required to submit new RACT rules within 24 months of the issuance of the CTG, or the deadline established by the Administrator in the action issuing the CTG. RACT rules for areas initially classified as Moderate must be effective, "no later than January 1 of the fifth year after the effective date of designation." For areas reclassified from Marginal to Moderate, RACT rules must be in effective no later than January 1 of the attainment year or the third year after the associated SIP revision deadline, whichever is earlier.

If there was an Oklahoma City O_3 nonattainment area designated in late 2022 classified as Marginal that failed to attain the O_3 NAAQS by the end of the 2024 O_3 season, that area would be required to implement RACT for all of these sources no later than January 1, 2027.

CTG RACT

EPA has issued a total of 45 different CTGs for VOC sources:

1. Aerospace
2. Auto and Light-Duty Truck Assembly Coatings
3. Bulk Gasoline Plants
4. Equipment Leaks from Natural Gas/Gasoline Processing Plants
5. Factory Surface Coating of Flat Wood Paneling
6. Fiberglass Boat Manufacturing Materials
7. Flat Wood Paneling Coatings
8. Flexible Packaging Printing Materials
9. Fugitive Emissions from Synthetic Organic Chemical Polymer and Resin Manufacturing Equipment
10. Graphic Arts – Rotogravure and Flexography
11. Industrial Cleaning Solvents
12. Large Appliance Coatings
13. Large Petroleum Dry Cleaners
14. Leaks from Gasoline Tank Trucks and Vapor Collection Systems
15. Leaks from Petroleum Refinery Equipment
16. Lithographic Printing Materials and Letterpress Printing Materials
17. Manufacture of High-Density Polyethylene, Propylene, and Polystyrene Resins
18. Manufacture of Pneumatic Rubber Tires
19. Manufacture of Synthesized Pharmaceutical Products
20. Metal Furniture Coatings

[51] EPA resources available at: https://www.epa.gov/general-conformity

21. Miscellaneous Industrial Adhesives
22. Miscellaneous Metal Products Coatings
23. Oil and Natural Gas Industry
24. Paper, Film, and Foil Coatings
25. Petroleum Liquid Storage in External Floating Roof Tanks
26. Plastic Parts Coatings
27. Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds
28. SOCMI Air Oxidation Processes
29. SOCMI Distillation and Reactor Processes
30. Shipbuilding/repair
31. Solvent Metal Cleaning
32. Stage I Vapor Control Systems – Gasoline Service Stations
33. Storage of Petroleum Liquids in Fixed Roof Tanks
34. Surface Coating for Insulation of Magnet Wire
35. Surface Coating of Automobiles and Light-Duty Trucks
36. Surface Coating of Cans
37. Surface Coating of Coils
38. Surface Coating of Fabrics
39. Surface Coating of Large Appliances
40. Surface Coating of Metal Furniture
41. Surface Coating of Miscellaneous Metal Parts and Products
42. Surface Coating of Paper
43. Tank Truck Gasoline Loading Terminals
44. Cutback Asphalt
45. Wood Furniture

MAJOR SOURCE VOC AND NO_X RACT

42 U.S.C. §7602(j) specifies that, "except as otherwise expressly provided, the terms 'major stationary source' and 'major emitting facility" mean any stationary facility or source of air pollutants which directly emits, or has the PTE, one hundred [tpy] of any air pollutant."

The 2017 emissions inventories for point sources in the Oklahoma City-Shawnee CSA includes data for 1,343 facilities:

- 23 facilities would meet the threshold for RACT based on actual emissions exceeding 100 tpy
  - 11 facilities emitted at least 100 tpy NO_X
  - 14 facilities emitted at least 100 tpy VOC
  - 2 facilities emitted at least 100 tpy NO_X and at least 100 tpy VOC
- Another 74 facilities could meet the major threshold criteria based on PTE 100 tpy or more, based on actual emissions of 50-100 tpy NO_X or VOC
  - 53 facilities emitted 50-100 tpy NO_X
  - 33 facilities emitted 50-100 tpy NO_X
  - 12 facilities emitted 50-100 tpy NO_X and VOC

RACM

EPA rules for RACM for O_3 nonattainment areas involves consideration of emission reduction measures from outside of the nonattainment area that could help the area come into compliance with the NAAQS. "The SIP revision shall include, as applicable, other control measures on sources of emissions of [O_3] precursors located outside the nonattainment area, or portion thereof, located within the state if doing so is necessary or appropriate to provide for attainment of the applicable [O_3] NAAQS in such area by the applicable [O_3] NAAQS in such area by the applicable attainment date."[52] This requirement has changed somewhat over the years, and would be difficult to assess what this might look like for any Oklahoma City nonattainment area. It could perhaps mean controls on oil and gas exploration and production equipment located in counties elsewhere in the state upwind of the nonattainment area. Texas adopted these types of rules in 2007 for the Dallas-Fort Worth area attainment demonstration.

RFP

One of the key regulatory requirements that applies to a Moderate nonattainment area that does not apply to a Marginal nonattainment area is the requirement for RFP in reducing VOC emissions by 15% within 6 years from a defined baseline level pursuant to 42 U.S.C. §7511a(b)(1). At the time the 1990 Clean Air Act Amendments were passed, it was believed that O_3 was driven primarily by VOC emissions, and since "Moderate" nonattainment areas had O_3 levels at least 15% above the level of the NAAQS, the 15% VOC reduction requirement was considered an appropriate base-level requirement for all Moderate area that would help ensure that states did not delay implementing emission reductions that would be needed to attain the NAAQS.

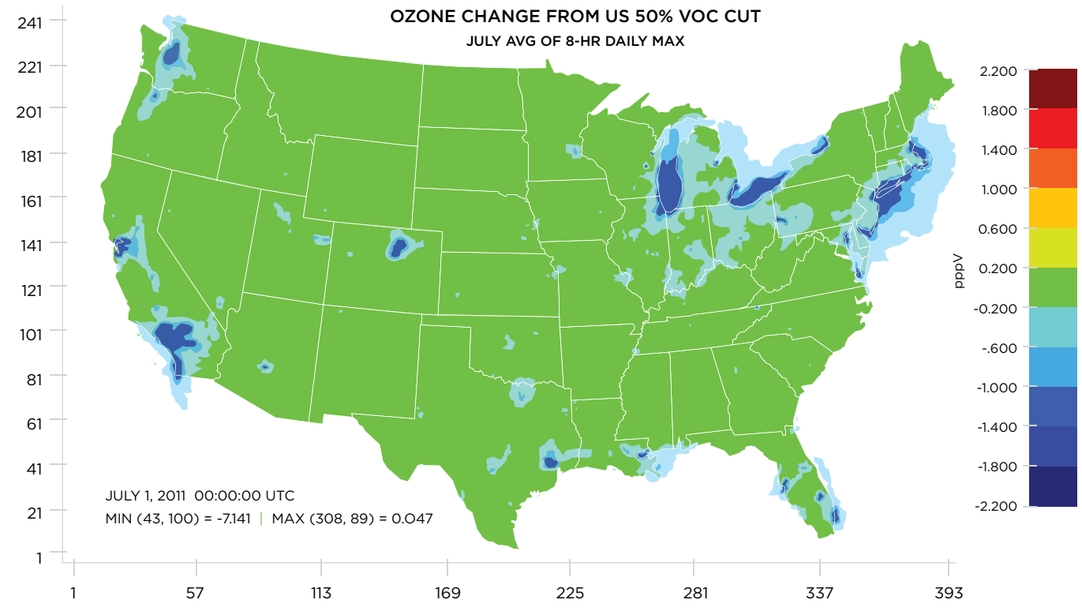
With the revisions of the O_3 NAAQS in 1997, 2008, and 2015, this requirement has continued to apply to areas classified as Moderate or higher, despite the fact that for most parts of the country, we know that ground-level O_3 concentrations are much more influenced by NO_X emission reductions, and a 15% reduction in VOC emissions may do very little to reduce O_3 concentrations in most parts of the country.

Based on modeling EPA conducted for the RIA for the 2015 O_3 NAAQS, CAPCOG estimates that at 15% VOC reduction in VOC emissions in the Oklahoma City-Shawnee CSA would result in a reduction in O_3 design value of no more than 0.10 – 0.15 ppb. The RIA included modeling of several different emission reduction scenarios, including a 50% across-the-board cut in nationwide anthropogenic VOC emissions (Scenario 2), and a 50% across-the-board cut in Arkansas, Louisiana, and Oklahoma NO_X emissions (Scenario 12). Figure 6-4 shows the impact of the nationwide 50% VOC cut.

