

II. Regional Implications of the 1990 Clean Air Act Amendments and Overview of Conformity Criteria

Criteria and procedures required for demonstrating conformity of transportation plans and programs are specified in EPA's Transportation Conformity Rule. The applicable conformity criteria and procedures are summarized below:

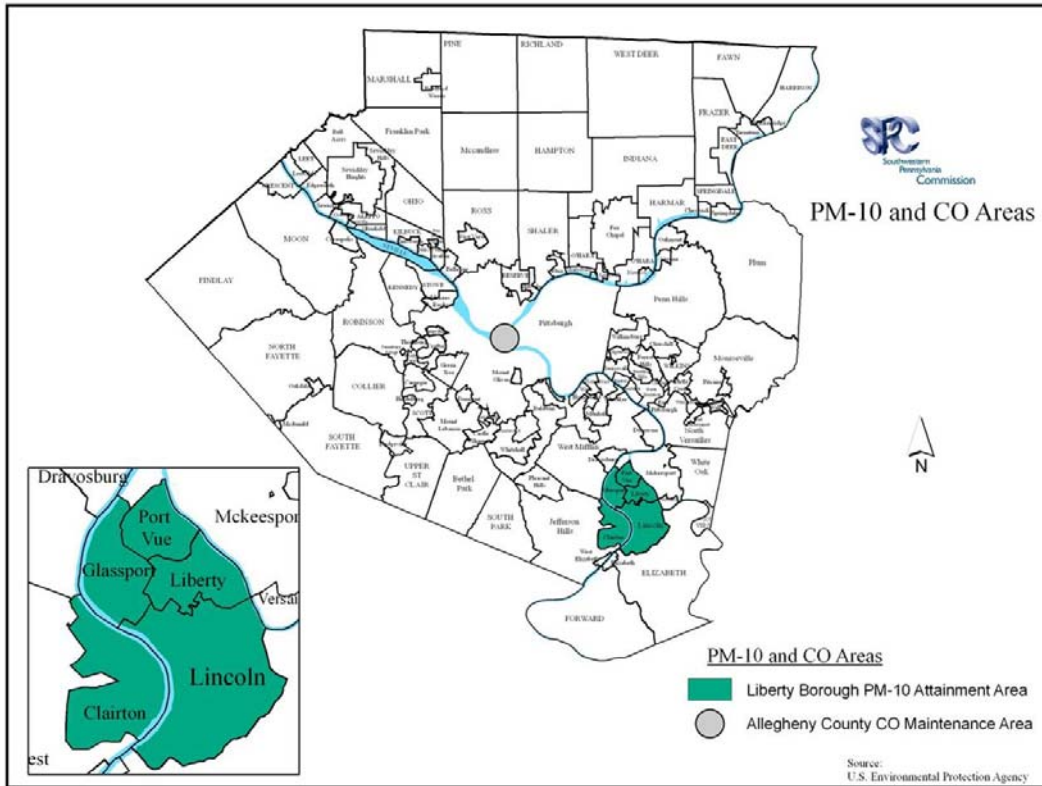
- 1) A determination should be made that the endorsed transportation plan and program will be consistent with the emissions budget in the approved control strategy SIP or redesignation request. Prior to EPA approval of emission budgets, a determination should be made that the transportation plan and program are consistent with the most recent estimates of mobile source emissions.
- 2) An assurance should be given that no goals, directives, recommendations or projects identified in the transportation plan and program contradict in a negative manner any specific requirements or commitments of the applicable SIP.
- 3) Transportation plans and programs should provide for the expeditious implementation of transportation control measures in the applicable SIP.
- 4) Transportation plan and program conformity determinations will be based on the most recent emissions estimates which in turn are to be based on the most recent population, employment, travel and congestion estimates as determined by the MPO or other authorized agency.
- 5) A determination should be made that the transportation plans and programs contribute to reductions in emissions in nonattainment areas and that the transportation plans and programs do not increase the frequency or severity of existing violations of the national ambient air quality standards (NAAQS).

