

Air Quality Conformity Determination

*2040 Long Range Transportation Plan and 2011-2014 Transportation Improvement Program
Southwestern Pennsylvania Commission – June 2011*

I. Introduction

The Southwestern Pennsylvania Commission (SPC) is the designated Metropolitan Planning Organization (MPO) for a 10-county region within Southwestern Pennsylvania. MPOs are responsible for making transportation conformity determinations for both their long range transportation plan and for their short range Transportation Improvement Program (TIP). This report documents the process used by SPC in the spring of 2011 for making the transportation-related conformity determination for the 2040 Transportation and Development Plan for Southwestern Pennsylvania (the 2040 Plan) and for the 2011-2014 Transportation Improvement Program for Southwestern Pennsylvania. The conformity determination is required by the federal Clean Air Act (CAA). SPC's conformity finding is based upon criteria and procedures described in the federal Environmental Protection Agency's (EPA) Transportation Conformity Rule (40 CFR Part 93). SPC's conformity finding was conducted consistent with procedures outlined in the EPA-approved Pennsylvania Conformity State Implementation Plan (SIP), which has an effective date of June 29, 2009, and satisfies all applicable conformity requirements in the Transportation Conformity Rule for designated nonattainment and maintenance areas under federal air quality standards for ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and carbon monoxide (CO).

On November 15, 1990, amendments to the federal Clean Air Act were enacted. The Clean Air Act (as amended) specifies how the United States Environmental Protection Agency designates nonattainment areas and how it defines the geographic boundaries of those areas. Nonattainment areas for three pollutants (ozone, carbon monoxide and fine particulate matter) are classified in accordance with the severity of the area's air pollution problem. Assignment of an area to one of the nonattainment classifications triggers various planning requirements which the area must comply with in order to meet the standard. The requirements vary by pollutant and increase in number and stringency with the severity of pollution.

The EPA promulgated regulations on November 23, 1993 (Transportation Conformity Rule) regarding criteria and procedures for demonstrating and assuring conformity of transportation plans, programs and projects with the Clean Air Act. The EPA has periodically revised and amended the Transportation Conformity Rule. All conformity findings must be based on criteria and procedures outlined in the Rule.

A regional conformity assessment and new conformity finding for the transportation Plan and Program is required before MPO adoption, acceptance, approval, or support of a regional Plan, TIP or amendments to those documents; or the approval, funding, or implementation of transportation projects. Conformity findings must be approved by the MPO before the regional Plan or TIP, or amendments to those documents are approved by the MPO or accepted by United States Department of Transportation (USDOT). The Transportation Conformity Rule cites a number of project types which may be excluded from the regional conformity analysis. The "exempt" project types are listed in Appendix B.

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The most recent conformity finding for the region's fiscally constrained TIP and Plan was approved by SPC on July 26, 2010 in conjunction with adoption of the 2011-2014 Transportation Improvement Program. The United States Department of Transportation concurred with SPC's conformity finding on September 29, 2010.

SPC has developed a new Long Range Plan (the 2040 Plan). Regionally significant projects are included in the Plan. Development of the new Plan resulted in adjustments to the 2011-2014 TIP. A new finding of conformity was needed prior to SPC's adoption of the 2040 Plan and before any federal action.

Travel simulation work and other relevant quantitative analysis for this demonstration of conformity began on April 20, 2011. The planning assumptions used in this conformity assessment are current as of that date. The major planning assumptions for this conformity assessment are briefly summarized below. As appropriate, the planning assumptions used in the analysis are further detailed in subsequent Sections of the report.

- In accord with EPA requirements, all emission factors were derived from EPA's MOBILE6.2 model.
- Data for vehicle registrations and vehicle miles traveled (VMT) distribution is from 2005 Pennsylvania Department of Transportation (PennDOT) information. This is unchanged from what was used in the July 2010 conformity determination.
- The current vehicle inspection/maintenance (I/M) programs for southwestern Pennsylvania are reflected in the analysis. Information about the I/M programs is presented in Section V.
- The Pennsylvania Clean Vehicles (PCV) Program, adopted in 1998, incorporated the California Low Emission Vehicle Program (CA LEV II) by reference although it allowed automakers to comply with the National Low Emission Vehicle (NLEV) program as an alternative to this Pennsylvania program until model year (MY) 2006. Beginning with MY 2008, "new" passenger cars and light-duty trucks with a gross vehicle weight rating (GVWR) of 8,500 pounds or less that are sold or leased and titled in Pennsylvania must be certified by the California Air Resources Board (CARB) or be certified for sale in all 50 states. For this program, a "new" vehicle is a qualified vehicle with an odometer reading less than 7,500 miles. PaDEP and PennDOT worked with the automobile manufacturers, dealers and other interested business partners and finalized procedures for complying with these new requirements. PaDEP is focusing on its outreach with the manufacturers and dealers on what they can offer for sale and how to certify that the vehicles are compliant. PennDOT's role is to ensure paperwork procedures for title and registrations include these certifications of compliance or that the vehicle owner qualifies for an exemption to the requirements. In all cases, PaDEP will use information obtained during PennDOT's title and registration process to oversee and audit, as needed, certain vehicle title transactions to determine compliance to the program. The impacts of this program are modeled for all analysis years beyond 2008.