As Figure 6-4 shows, even a 50% cut in all VOC emissions across the entire U.S. would not have a major impact on VOC emissions across Oklahoma. The projected design values for the monitoring stations in Oklahoma for both scenarios is shown in Table 6-2 on the next page.

While EPA modeled the 50% VOC cut nationwide, it did state that it assumed that all impacts modeled for key areas still not attaining the 2015 O_3 NAAQS

Figure 6-4. Change in July Average of 8-Hr. Daily Maximum O_3 Concentration (ppb) due to 50% Cut in U.S. Anthropogenic Emissions from 2015 O_3 NAAQS RIA



[52] 40 CFR §51.1312(c)

Table 6-2. NO_X and VOC Sensitivity for Oklahoma City Area Monitors in 2015 O_3 NAAQS RIA Modeling

SITE	COUNTY	PROJECTED 2025 BASELINE DESIGN VALUE IN RIA PROPOSAL	IMPACT OF 50% U.S. VOC REDUCTION (PPB) (SCENARIO 2)	IMPACT OF 50% AR/LA/OK NO_X REDUCTION (PPB) (SCENARIO 12)
Yukon (400170101)	Canadian	62.85	-0.43	-7.82
Moore (400270049)	Cleveland	64.04	-0.42	-6.88
Goldsby (400871073)	McClain	63.15	-0.35	-6.56
OKC Central (401090033)	Oklahoma	66.44	-0.50	-6.83
Choctaw (401090096)	Oklahoma	65.29	-0.47	-6.79
OKC North (401091037)	Oklahoma	67.11	-0.45	-6.56

by 2025 would be from emissions reductions nearby. If we apply this same assumption to the Oklahoma City area, we'd assume that close to 100% of the impact described in Table 6-2 for Scenario 2 would be as a result of VOC reductions from within the Oklahoma City-Shawnee CSA. If we in turn assume rough linearity in the O_3 response to VOC reductions, we can assume that a 15% reduction in VOC emissions would result in only a 0.10 – 0.15 ppb reduction in the Oklahoma City area monitoring design values in 2025. As the Table 6-2 shows, O_3 levels in the Oklahoma City area are far more responsive to NO_X reductions than VOC reductions.

For the 2015 O_3 NAAQS, the RFP requirements are codified in 40 CFR §51.1310. This regulation re-affirms that this statutory requirement applies to any nonattainment areas (or parts of nonattainment areas) that have not previously fulfilled this requirement. Since none of the counties in the Oklahoma City-Shawnee ever been subject to this requirement in the past, this requirement would apply to the entire extent of any Oklahoma City-based nonattainment area. An RFP SIP revision for an area initially classified as Moderate is due no more than 36 months after the effective date of its nonattainment designation, but EPA would establish any deadlines for submission of an RFP SIP if the area was initially classified as Marginal and only became a Moderate nonattainment area due to a "bump-up" due to failing to attain the NAAQS.

For the 2008 O_3 NAAQS, for which EPA finalized nonattainment designations in April and May 2012, the default baseline year was 2011, with a target year of 2017, but EPA allowed for baseline years ranging from 2008 – 2012 if the state submitted justification for why the alternative baseline was appropriate. If an area used a 2008-2010 baseline year, it would need to provide for an additional 3% per year from the end of the first 6 years to the beginning of the attainment year. In EPA Region 6, the only nonattainment areas with RFP SIP requirements were the Dallas-Fort Worth (DFW) and Houston-Galveston-Brazoria (HGB) nonattainment areas. All eight of the counties in the HGB nonattainment area had already been covered by an approved 15% VOC reduction plan, and the region was therefore eligible for using NO_X reductions to fulfill the 15% emission reduction requirement, and nine of the ten counties in the DFW nonattainment area were able to use NO_X or VOC reductions rather than only VOC reductions. One county (Wise County) in the DFW nonattainment area had not previously been designated nonattainment, however, so Texas was required to demonstrate a VOC reduction of at least 15% of Wide County's baseline VOC emissions pursuant to these rules.[53]

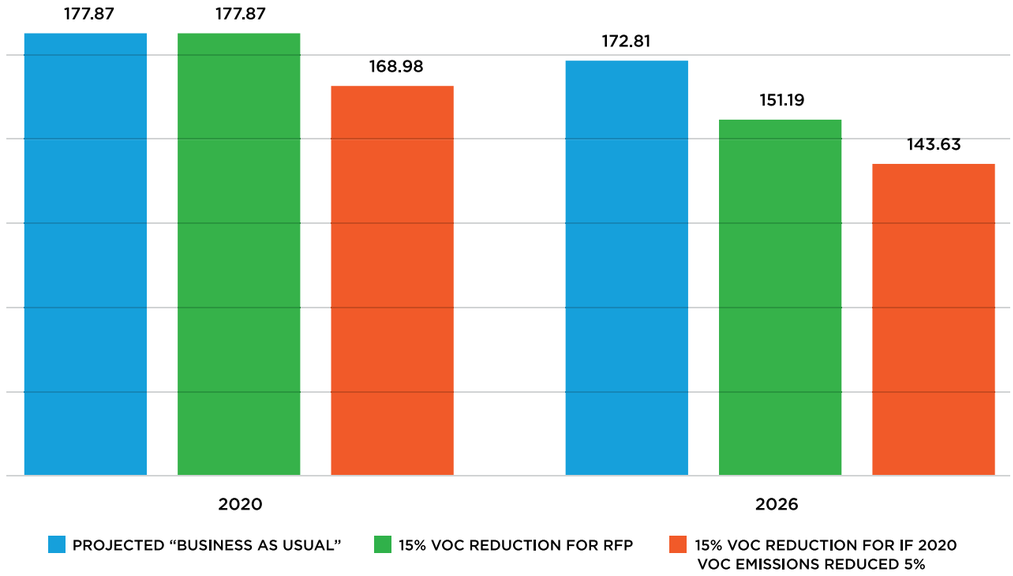
[53] See https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2015-AD-RFP-DFW/DFWRFP_2015_archive.pdf. EPA approved this plan on 12/7/2016 (81 FR 88124)

40 CFR §51.1310(b) specifies that the baseline for an RFP plan "shall be the emissions inventory for the most recent calendar year for which a complete triennial inventory is required to be submitted to the EPA under the provisions of Subpart A of this part." However, "States may use an alternative baseline emissions inventory provided that the year selected corresponds with the year of the effective date of designation as nonattainment for that NAAQS. Assuming a late 2022/early 2023 nonattainment designation date, the baseline year would likely be 2020, since the deadline for states to submit data for the 2020 NEI will be December 31, 2021, in accordance with 40 CFR §51.30(b). RFP SIP revisions that Texas has submitted for the Dallas-Fort Worth and Houston-Galveston-Brazoria nonattainment areas for the 2008 O_3 NAAQS used 2011 as the baseline year was 2011, with a target year of 2017, which was conveniently the same year as the "attainment year" for a Moderate nonattainment area. If the baseline year is 2020, however, the target year for the 15% VOC reduction requirement would be 2026, although the attainment date would be late 2028/early 2029 based on the design value covering the 2025-2027 O_3 seasons.

There four major issues to consider with the RFP requirement:

1. It must be a VOC reduction even if the region's levels are more responsive to NO_X reductions
2. Because of the methodology for calculating of baseline emissions, it can create a disincentive for implementing emissions reductions early (as will be shown in sample calculations below)
3. In the event of being reclassified from Marginal to Moderate, there would be very little time to achieve the 15% reduction in VOC emissions by the beginning of the region's attainment year
4. Existing federal regulations are not projected to achieve anywhere near the 15% VOC reduction target within this timeframe, and it's not clear that the VOC RACT requirements and the I/M program requirements

Figure 6-5. 2020 and 2026 Projected Summer Weekday VOC Emissions for Oklahoma City-Shawnee CSA for Various 15% VOC RFP Scenarios (tpd)



Using interpolations for 2020 and 2026 from EPA's recently released summer weekday NO_X and VOC emissions estimates for 2016, 2023, and 2028 as part of its 2016v1 modeling platform, Figure 6-5 illustrates the need for additional VOC emissions by 2026 if this requirement goes into effect, and the way in which the RFP requirement can inadvertently provide a disincentive for taking early action to reduce VOC emissions.