In accord with the federal Clean Air Act, the U.S. Environmental Protection Agency (EPA) has designated several nonattainment areas within Southwestern Pennsylvania for five separate National Ambient Air Quality Standards (NAAQS). The five air quality standards are: the PM₁₀ NAAQS (one designated area – five municipalities within Allegheny County – Map 1), the carbon monoxide NAAQS (one designated area – City of Pittsburgh's Central Business District – Map 1), the 8-hour ozone NAAQS (three separate areas that, combined, cover nine of the ten counties within SPC's planning area – Map 2), the annual PM_{2.5} NAAQS (three separate areas that, combined, cover five entire counties and parts of four other counties within SPC's planning area – Map 3), the daily PM_{2.5} NAAQS (the same three areas designated nonattainment for the PM_{2.5} annual standard – Map 3). Transportation conformity must be addressed by SPC for each nonattainment and maintenance area.

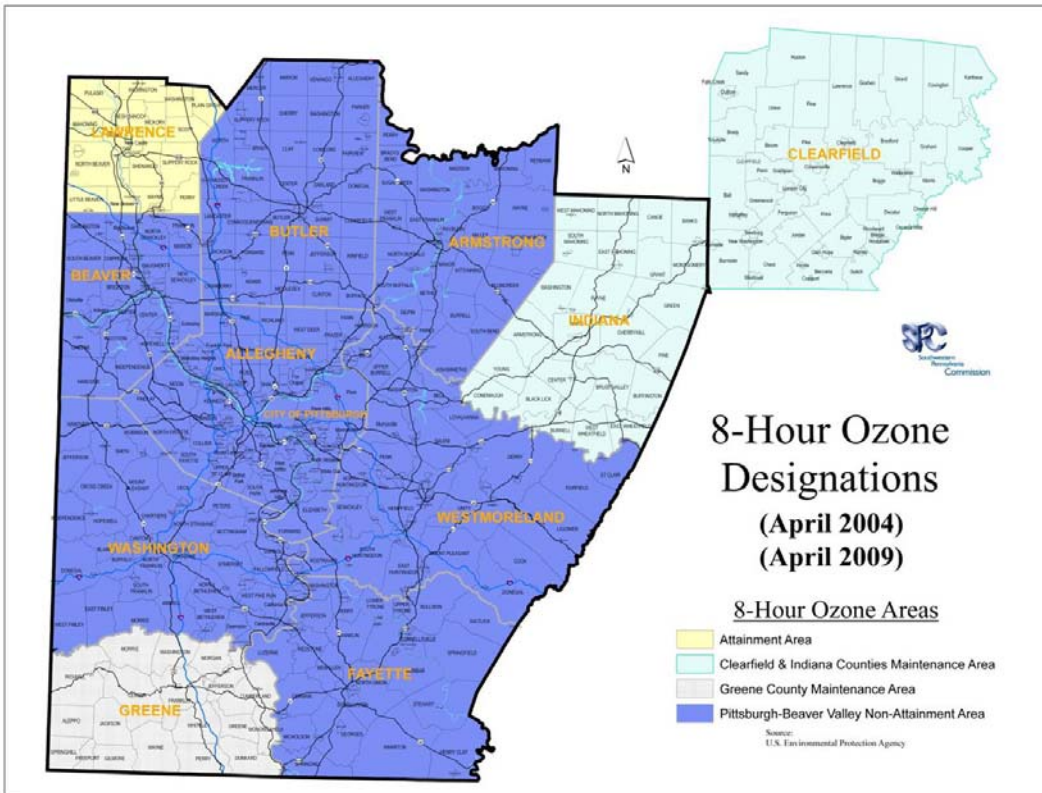
This report addresses conformity for all of the designated nonattainment areas and applicable air quality standards.