Basically, there would only be a 2.85% reduction in VOC emission reductions expected in this time frame, leaving the other 12.15% reduction that would need to be achieved through new control measures. By way of comparison, these emissions inventories suggest that NO_X emissions will decrease by 20.78% over this time frame without any new controls. The total amount of additional VOC emission reductions that will need to be achieved by 2026 will be approximately 21.62 tpd VOC. The VOC emissions reductions from the VOC RACT rules and the I/M program can be counted towards this total, but it isn't clear that they will be able to fully fulfill this 15% VOC reduction requirement. If the I/M program was able to achieve a 12% reduction in on-road VOC emissions from Canadian, Cleveland, and Oklahoma Counties, that would translate into approximately a 1.58 tpd reduction, leaving another 20.04 tpd VOC that would need to be reduced through the RACT rules and possibly other VOC emission reduction measures that may be needed specifically to fulfill this requirement.

I/M PROGRAM

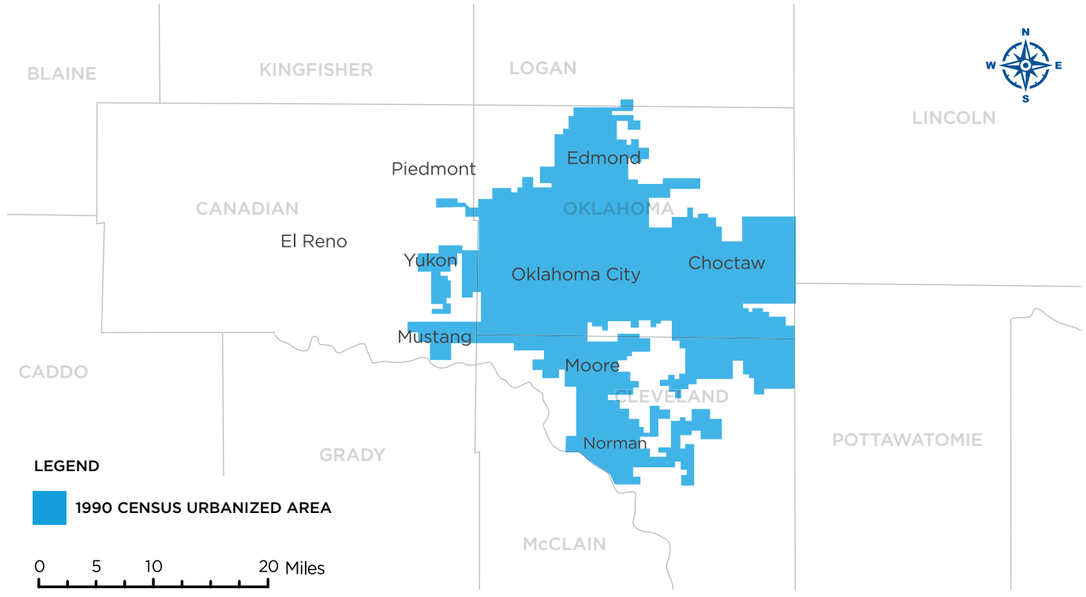
40 CFR §51.350 - §51.373 covers EPA's regulations for I/M programs. 40 CFR §51.350(b)(2) specifies that, "programs should nominally cover at least the entire urbanized area, based on the 1990 census. Exclusion of some urban population is allowed as long as an equal number of non-urban residents of the MSA containing the subject urbanized area are included to compensates for the exclusion." 40 CFR §51.350(c) states that "all I/M programs shall provide that the program will remain effective, even if the area is redesignated to attainment status or the standard is otherwise rendered no longer applicable, until the State submits and EPA approves a SIP revision which convincingly demonstrates that the area can maintain the relevant standard(s) without benefit of the emission reductions attributable to the I/M program." For Moderate O_3 nonattainment areas, a "basic" I/M program is required. This is defined in 40 CFR §51.352:

- Annual testing
- On-board diagnostic testing for model year 2001 and later light-duty cars (up to 8,500 pounds gross vehicle weight rating (GVWR))

SANCTIONS

If the state does not submit an approvable nonattainment SIP or if it is found to not be implementing an approved SIP, it can be subject to sanctions. This can include either a 200% offset requirement for NNSR permitting or the temporary loss of federal funding for transportation projects. Although rare, there are a handful of instances in which this has occurred.

Figure 6-6. 1990 Oklahoma City Urbanized Area



7 MODELING THE ECONOMIC IMPACT OF REQUIREMENTS

An analysis of the potential regional economic impacts of a set of regulations such as those associated with a nonattainment designation requires a careful enumeration of the potential or expected consequences in terms of inputs into an economic input-output model.[54]

This enables the regulatory impact to be translated into an impact on a region's GRP. It should be noted that any such analysis inherently involves a counterfactual analysis – what economic outcomes may occur under a nonattainment designation versus what economic outcomes may have occurred under an attainment/unclassifiable designation. This kind of analysis can only be done through modeling and careful construction of plausible economic scenarios.

It should also be noted that this type of analysis really needs to be specific to the Oklahoma City area, rather than trying to compare economic performance in areas designated nonattainment to areas designated attainment/unclassifiable in general. For example, the top 10 cities in the U.S. are all nonattainment areas, and many have been designated nonattainment since 1977. Strong economic growth in an area designated nonattainment does not mean that the growth would have been even stronger if the area was designated attainment/unclassifiable. This is why communicating the concept of "opportunity cost" to stakeholders is so critical for a study like this.

Lastly, there are some important segments of any regional economy that may be heavily and directly affected by a nonattainment designation, such as fossil fuel electricity generation or oil and gas extraction, but most of the economy in the retail and service sector would not experience any direct impacts from a nonattainment designation, and given all of the other factors that influence economic output, the impact of a nonattainment may not be "significant" for many individual sectors of the economy, even if the aggregate impact across the economy is significant.

INPUT-OUTPUT MODEL

In 2015, CAPCOG used Emsi's Market Analyst input/output model for the Austin-Round Rock MSA for 2013. Other models such as Chmura and REMI could also be used for this purpose.

For each North American Industrial Classification System (NAICS) code, Emsi's model provided a series of different data points that CAPCOG used in its analysis:

- GRP, consisting of: a) earnings, b) property income, c) taxes generated, and d) subsidies
- The number of jobs, earnings, sales, and average earnings per job
- Regional multipliers for sales, jobs, earnings, value added or subtracted:
  - "Initial" – the impacts in the sector directly affected (i.e., the specific NAICS code for a facility impacted by NNSR permitting)
  - "Direct" – impacts on an affected sector's direct suppliers within the region
  - "Indirect" – impacts further up the supply chain (i.e., suppliers of direct suppliers) within the region
  - "Induced" – broader impacts within the economy (i.e., increased retail sales from more disposable income from more workers within the region)

CAPCOG obtained estimates of the impact on annual GRP due to a change in sales or jobs as follows:

$$\Delta GRP_i \text{ from a Change in Sales} = \Delta Sales_i \times (\text{Initial Value Added to Sales}_i + \text{Direct Value Added to Sales}_i + \text{Indirect Value Added to Sales}_i + \text{Induced Value Added}_i) \text{ or}$$

$$\Delta GRP_i \text{ from a Change in Jobs} = \Delta Jobs_i \times \frac{Sales_i}{Jobs_i} \times (\text{Initial Value Added to Sales}_i + \text{Direct Value Added to Sales}_i + \text{Indirect Value Added to Sales}_i + \text{Induced Value Added}_i)$$

Where:
i = a specific six-digit NAICS code, and
Initial Value Added to Sales = *(earnings + property taxes + taxes generated – subsidies)*/Sales

EXAMPLE FOR ECONOMIC IMPACT OF LOST INDUSTRIAL EXPANSION

Two of the key scenarios that CAPCOG modeled in its 2015 study involved local manufacturing businesses electing not to expand within the region as a result of a nonattainment designation. One of those businesses was a cement manufacturing facility, which we knew has approximately 120 employees. From our discussions with the facility and the state's cement trade association, we projected that the growth in cement demand within the state would likely require additional cement manufacturing capacity, and that the cement plant within our region was a likely candidate for such an expansion. From our discussion with the facility, we created a scenario that evaluated the economic impact of doubling the size of the facility. Since the company was not willing to share more sensitive figures like sales data, we instead used the number of jobs and the EMSI input-output model to simulate the impact on the regional economy:

1. Estimated doubling of capacity (adding 1 million tons of output per year) is equivalent to adding 120 jobs in the cement manufacturing sector (NAICS code 327310)
2. These 120 jobs were equivalent to about $67 million per year in sales
3. The new sales add about $79 million per year in GRP
   a. $33 million per year from the plant itself (0.4848 sales multiplier)
   b. $11 million per year from direct suppliers (0.1672 sales multiplier)
   c. $2 million per year from indirect suppliers (0.0326 sales multiplier)
   d. $33 million per year from induced demand (0.4908 sales multiplier) across the economy
4. The facility was estimated to have a 20-year useful life (based on tax allowances for depreciation of capital equipment), so the $79 million per year would translate into a total of approximately $1.6 billion in lost GRP over a 20-year period

CAPCOG also calculated the loss of the one-time economic activity associated with construction:

1. Assuming a capital cost of $279 per ton of capacity, based on a literature review showing a range of $279 - $325 per ton, the total capital cost of the project would be approximately $279 million, which would represent an increase in sales in the Industrial Building Construction sector (NAICS code 236210)
2. The new construction sales would add $212 million per year to the GRP;
   a. $156 million per year from the construction firm itself
   b. $43 million per year from direct suppliers
   c. $12 million per year from indirect suppliers
   d. $0 per year from induced demand (this is due to the one-time nature of the expenditure; since the induced demand figure assumes a sustained change in overall sales or jobs)
3. Since the construction is a one-time expense, the annual amounts are multiplied by 1 to reflect total economic impact over the course of the project, even if construction takes longer or shorter than 1 year.

Combining these two amounts together, the loss of a 1 million ton per year expansion of cement manufacturing capacity would be expected to have a $1.8 billion impact over a 20-year period.
This process should be repeated for each individual economic development scenario it wishes to simulate. For the study conducted by AACOG for the San Antonio area, the analyst used a number of

[54] https://kb.economicmodeling.com/what-is-input-output-modeling/

hypothetical examples of the types of facilities that might choose not to locate a new facility within the region or expand an existing facility even if it lacked specific information that any such situation was expected within the next 5-10 years.

Since there are an infinite number of potential hypothetical scenarios for business expansion or economic development within the region, ACOG would be wise to focus on: a) simulating the impact of specific businesses and facilities surveyed within the region that would plausibly undertake a significant expansion between 2020 and 2030 under a "business as usual" scenario that would be affected by NNSR permitting; and b) the types of "major" facilities (i.e., capable of emitting ≥ 100 tpy NO_X or VOC) that the economic development community would be affected by NNSR permitting (for example, if the local economic development community is trying to attract a vehicle assembly plant to the region, simulating the GRP impact of such a facility that could be lost to the region if designated nonattainment).

For analyzing the impact of having to install new pollution control systems, ACOG would need to make some assumptions on how to treat that in this context. CAPCOG basically assumed that the costs were equivalent to negative earnings, since it would effectively shrink the amount of earnings that a company would be able to yield from the same amount of sales. Since for some of the analyses – such as the 15% VOC reduction – it was not evident how to translate those reductions into specific sectors and we lacked appropriate cost/ton information for NAICS codes in order to translate the required region-wide VOC reduction into specific economic data by sector. As a result of this limitation, rather than seeking to simulate a series of more complex economic activity using multipliers, CAPCOG simply counted the average cost/ton figures for various pollutants (and technologies where known or applicable) as negative earnings and did not apply any multipliers to those numbers. This particular aspect of the methodology could likely be improved upon.

For the I/M program, the economic analysis is much more complex due to the counterfactual analysis and the various sectors affected by it.

1. The scope of the program would need to be estimated in terms of the number of vehicles that would be inspected each year
2. There would also need to be an analysis of the likely number of vehicles expected to fail the test and be required to repair the vehicle that would need to pay for repairs and another round of testing
3. The fee would need to be estimated and the components staying with the inspection station and going to the government enumerated
4. The fee would then be multiplied by the number of affected vehicles and allocated to the inspection station and the government
5. This aggregate total in fees would constitute new sales in the auto repair sector (which can include several NAICS codes) and new government revenue (i.e., "sales") at the state and/or local level, depending on how the program is administered
6. These number of vehicles needing a repair would need to be multiplied by an average cost of a required repair in order to calculate the total additional cost to the motorist of additional repairs
7. These repairs would constitute new sales for the vehicle I/M station
8. Sales can then be translated into earnings
9. Sector-specific earnings can be multiplied by appropriate earnings multipliers
10. The aggregate impact of earnings from this scenario would then need to be compared to some counterfactual scenario in which motorists spent the money required to be spent on an inspection and repairs would instead spent somewhere else in the region

MODELING THE ECONOMIC IMPACT OF TRANSPORTATION CONFORMITY

Estimating the potential costs of transportation conformity requirements is difficult because it requires a number of complex assumptions in order to arrive at defensible numbers. In CAPCOG's 2015 report, we looked at the issue from several angles:

1. The new administrative costs to the MPO to have to actually perform conformity analyses and participate in the interagency consultation process required for transportation conformity
2. Costs associated with delays in getting approval for projects or amendments to projects as a result of the routine requirement to demonstrate conformity
3. Costs associated with a transportation conformity lapse, including:
   a. Lapse-related project delays; and
   b. Re-allocation of federal funding to other areas of the state to avoid the state losing federal funding.

SUMMARY OF THE REGIONAL ECONOMY

The federal Bureau of Economic Analysis recently released county-level GRP estimates for the entire country.[55] These data are shown in Table 7-1 is for the eight counties in the Oklahoma City-Shawnee CSA.

Table 7-1. 2015-2018 Local GRP for Counties in the Oklahoma City-Shawnee CSA (Thousands of Chained 2012 Dollars)

COUNTY	2015 GRP	2016 GRP	2017 GRP	2018 GRP	2015-2016 % CHANGE	2016-2017 % CHANGE	2017-2018 % CHANGE
Canadian	3,351,297	3,253,235	3,453,778	4,179,430	-3.0%	5.8%	17.4%
Cleveland	7,218,155	7,035,475	6,984,853	7,136,979	-2.6%	-0.7%	2.1%
Grady	1,296,396	1,256,968	1,274,825	1,325,781	-3.1%	1.4%	3.8%
Lincoln	686,056	652,778	643,212	658,277	-5.1%	-1.5%	2.3%
Logan	594,197	590,636	607,349	614,523	-0.6%	2.8%	1.2%
McClain	918,958	904,202	913,203	956,594	-1.6%	1.0%	4.5%
Oklahoma	63,844,230	63,020,947	63,498,956	64,803,045	-1.3%	0.8%	2.0%
Pottawatomie	2,004,266	1,903,100	1,872,254	1,864,658	-5.3%	-1.6%	-0.4%
TOTAL	**79,913,555**	**78,617,341**	**79,248,430**	**81,539,287**	**-1.6%**	**0.8%**	**2.8%**

[55] Bureau of Economic Analysis. Local Area Gross Domestic Product, 2018. https://www.bea.gov/data/gdp/gdp-county-metro-and-other-areas. Released December 12, 2019. Accessed January 14, 2020.

8 ASSESSING PROBABILITIES

This study can include assessment of probabilities of various outcomes as a way to further characterize risk. CAPCOG's 2015 study basically enumerated various plausible economic impacts without assigning any probabilities to those outcomes, but a more rigorous study could include items such as:

- Probabilities of different NAAQS scenarios;
- Probabilities of various O_3 design value scenarios;
- Probabilities of EPA decisions regarding a nonattainment designation;
- Probabilities of various scenarios for being redesignated to attainment;
- Probabilities of different regulatory decisions; and
- Probabilities of various business conditions or situations.

Many of these probabilities could be highly subjective or speculative, but could be worth developing in consultation with stakeholders. The probabilities associated with attaining or violating the NAAQS on the other hand, could be based more directly on statistical methods using current and projected/modeled O_3 levels. The balance of this section highlights some relevant data that could be used for this purpose.

2014 MODELING FOR TIER 3 VEHICLE STANDARDS

In 2014, EPA conducted photochemical modeling in support of its Tier 3 light-duty vehicle emissions standards, including projected O_3 design values for 2018 and 2030 with and without the Tier 3 standards.[56] Table 8-1 shows the data for the four counties in the Oklahoma City CSA with design value projections.