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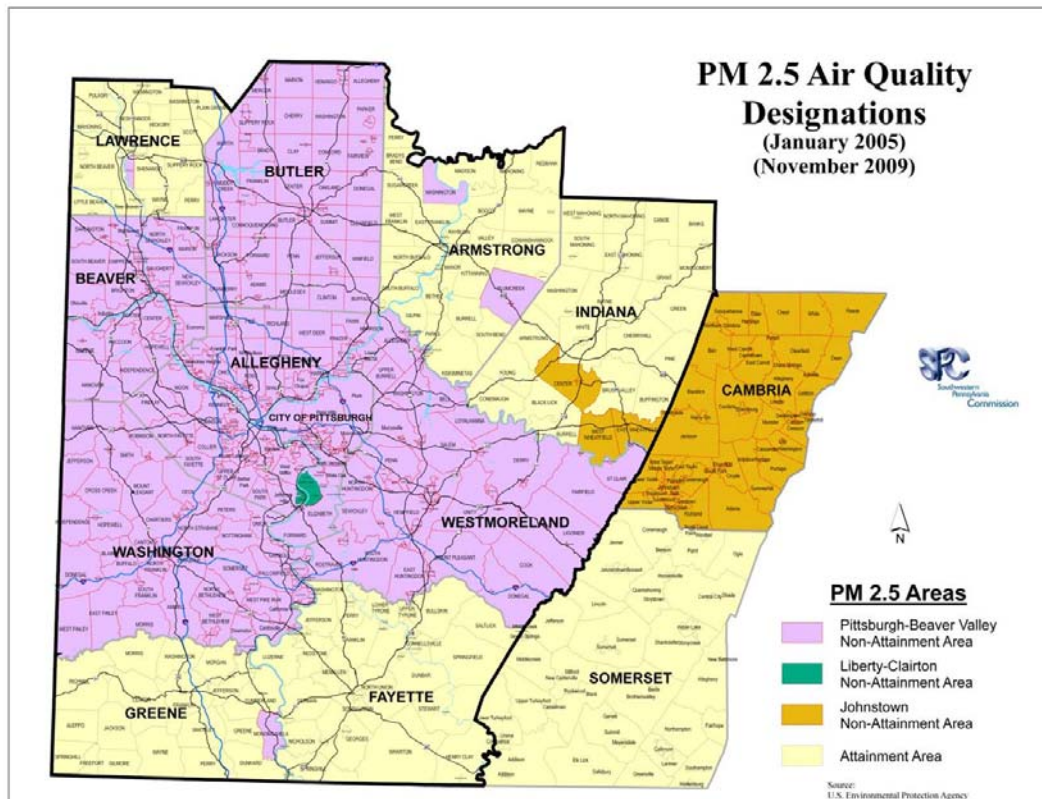
Map 1



Map 2

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Map 3

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PM₁₀

In accord with the federal Clean Air Act, the U.S. Environmental Protection Agency designated a moderate nonattainment area for particulate matter (PM₁₀) within Allegheny County. That area includes the City of Clairton and the Boroughs of Glassport, Liberty, Lincoln and Port Vue (Map 1). PM₁₀ nonattainment in that area stemmed primarily from industrial sources in the area and not from mobile sources. This nonattainment area was not required to have a PM₁₀ transportation conformity budget. Because the PM₁₀ violations had been caused by industrial stationary sources and motor vehicles were not an important contributor to the nonattainment problem, no additional quantitative analysis for transportation-related PM₁₀ impacts is required for conformity purposes.

On January 6, 1994, the Allegheny County Health Department submitted a PM₁₀ Attainment Plan to EPA for review and approval. That was followed on July 12, 1995 with submittal of contingency measures that would be enforced if the area failed to attain the PM₁₀ standard. On September 8, 1998, EPA's final approval of those documents was announced in the Federal Register (63 FR 47434) and EPA declared that the area had attained the PM₁₀ standard. On October 28, 2002, a request to redesignate the area as attainment for PM₁₀ was submitted to EPA by Allegheny County. EPA's approval of the redesignation request, and the formal redesignation of the area from nonattainment to attainment of the PM₁₀ national ambient air quality standards (NAAQS), was announced in the Federal Register on September 11, 2003 (68 FR 53515).

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The 2040 Plan and 2011-2014 TIP will not worsen the PM₁₀ emissions in that area, nor will they interfere with the expeditious implementation of mitigation measures to control those emissions. Two projects are identified on the 2011-2014 TIP and the 2040 Plan in those five municipalities. The projects are the rehabilitation of two bridges over the Monongahela River: the Clairton-Glassport Bridge (MPMS # 69068) and the Mansfield (Dravosburg) Bridge (MPMS # 69203). Total cost for the two projects is \$37,030,640.