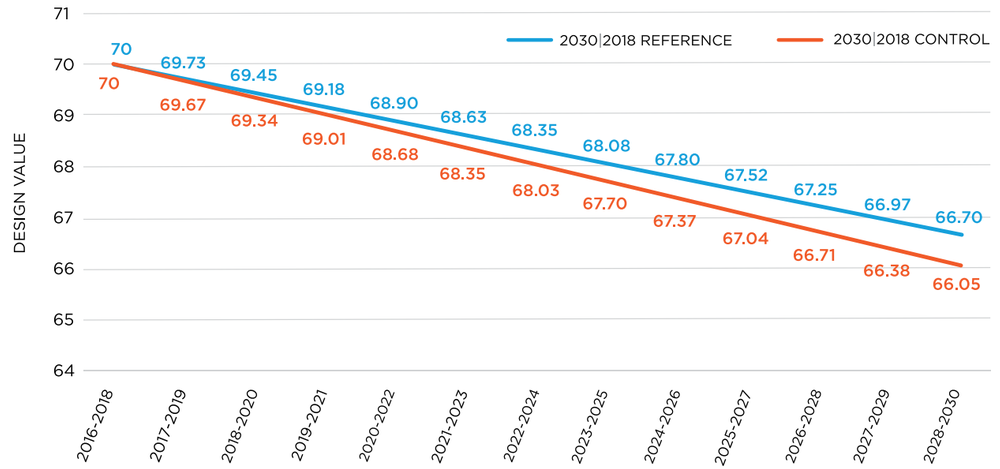
The actual 2018 design values for each county were quite a bit higher – ranging from 67 – 70 ppb. Using the relative change from 2018-2030 and applying it to the 2018 design values would result in projected design values for the region ranging from 66.05 – 66.70 ppb, with individual counties having projected design values as low as 63.91 ppb. Figure 8-1 shows what the expected design value would be for each county by year if the region experienced the relative change in O_3 anticipated in this modeling between 2018-2030.

Table 8-1. Design Value Projections for 2018 and 2030 from Tier 3 Vehicle Standard Air Quality Modeling (ppb)

COUNTY	2007 BASELINE	2018 REFERENCE	2018 CONTROL	2030 REFERENCE	2030 CONTROL
CANADIAN	73.7	62.58	61.89	60.37	59.02
CLEVELAND	72.3	63.06	62.56	60.65	59.58
MCCLAIN	70.0	60.48	60.00	58.16	57.23
OKLAHOMA	78.0	64.45	63.68	61.41	60.09

[56] EPA. "Table B-1: 8-Hour Ozone Design Values for Tier3 Scenarios." *Air Quality Modeling Technical Support Document: Tier 3 Motor Vehicle Emission and Standards.* Air Quality Assessment Division, Office of Air Quality Planning and Standards, Research Triangle Park, NC. February 2014. EPA-454/R-14-002. Available online at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-control-air-pollution-motor-vehicles-tier-3

Figure 8-1. Adjusted 2018-2030 Regional Design Value Projected Based on Tier 3 Modeling and 2016-2018 Design Value



The projections show an average per-year reduction of 0.28 – 0.33 ppb. These data suggest:

- The region is likely to avoid a nonattainment designation if the NAAQS remains at 70 ppb
- The region would likely face nonattainment designation if the NAAQS is revised to 68 ppb or lower 2020
- If the standard was lowered to 65 ppb in 2020, the region may still be violating the NAAQS in 2030 without additional O_3 reductions
- If the standard were set as low as 60 ppb, the region would very likely remain in violation of the NAAQS well into the 2030s without substantial O_3 reductions

2017 MODELING FOR 2015 O_3 NAAQS TRANSPORT ANALYSIS

In 2017, EPA released new photochemical modeling for 2023 to assist in supporting the development of "Transport" SIPs due in October 2018.[57] Table 8-2 on the next page shows the projected 2023 design values from this analysis.

2018 MODELING FOR 2008 O_3 NAAQS "CLOSE-OUT" AND 2015 O_3 NAAQS TRANSPORT

In 2018, EPA released new photochemical modeling data that included projected O_3 design values (on Table 8-3) for 2023 using its latest 2011 modeling platform.[58]

The modeling also included estimates of the O_3 contributions from anthropogenic emissions from each state.[59] This is is useful for understanding both the extent to which the region's O_3 levels are able to be controlled through implementation of control measures within Oklahoma, and the potential risk that the Clean Air Act's interstate pollution transport restrictions could result in sources in the Oklahoma City area being subject to control requirements even if the region is designated attainment/unclassifiable.

[57] EPA. "2015 Ozone NAAQS Preliminary Transport Assessment Design Values and Contributions." January 6, 2017. Available online at: https://www.epa.gov/airmarkets/notice-data-availability-preliminary-interstate-ozone-transport-modeling-data-2015-ozone

[58] EPA. "Appendix B: Projected Ozone Design Values at Individual Monitoring Sites Based on EPA's Updated 2023 Transport Modeling." *Air Quality Modeling Technical Support Document for the Updated 2023 Projected Ozone Design Values.* Office of Air Quality Planning and Standards. June 2018. Available at: https://www.epa.gov/sites/production/files/2018-06/documents/aq_modelingtsd_updated_2023_modeling_o3_dvs.pdf

[59] https://www.epa.gov/sites/production/files/2018-05/updated_2023_modeling_dvs_collective_contributions.xlsx

A few highlights from this modeling:

- Emissions from within Oklahoma were projected to contribute about 14 – 19 ppb to the projected 2023 O_3 design values in the Oklahoma City-Shawnee CSA
- Emissions from other states were projected to contribute 11 – 13 ppb to Oklahoma City-Shawnee CSA, including:
  - About 4.5 – 7.4 ppb from Texas
  - About 0.2 – 1.2 ppb from Missouri
  - About 0.2 – 0.8 ppb from Arkansas
  - About 0.5 – 0.7 ppb from Louisiana
- Emissions from all tribal areas of the country collectively contributed less than 0.1 ppb
- Emissions from Oklahoma contributed more than 1 ppb to design values at 65 O_3 monitors in other states, including:
  - 2 monitors in Texas that are identified as "nonattainment" or "maintenance" receptors for the 2015 O_3 NAAQS in the Dallas-Fort Worth area (contributions of 1.2 – 1.7 ppb)
  - 1 monitor in Michigan identified as a "maintenance" receptor for the 2015 O_3 NAAQS (1.3 ppb)
  - 1.0 – 2.2 ppb contributions at 17 sites in Texas, Illinois, Indiana, Michigan, Texas, and Wisconsin with projected maximum design values between 66.0 ppb and 70.9 ppb.

FORTHCOMING MODELING

EPA has announced that it expects to release new photochemical modeling data along with its proposal for the 2020 O_3 NAAQS review in Spring of 2020, and that it will be based on a new 2016 Photochemical Modeling platform recently used for regional haze modeling completed in Summer 2019. This means that the "Baseline" design values used for projections will be 2014-2016, 2015-2017, and 2016-2018. The Table 8-4 identifies the calculated "baseline" low, average, and high design values for this period. These can then be compared to future design value projections in order to calculate the relative response factor and estimate the annual projected change in O_3 design values.

SAMPLE CALCULATION FOR PROBABILITY OF VIOLATING THE NAAQS

Since O_3 design values use the average of three years' of data, design values come with a standard deviation in the 4th-highest MDA8 values, which can be used to assess the statistical probability that a monitor's design value would be attaining the NAAQS. This can be calculated in MS Excel by calculating the cumulative probability that the mean value for the three-year period was below 71 ppb. The probability of violating the NAAQS would be 1 minus the probability of attaining the NAAQS. Since any one monitor's violation of the NAAQS would cause the entire metro area to be considered in violation of the NAAQS, an area-wide analysis would need to involve a calculation of the joint probability of all of the monitoring stations recording a design value attaining the NAAQS. The probability of any one monitor violating the NAAQS would then subtract that value.

Table 8-2. 2017 O_3 Modeling with 2009-2013 Design Values and Projected 2023 Design Values (ppb)

SITE	COUNTY	2009-2013 BASE PERIOD AVERAGE DESIGN VALUE	2009-2013 BASE PERIOD MAXIMUM DESIGN VALUE	2023 BASE CASE AVERAGE DESIGN VALUE	2023 BASE CASE MAXIMUM DESIGN VALUE
Yukon (400170101)	Canadian	75.7	76	60.5	60.7
Moore (400270049)	Cleveland	75.0	76	61.9	62.8
Goldsby (400871073)	McClain	73.3	74	59.8	60.4
OKC Central (401090033)	Oklahoma	76.7	78	63.0	64.1
Choctaw (401090096)	Oklahoma	76.0	77	61.8	62.6
OKC North (401091037)	Oklahoma	78.3	79	64.6	65.2

Table 8-3. 2018 EPA O_3 Modeling with 2009-2013 Design Values and Projected 2023 Design Values

SITE	COUNTY	2009-2013 AVG.	2009-2013 MAX.	2023EN "3X3" AVG.	2023EN "3X3" MAX.
Yukon (400170101)	Canadian	75.7	76	60.4	60.6
Moore (400270049)	Cleveland	75.0	76	61.8	62.7
Goldsby (400871073)	McClain	74.0	75	60.2	61.0
OKC Central (401090033)	Oklahoma	76.7	78	62.7	63.8
Choctaw (401090096)	Oklahoma	76.0	77	61.5	62.4
OKC North (401091037)	Oklahoma	78.3	79	64.4	65.0

Table 8-4. Baseline Design Values to be Used in Forthcoming EPA O_3 Projections

SITE	COUNTY	LOW	AVG.	HIGH
Yukon (400170101)	Canadian	65	66.33	69
Moore (400270049)	Cleveland	66	66.67	68
Goldsby (400871073)	McClain	66	66.33	67
OKC Central (401090033)	Oklahoma	67	67.33	68
Choctaw (401090096)	Oklahoma	65	66.33	67
OKC North (401091037)	Oklahoma	68	69.00	70

9 EMISSIONS AND EMISSIONS-RELATED INFORMATION

One of the significant factors in determining the likelihood of a nonattainment designation, the regulatory impacts, and the benefits of taking action to avoid a nonattainment designation is the level of NO_X and VOC emissions within the region.

GENERAL EMISSIONS DATA

Table 9-1 summarizes EPA projections for 2023 and 2028 NO_X and VOC emissions from each of the eight counties, along with population and density figures.

Given the 2023 and 2028 NO_X and VOC estimates, the following general assumptions can be drawn:

- A 15% VOC RFP requirement would be at least 9.06 – 26.43 tpd, depending on the size of the nonattainment area, but estimated reductions between 2023 and 2028 would only amount to 2.32 – 5.65, leaving a 6.74 – 20.78 tpd deficit in RFP reductions
- A 3% reduction needed for contingency measures would represent 1.07 – 3.17 tpd NO_X or 1.81 – 5.29 tpd VOC, or lesser amounts if a combination of NO_X and VOC reductions were used. These amounts exceed what is achievable through fleet turnover.

POINT SOURCES

Since point sources often represent the "low-hanging fruit" for reducing emissions, the presence of point sources in a county that otherwise may not have very high levels of emissions in aggregate could put it at a higher risk of a nonattainment designation. Figure 9-3 and Figure 9-4 illustrate the quantity of NO_X emissions from "point" sources based on facilities emitting at least 100 tpy NO_X or at least 25 tpy NO_X in 2017.[60]

Figure 9-1. Estimated 2023 Oklahoma City-Shawnee CSA NO_X Emissions by Source Type

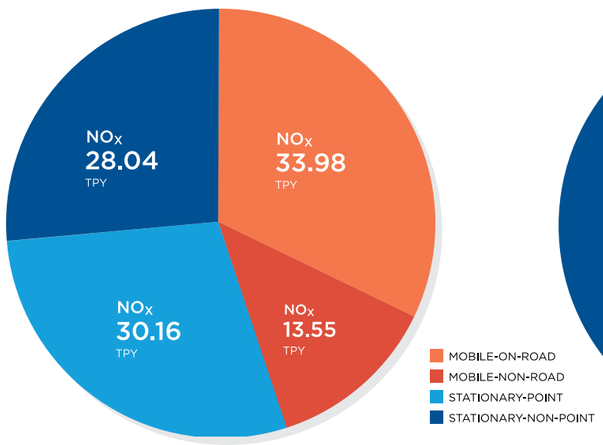
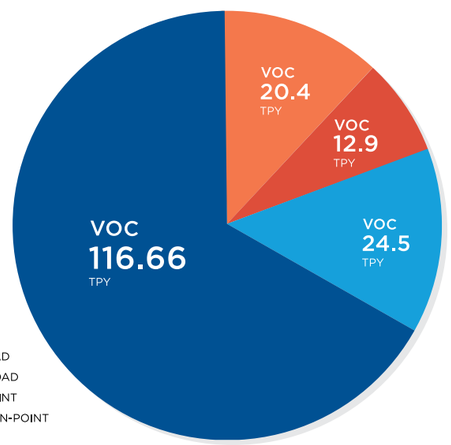


Figure 9-2. Estimated 2023 Oklahoma City-Shawnee CSA VOC Emissions by Source Type



[60] Point source data from ODEQ_2017ReportedEmissions_ACOG Counties and OKCShawnee CSA.xlsx file provided by Eric Pollard (ACOG) to Andrew Hoekzema (CAPCOG) via e-mail on 12/20/2019

Table 9-1. Population, Density, and Avg. Daily Summer NO_X and VOC Emissions Projections

COUNTY	2018 POPULATION [61]	LAND AREA (SQ. MI.) [62]	DENSITY (POP. PER SQ. MI.)	2023 NO_X (TPD) [63]	2023 VOC (TPD)	2028 NO_X (TPD) [64]	2028 VOC (TPD)
Canadian	144,447	896.63	161.10	16.98	29.84	15.23	29.17
Cleveland	281,669	538.77	522.80	7.85	15.21	6.2	14.57
Grady	55,551	1,100.50	50.48	19.19	32.06	17.48	31.06
Lincoln	34,920	952.31	36.67	5.97	10.27	5.2	9.88
Logan	47,291	743.83	63.58	9.12	10.45	8.23	10.23
McClain	39,985	570.7	70.06	6.21	7.50	5.56	7.22
Oklahoma	792,582	708.82	1,118.17	35.76	60.41	31.95	58.09
Pottawatomie	72,679	787.67	92.27	4.65	10.46	4.03	10.33
TOTAL	**1,469,124**	**6,299.23**	**233.22**	**105.73**	**176.20**	**93.88**	**170.55**

Figure 9-3. Point Source NO_X Emissions by County, 100 tpy threshold (tpy)

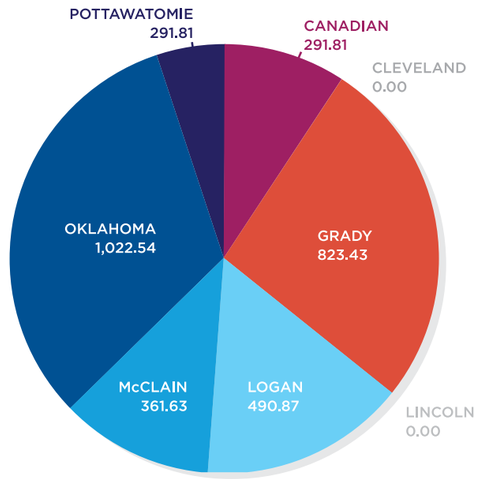
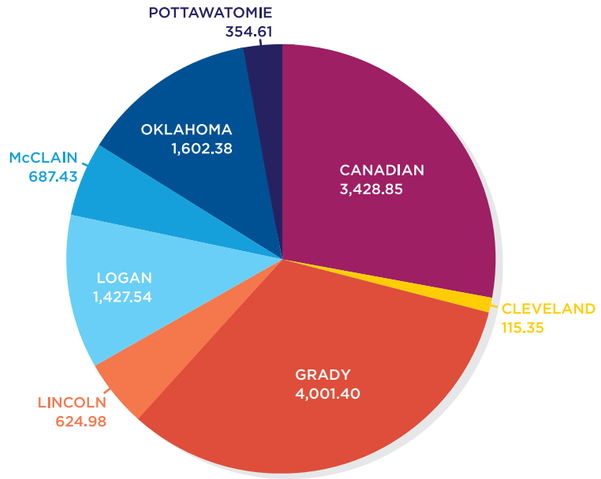


Figure 9-4. Point Source NO_X Emissions by County (tpy)



[61] U.S. Census Bureau. Table PEPANNRES: Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018.