Carbon Monoxide

While the region has met the national ambient air quality standard for carbon monoxide since March 1986, the City of Pittsburgh's central business district was designated by EPA as an "unclassified" nonattainment area for carbon monoxide (Map 1). In August 2001, the Allegheny County Health Department submitted a redesignation request to PaDEP asking that it be forwarded to EPA with a recommendation for approval. That redesignation request was subsequently approved by EPA and announced in the Federal Register on November 12, 2002 (67 FR 68521).

A limited carbon monoxide maintenance plan is part of that approved redesignation for Allegheny County. Under limited maintenance plans, EPA policy does not require a carbon monoxide emission budget test for conformity determinations. Emission budgets in limited maintenance plan areas are considered to be not constraining for the length of the initial maintenance period. Therefore, conformity for carbon monoxide is demonstrated in the county.

Ozone

The three 8-hour ozone nonattainment and maintenance areas are:

- Pittsburgh - Beaver Valley nonattainment area. This area includes seven counties within SPC's planning area (Allegheny, Armstrong, Beaver, Butler, Fayette, Washington, and Westmoreland).
- Greene County maintenance area. This area includes all of Greene County.
- Clearfield - Indiana counties maintenance area. This area includes all of Clearfield County (which is outside of the SPC planning area) and all of Indiana County.

Map 2 shows the boundaries of these designated 8-hour ozone areas.

Ozone is formed through chemical reactions induced when sunlight reacts with volatile organic compounds (VOCs, principally "hydrocarbons"), and nitrogen oxides (NO_x). A major source of VOCs and NO_x is the incomplete combustion of fossil fuels. Transportation-related activities are a major contributor of these pollutants. Since heat speeds the reactions, ozone levels are typically highest during hot summer days. For ozone nonattainment areas, reductions in both VOC and NO_x are required in order to demonstrate conformity.

The Transportation Conformity Rule requires that the conformity determination for transportation plans and programs be based on comparisons to established VOC and NO_x motor

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vehicle emissions budgets (MVEB), provided that the budgets are established in a control strategies State Implementation Plan and that EPA has declared the motor vehicle emission budgets to be adequate for transportation conformity purposes. The emissions budget establishes a cap on emissions which cannot be exceeded by predicted highway and transit vehicle emissions. The conformity analysis should demonstrate reduced VOC and NO_x emissions in a future year for the transportation plan or program when compared to the established emissions budgets. The analysis must estimate total transportation-related emissions within the ozone nonattainment area for certain future years, and may include the effects of any emission control programs which are already adopted or committed to in the applicable State Implementation Plan.

Motor vehicle emissions budgets for VOC and NO_x were established in the Maintenance Plan for the Pittsburgh-Beaver Valley Ozone Area (*Pittsburgh-Beaver Valley Area Ozone Maintenance Plan and Request for Redesignation as Attainment for Ozone*). This is the Maintenance Plan and Attainment SIP approved for this area by EPA under the 1-hour ozone standard. It will remain in effect until the state submits, and EPA approves, an attainment demonstration and motor vehicle emissions budgets for the 8-hour standard. The budgets from this SIP are based on analysis using EPA's MOBILE6.2 emissions model and were approved by EPA on December 10, 2004, for use in conformity assessments. These budgets are, therefore, available to SPC for use in demonstrating 8-hour ozone transportation conformity. The approved emissions budgets for the Pittsburgh-Beaver Valley Ozone Area are presented in Table 19 and are shown graphically in Figures 15 (VOC) and 16 (NO_x) in Section VII. In 2007, PaDEP submitted a SIP revision to EPA for review and approval (*State Implementation Plan Revision: Maintenance Plan and Base Year Inventory – Pittsburgh-Beaver Valley Eight-Hour Ozone Nonattainment Area – PaDEP, April 2007*). That SIP revision demonstrates attainment of the 8-hour ozone standard and includes proposed motor vehicle emissions budgets for the Pittsburgh-Beaver Valley 8-hour ozone nonattainment area. As of May 10, 2011, EPA had not yet made a finding that the proposed motor vehicle emissions budgets are adequate for transportation conformity purposes. Nevertheless, both the approved budgets and the proposed budgets are presented in Table 19 and Figures 15 and 16. The approved budgets are the basis for SPC's conformity finding. The proposed budgets are shown only for information.