[62] Census Bureau QuickFacts. https://www.census.gov/quickfacts/fact/table/US/PST045218

[63] ftp://newftp.epa.gov/air/emismod/2016/v1/reports/2023fh_county_sector_average_summer_weekday_NOX_VOC.xlsx

[64] ftp://newftp.epa.gov/air/emismod/2016/v1/reports/2028fh_county_sector_average_summer_weekday_NOX_VOC.xlsx

Figure 9-5. Point Sources in Oklahoma City Area, NO_x ≥ 100 tpy

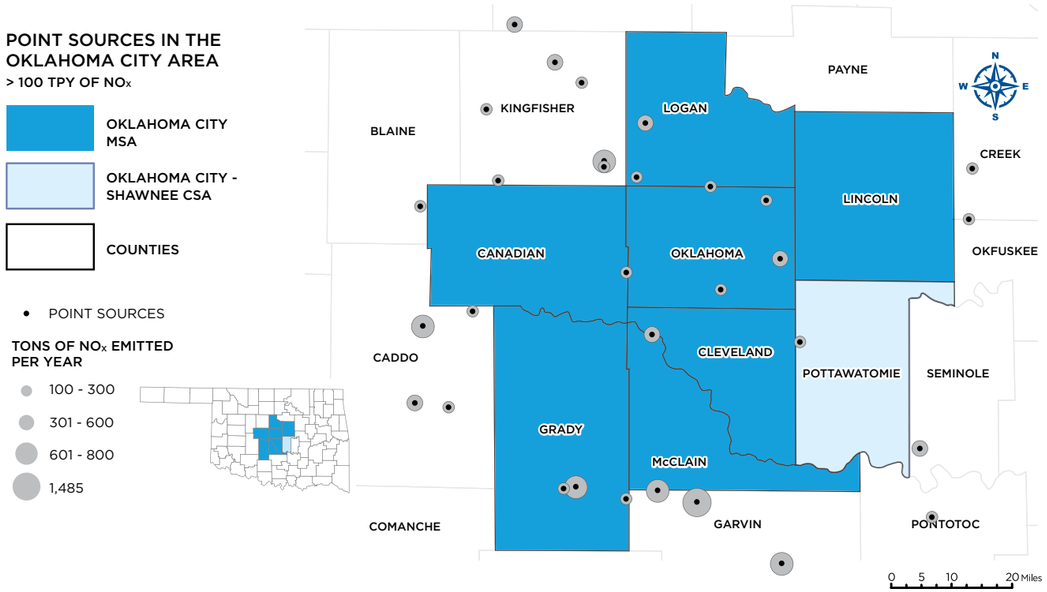
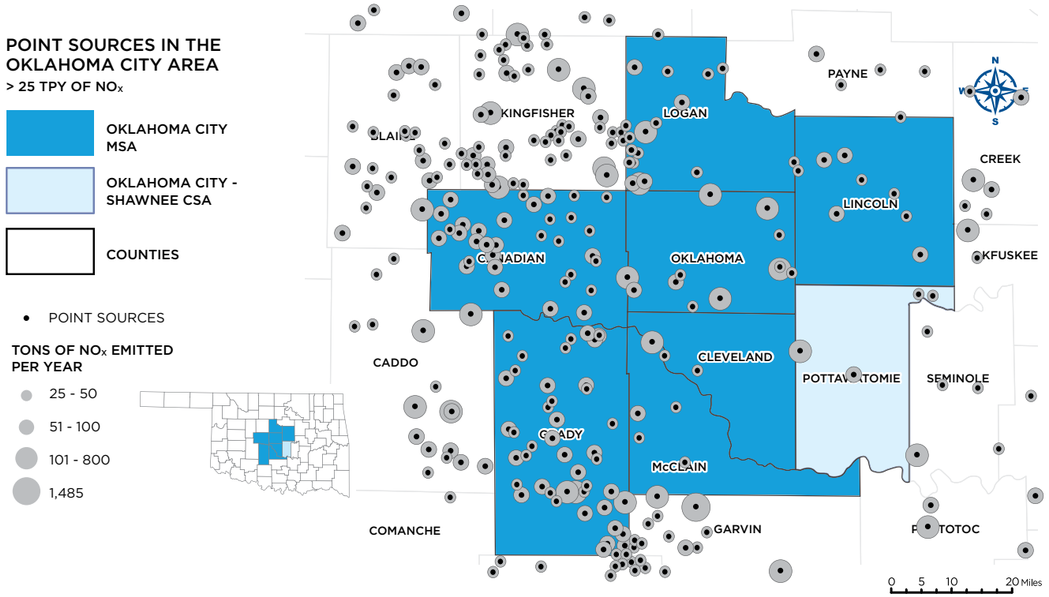


Figure 9-6. Point Sources in Oklahoma City Area, NO_x ≥ 25 tpy



SUMMARY OF REGULATORY REQUIREMENTS

The following table summarizes the various regulatory requirements for nonattainment areas and potential applicability in terms of time frame, geographic area, and sources.

REQUIREMENT	POTENTIAL TIME FRAME	POTENTIAL GEOGRAPHIC APPLICABILITY	SOURCE APPLICABILITY	OTHER NOTES
NNSR	2023 – 2028	Nonattainment area	New sources PTE ≥ 100 tpy NO_X or VOC, modification PTE ≥ 40 tpy NO_X or VOC	110% offsets for Marginal Areas; 115% offsets for Moderate areas
TRANSPORTATION CONFORMITY	2023 – 2040	Nonattainment area	Federal approvals for increased road or transit capacity	The most stringent NO_X and VOC MVEBs apply
GENERAL CONFORMITY	2023 – 2040	Nonattainment area	All other federal approvals for direct + indirect ≥ 100 tpy NO_X or VOC	n/a
15% VOC REDUCTION	2020 – 2026	Nonattainment area	All anthropogenic sources of VOC	Approximately 21.62 tpd in VOC emission reductions needed beyond existing reductions
I/M PROGRAM	2028 – 2040	1990 Urbanized Area (parts of Canadian, Cleveland, Logan, and Oklahoma Counties)	Light-duty vehicles	Approximately 1.58 tpd VOC in 2026, 1.39 tpd VOC in 2028, 2.34 tpd NO_X in 2026, 2.02 tpd NO_X in 2028
VOC CTG RACT	2028 – 2040	Nonattainment area	Numerous different business types	45 different CTG documents
VOC MAJOR SOURCE RACT	2028 – 2040	Nonattainment area	Stationary sources PTE ≥ 100 tpy VOC	About 10-20 within CSA
NO_X MAJOR SOURCE RACT	2028 – 2040	Nonattainment area	Stationary sources PTE ≥ 100 tpy VOC	About 10-20 within CSA
RACM	2028 – 2040	Outside of Nonattainment Area	Any source	n/a

APPENDIX A:
2010-2018 POPULATION DATA

Table A-1 shows the county population estimates for July 1, 2010, and July 1, 2018, as well as the change and percent change over that time frame.

Table A-1. County Population Estimates and Growth 2010-2018

COUNTY	JULY 1, 2010 ESTIMATE	JULY 1, 2018 ESTIMATE	CHANGE	% CHANGE
Canadian	116,341	144,447	28,106	24.16%
Cleveland	257,079	281,669	24,590	9.57%
Grady	52,441	55,551	3,110	5.93%
Lincoln	34,356	34,920	564	1.64%
Logan	42,057	47,291	5,234	12.45%
McClain	34,736	39,985	5,249	15.11%
Oklahoma	720,787	792,582	71,795	9.96%
Pottawatomie	69,633	72,679	3,046	4.37%
TOTAL	**1,327,430**	**1,469,124**	**141,694**	**10.67%**

APPENDIX B:
EXAMPLES OF CHANGING GEOGRAPHIC BOUNDARIES OF O_3 NONATTAINMENT AREAS AFTER INITIAL DESIGNATION

There is precedence for changing the geographic scope of an O_3 nonattainment area after initial designation:

- 9/17/2004: EPA changed the boundary of the Las Vegas, Nevada 1997 O_3 nonattainment area to be limited the boundaries to area around City of Las Vegas and redesignation of the rest of Clark County as unclassifiable/attainment[65]
- 10/13/2006: EPA changed the boundary of the Macon, Georgia 1997 O_3 nonattainment area to clarify the exact boundaries of the area[66]
- 4/13/2015: EPA changed the boundaries of the Los Angeles-South Coast Air Basin and San Diego, California nonattainment areas for the 1997 O_3 NAAQS to remove the Pechanga Reservation from these two nonattainment areas and designate it as a separate air quality planning area[67]
- 7/15/2019: EPA split the Sheboygan nonattainment area for the 1997 and 2008 NAAQS, which consisted of one county, into two separate nonattainment areas covering the same geographic area – "Shoreline Sheboygan County, Wisconsin," and "Inland Sheboygan County, Wisconsin," which enabled EPA to make a "Clean Data Determination" for one of the two areas that had monitoring data that was meeting the NAAQS[68]

[65] FR 55956
[66] FR 60429
[67] FR 18120
[68] FR 33700

APPENDIX C:
2015 O_3 NONATTAINMENT DESIGNATIONS IN EPA REGION 6

Table C-1 shows the CSAs or CBSAs in EPA Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas) that include a 2015 O_3 NAAQS nonattainment area. The CSA or CBSAs listed below are those identified by OMB as of its July 2015 bulletin, which were the most recent definitions available to EPA at the time they finalized their area designations.[69]