Motor vehicle emissions budgets for VOC and NO_x were established in the Maintenance Plan for the Greene County Ozone Area (*Final State Implementation Plan Revision: Maintenance Plan – Greene County Eight-Hour Ozone Nonattainment Area – PaDEP, May 2008*). The budgets from this SIP are based on analysis using EPA's MOBILE6.2 emissions model and were approved by EPA on March 19, 2009, for use in conformity assessments. These budgets are, therefore, available to SPC for use in demonstrating 8-hour ozone transportation conformity. The approved emissions budgets for the Greene County Ozone Area are presented in Table 20 and are shown graphically in Figures 17 (VOC) and 18 (NO_x) in Section VII.

Motor vehicle emissions budgets for VOC and NO_x were established in the Maintenance Plan for the Clearfield – Indiana Ozone Area (*Final State Implementation Plan Revision: Maintenance Plan – Clearfield-Indiana Eight-Hour Ozone Nonattainment Area – PaDEP, May 2008*). The budgets from this SIP are based on analysis using EPA's MOBILE6.2 emissions

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model and were approved by EPA on March 19, 2009, for use in conformity assessments. Separate emissions budgets were established for Indiana and Clearfield counties. The Indiana County budgets are, therefore, available to SPC for use in demonstrating 8-hour ozone transportation conformity for Indiana County. The approved emissions budgets for the Indiana County portion of the Clearfield – Indiana Ozone Area are presented in Table 21 and are shown graphically in Figures 19 (VOC) and 20 (NO_x) in Section VII.

Information needed for the 8-hour ozone conformity assessments is presented in Section V. Results of the analysis, and the conformity determinations for the nonattainment areas within the SPC planning area, are found in Section VII.

Lawrence County is an air quality attainment area under the 8-hour ozone standard and therefore does not require an ozone conformity assessment.

PM_{2.5}

The three PM_{2.5} nonattainment areas are:

- Johnstown. This area includes all of Cambria County (which is outside of the SPC planning area), plus five municipalities within Indiana County (West Wheatfield, Center, and East Wheatfield townships, and Armagh and Homer City boroughs).
- Liberty-Clairton. This area includes five municipalities within Allegheny County (Glassport, Liberty, Lincoln, and Port Vue boroughs, and Clairton City).
- Pittsburgh - Beaver Valley. This area includes all or part of eight counties within SPC's planning area as follows: Allegheny County (remainder not included in the Liberty-Clairton area); Armstrong County (Plumcreek and Washington townships, and Elderton Borough); Beaver County (entire county); Butler County (entire county); Greene County (Monongahela Township); Lawrence County (portions of Taylor Township south of New Castle City); Washington County (entire county); and Westmoreland County (entire county).

The remainder of the SPC planning area is designated as "attainment" for the PM_{2.5} air quality standards. That attainment area includes all of Fayette County and the remainder of Armstrong, Greene, Indiana, and Lawrence counties.

Map 3 shows the boundaries of these PM_{2.5} nonattainment areas in southwestern Pennsylvania. All three areas are designated nonattainment for both the annual PM_{2.5} NAAQS and the daily PM_{2.5} NAAQS.

The Transportation Conformity Rule requires that the conformity determination for transportation plans and programs be based on comparisons to approved emission budgets, provided that the budgets are established in a control strategies State Implementation Plan and that EPA has declared the motor vehicle emission budgets to be adequate for transportation conformity purposes. The emission budgets establish caps on emissions which cannot be exceeded by predicted highway and transit vehicle emissions. The conformity analysis should demonstrate reduced emissions in a future year for the transportation plan or program when

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compared to the approved emission budgets. The analysis must estimate total transportation-related emissions within the nonattainment area for certain future years, and may include the effects of any emission control programs which are already adopted or committed to in the applicable SIP.