Of the counties that were designated nonattainment in EPA Region 6, the following list identifies which were designated nonattainment due to monitored violations of the NAAQS versus contribution.[70]

- Dallas-Fort Worth, TX, nonattainment area:
  - Six counties had monitors violating the NAAQS (Collin, Dallas, Denton, Johnson, Parker, and Tarrant Counties)
  - Three counties were designated as nonattainment on the basis of contribution to these NAAQS violations
    - Ellis and Kaufman Counties each had at least one monitor; all of these monitors showed attainment of the NAAQS
    - Wise County had no monitor
- Dona Ana County, NM nonattainment area:
  - Includes a portion of one county that had one monitor violating the NAAQS
- Houston-Galveston-Brazoria, TX nonattainment Area:
  - Four counties had monitors violating the NAAQS (Brazoria, Galveston, Harris, and Montgomery Counties)
  - Two counties were designated as contributing to these violations, neither of which had a monitor (Chambers and Fort Bend Counties)
- San Antonio, TX nonattainment area:
  - Includes one county that had two monitors violating the NAAQS
- None of the counties were located in other CBSAs included in a broader CSA

Table C-1. CSAs or CBSAs in EPA Region 6 Containing 2015 O_3 Nonattainment Areas and their Associated Counties

CSA OR CBSA	NONATTAINMENT AREA	NONATTAINMENT AREA COUNTIES/PARISHES	COUNTIES/PARISHES DESIGNATED ATTAINMENT/UNCLASSIFIABLE
Dallas-Fort Worth TX-OK CSA	Dallas-Fort Worth, TX	Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise Counties, TX	Bryan County, OK; and Cooke, Fannin, Grayson, Henderson, Hood, Hopkins, Hunt, Navarro, Palo Pinto, Rockwall, and Somervell Counties, TX
El Paso-Las Cruces, TX-NM CSA	Southern Dona Ana County, NM	Dona Ana County, NM (southern part)	El Paso and Hudspeth County, TX; Dona Ana County (northern part), NM
Houston-the Woodlands CSA	Houston-Galveston-Brazoria, TX	Brazoria, Chambers, Fort Bend, Galveston, Harris, and Montgomery Counties	Austin, Liberty, Matagorda, Waller, Trinity, Walker, Waller, Washington, and Wharton Counties
San Antonio-New Braunfels MSA	San Antonio, TX	Bexar County	Atascosa, Bandera, Comal, Guadalupe, Kendall, Medina, and Wilson Counties

[69] Office of Management and Budget. OMB Bulletin No. 15-01: Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas. July 15, 2015. Available online at: https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/bulletins/2015/15-01.pdf. Accessed January 14, 2020.

[70] Based on Technical Support Documents available at https://www.epa.gov/ozone-designations/2015-ozone-standards-state-recommendations-epa-responses-and-technical-support. Accessed January 14, 2020.

APPENDIX D:
INDUSTRY CODES FOR MAJOR SOURCES OF NO_X AND VOC IN OKLAHOMA

Across the state of Oklahoma, a total of 148 facilities in 34 different Standard Industrial Classification (SIC) codes reported emitting at least 100 tpy NO_X or VOC in 2017. These facilities would definitely be subject NO_X and/or VOC RACT if they were located in a nonattainment area, and construction of a new facility of a comparable scale within a nonattainment area would be subject to NNSR permitting. The Table D-1 identifies these codes, whether they are "major" for NO_X or VOC, and whether any major facilities for the SIC code were located in the CSA in 2017.

This list provides a good starting point for ACOG and its stakeholders to consider what types of facilities would could have trouble expanding or building a new facility in the Oklahoma City-Shawnee CSA if the area was designated nonattainment.

Since modern economic models rely on NAICS codes, ACOG staff or one of the other stakeholders should use a SIC-NAICS crosswalk in order to assign the corresponding NAICS code to each point source facility within the region.

Table D-1. SIC Codes for Major Sources of NO_X and VOC in Oklahoma in 2017 and whether any Major Sources were Located in the Oklahoma City-Shawnee CSA

SIC	SIC CODE NAME	NO_X	VOC	CSA
1311	Crude Petroleum and Natural Gas		●	●
1321	Natural Gas Liquids	●	●	●
2051	Bread and Other Baker Products, Except Cookies and Crackers		●	●
2075	Soybean Oil Mills	●		
2099	Food Preparations, Not Elsewhere Classified		●	
2421	Sawmills and Planing Mills, General		●	
2493	Reconstituted Wood Products	●	●	
2621	Paper Mills	●	●	
2631	Paperboard Bills	●	●	
2752	Commercial Printing, Lithographic		●	●
2819	Industrial Inorganic Chemicals, Not Elsewhere Classified	●		
2869	Industrial Organic Chemicals, Not Elsewhere Classified		●	
2873	Nitrogenous Fertilizers	●	●	
2895	Carbon Black	●		
2911	Petroleum Refining	●	●	
2999	Products of Petroleum and Coal, Not Elsewhere Classified	●		
3011	Tires and Inner Tubes		●	
3086	Plastics Foam Products		●	●
3211	Flat Glass	●		
3221	Glass Containers	●		
3241	Cement, Hydraulic	●		
3274	Lime	●		
3321	Gray and Ductile Iron Foundaries		●	
3351	Rolling, Drawing, and Extruding of Copper		●	●
3411	Metal Cans		●	●
3499	Fabricated Metal Products, Not Elsewhere Classified		●	
3711	Motor Vehciles and Passenger Car Bodies		●	
4612	Crude Petroleum Pipelines		●	
4613	Refined Petroleum Pipelines		●	
4911	Electric Services	●	●	●
4922	Natural Gas Transmission	●	●	●
4953	Refuse Systems	●		
5171	Petroleum Bulk Stations and Terminals		●	
9711	National Security	●	●	●

APPENDIX E:
LIST OF ACRONYMS

AACOG: Alamo Area Council of Governments

ACOG: Association of Central Oklahoma Governments

AQCR: Air Quality Control Region

BACT: Best Available Control Technology

CASAC: Clean Air Scientific Advisory Committee

CBSA: Core-Based Statistical Area

CFR: Code of Federal Regulations

CMAQ: Congetion Mitigation for Air Quality

CO: Carbon Monoxide

CSA: Combined Statistical Area

CTG: Control Technique Guideline

EPA: U.S. Environmental Protection Agency

FHWA: Federal Highway Administration

FTA: Federal Transit Administration

GRP: Gross Regional Product

GVWR: Gross Vehicle Weight Rating

I/M: Inspection and Maintenance

ISA: Integrated Science Assessment

LAER: Lowest Achievable Emissions Rate

LLC: Limited Liability Corporation

MDA8: Maximum Daily 8-Hour Average

MMBtu: Million British Thermal Units

MPA: Metropolitan Planning Area

MPO: Metropolitan Planning Organization

MSA: Metropolitan Statistical Area

MVEB: Motor Vehicle Emissions Budget

µSA: Micropolitan Statistical Area

NAAQS: National Ambient Air Quality Standard

NAICS: North American Industrial Classification System

NNSR: Nonattainment new source review

NO_X: Nitrogen Oxides

NSPS: New Source Performance Standards

NSR: New Source Review

O_3: Ozone

OCARTS: Oklahoma City Area Regional Transportation Study

ODEQ: Oklahoma Department of Environmental Quality

ODOC: Oklahoma Department of Commerce

ODOT: Oklahoma Department of Transportation

OG&E: Oklahoma Gas and Electric

OMB: Office of Management and Budget

OSU: Oklahoma State University

OU: Oklahoma University

Pb: Lead

PM: Particulate Matter

PM2.5: Particulate Matter with an aerodynamic diameter of 2.5 micrometers or less

Ppb: Parts per billion

PSD: Prevention of Significant Deterioration

PTE: Potential to emit

RACM: Reasonably Available Control Measure

RACT: Reasonably Available Control Technology

REMI: Regional Economic Models, Inc.

RIA: Regulatory Impact Analysis

RFP: Reasonable Further Progress

SCR: Selective Catalytic Reduction

SIC: Standard Industrial Classification

SIP: State Implementation Plan

SO_2: Sulfur Dioxide

STIP: State Transportation Improvement Program

TIP: Transportation Improvement Program

Tpd: tons per day

Tpy: tons per year

TTI: Texas Transportation Institute

U.S.C.: United States Code

VOC: Volatile Organic Compound

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4205 N. Lincoln Blvd. | Oklahoma City, OK 73105