PM_{2.5} SIPs have not been submitted to EPA. Prior to approval of PM_{2.5} SIPs, the Transportation Conformity Rule allows conformity determinations for the annual PM_{2.5} standard to be based on either a demonstration that future emissions will be below 2002 levels, or that emissions in each analysis year under the “build” condition will not be greater than emissions under the “no-build” condition. Conformity determinations under the daily PM_{2.5} standard may be based on either a demonstration that future emissions will be below 2008 levels, or that emissions in each analysis year under the “build” condition will not be greater than emissions under the “no-build” condition. The Liberty-Clairton area was previously designated as a nonattainment area under an older daily PM_{2.5} standard. Conformity determinations under that daily PM_{2.5} standard may be based on either a demonstration that future emissions will be below 2002 levels, or that emissions in each analysis year under the “build” condition will not be greater than emissions under the “no-build” condition. In all cases, the emission reduction must be a net reduction of emissions that accounts for emissions attributable to transportation-related sources. Reductions in emissions resulting from several federal programs (e.g. tail pipe standards, evaporative controls, and fuel volatility) cannot be credited toward the reduction.

Through the interagency consultation process, the “below 2002 levels” test was selected for demonstrating conformity for the three PM_{2.5} nonattainment areas under the annual standard, and the “below 2008 levels” test was selected for demonstrating conformity for the three PM_{2.5} nonattainment areas under the daily standard. To ensure against “backsliding”, the “below 2002 levels” test was also be used in the conformity demonstration for the Liberty-Clairton PM_{2.5} nonattainment area under the daily standard.

PM_{2.5} emissions (fine particulates) are emitted directly by motor vehicles as a result of the fuel combustion process (tailpipe emissions) and as a result of brake and tire wear. PM_{2.5} emissions are contained in re-entrained road dust and transportation construction dust. PM_{2.5} emissions are also formed through reactions in the atmosphere among several precursor emissions including VOC, NO_x, ammonia (NH₃) and sulfates (SO_x). Under EPA conformity regulations:

- Direct PM_{2.5} tailpipe, brake wear, and tire wear emissions must be analyzed.
- Re-entrained road dust is included only if EPA or the Pennsylvania Department of Environmental Protection determines that it is a significant contributor to PM_{2.5} in the nonattainment area, or is named in a PM_{2.5} SIP and a motor vehicle emissions budget is established for this item.
- Transportation construction dust is encompassed in regional transportation conformity if it is named in a PM_{2.5} SIP and a motor vehicle emissions budget is established for this item.
- NO_x must be analyzed in the period prior to SIP submission and budget adequacy determination or approval, unless EPA and PaDEP determine it is not a significant contributor.

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- VOC, NH₃ and SO_x analysis is not required in the period prior to SIP submission unless EPA or PaDEP determines one or more of these precursors to be a significant contributor.

As a result of the interagency consultation process required by the Transportation Conformity Rule, and in the absence of a SIP and attendant emission budgets, and in the absence of EPA and PaDEP significance determinations, SPC's PM_{2.5} conformity analysis encompasses the following pollutants: Direct PM_{2.5} emissions (tailpipe, brake wear, tire wear); and NO_x precursor emissions.

The interagency consultation process also resulted in agreement on conformity analysis procedures for the Johnstown PM_{2.5} nonattainment area. The Indiana County portion of that nonattainment area is within the SPC planning area. The Cambria County portion is within the planning area of the Johnstown Area Transportation Study (JATS), the MPO for Cambria County. SPC and JATS agreed to perform the conformity analysis on their respective areas separately, but using the same analysis years. The combined results demonstrate conformity for the entire area.

Information needed for the conformity assessments is presented in Section V. Results of the analysis, and the conformity determinations for the nonattainment areas within the SPC planning area, are found in Section VII.

The results from the Cambria County portion of the Johnstown PM_{2.5} nonattainment area are found in Appendix A. In Tables 14 and 16 (Section VII), the results from the SPC analysis for the Indiana County portion of the Johnstown PM_{2.5} nonattainment area are combined with results from the JATS analysis for the Cambria County portion to demonstrate conformity for the entire Johnstown nonattainment area.