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- SPC's Cycle 9 forecast of population, employment and households was developed in the spring of 2011. The Cycle 9 forecast replaces the Cycle 8 forecast which was adopted in 2007. The Cycle 9 forecast was used to generate trips for the travel demand model. The Cycle 9 forecast was adopted by SPC in June 2011, concurrent with adoption of the 2040 Plan. The base year for the Cycle 9 forecast is 2010. The horizon year is 2040. Information about SPC's modeling and forecasting process is presented in Section IV.
- SPC's travel demand model is configured for the TP+ modeling software package. The travel model covers SPC's entire 10-county planning region. All of the VMT and emissions projections were developed from SPC's travel model.
- SPC's 10-county travel model was validated with available data in the spring of 2011. That updated model was used for this conformity assessment.
- SPC's travel demand model is sensitive to road and bridge tolls. Toll rates are coded on highway network links to reflect tolls charged by the Pennsylvania Turnpike Commission. Once toll rates are coded, the rates remain constant for all analysis years (essentially assuming that tolls will increase at the same rate as inflation).
- SPC's travel demand model includes a mode split component. Current transit operating plans and service levels are incorporated into the future year networks and augmented with facilities and service identified in the TIP and Plan. SPC's mode split model is sensitive to transit fares. The current transit fare structure is built into the model. Fare rates are held constant for all analysis years (essentially assuming that fares will increase at the same rate as inflation). Transit person trips are summarized by trip purpose and analysis year in Table 11.
- In April 2010, Port Authority of Allegheny County began implementing service changes recommended in its recently completed Transit Development Plan. Implementation of Port Authority's Transit Development Plan will be phased over several years and will result in major changes to Port Authority's service levels and route structure. Also, in response to severe funding shortfalls in State assistance, the Port Authority of Allegheny County instituted a 15% reduction in transit service systemwide in March, 2011. The TP+ transit networks used for this conformity analysis reflect Port Authority's TDP implementation schedule and the March 2011 service cuts.
- EPA has designated the Johnstown area as nonattainment under both the PM_{2.5} annual standard and the PM_{2.5} daily standard. The Indiana County portion of the Johnstown PM_{2.5} nonattainment area is within the SPC region, but the Cambria County portion is within the planning area of the Johnstown Area Transportation Study (JATS), the MPO for Cambria County. Interagency consultation and coordination between SPC and JATS ensured that conformity assessments for that designated PM_{2.5} nonattainment area satisfy federal requirements.

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- EPA had designated an 8-hour ozone nonattainment area consisting of Indiana-and Clearfield counties. Indiana County is within the SPC region. Clearfield County is within the North Central Pennsylvania RPO (NCRPO) planning area. In previous analyses, interagency consultation and coordination between SPC and NCRPO ensured that conformity assessments for that designated 8-hour ozone nonattainment area satisfied federal requirements. On March 19, 2009, EPA published in the Federal Register its approval of an Attainment SIP and Maintenance Plan for that 8-hour ozone area. That EPA action also approved the separate vehicle emissions budgets for the ozone precursors volatile organic compounds (VOC) and nitrogen oxides (NO_x) that are contained in the SIP revision for each county. Conformity under the 8-hour ozone standard for Indiana County can now be demonstrated by SPC if estimated future emissions are less than the approved Indiana County budgets. Interagency coordination between NCRPO and SPC is no longer required for conformity purposes. The approved VOC and NO_x budgets are used for the 8-hour ozone conformity demonstration in Section VII for Indiana County.

- Vehicle emission budgets are available to SPC for use in the conformity assessment for the Pittsburgh-Beaver Valley 8-hour ozone nonattainment area. That area consists of seven counties within SPC's planning area (Allegheny, Armstrong, Beaver, Butler, Fayette, Washington, and Westmoreland). On April 22, 2004, the Pennsylvania Department of Environmental Protection (PaDEP) submitted SIP revisions to EPA that contained emission budgets for VOC and NO_x developed with the MOBILE6.2 emissions model. EPA approved the budgets for use in conformity assessments on December 10, 2004. These emissions budgets were approved for demonstrating conformity under the 1-hour ozone standard. The Transportation Conformity Rule requires that they are to be used for conformity assessments under the 8-hour ozone standard until new emissions budgets for the 8-hour ozone standard are approved by EPA for the Pittsburgh-Beaver Valley nonattainment area. The approved 1-hour ozone emissions budgets for VOC and NO_x are used for the conformity demonstration in Section VII for the Pittsburgh-Beaver Valley 8-hour ozone nonattainment area.

- In 2007, the PaDEP submitted an Attainment SIP and Maintenance Plan to EPA for the Pittsburgh-Beaver Valley 8-hour ozone nonattainment area. That SIP revision includes VOC and NO_x motor vehicle emissions budgets for the nonattainment area. EPA has not yet approved these revised budgets for use in conformity assessments. The revised budgets are shown for information in Section VII, along with the budgets approved for the 1-hour ozone standard.

- Vehicle emission budgets are now available to SPC for use in the conformity assessment for the Greene County 8-hour ozone nonattainment area. That area consists of Greene County in its entirety. On January 25, 2007, PaDEP submitted SIP revisions to EPA that contained emission budgets for VOC and NO_x developed with the MOBILE6.2 emissions model. An amended SIP was submitted to EPA on May 23, 2008. On March 19, 2009 EPA published in the Federal Register its approval of the SIP revision and the

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motor vehicle budgets contained in the SIP. The approved VOC and NO_x budgets are used for the conformity demonstration in Section VII for the Greene County 8-hour ozone nonattainment area.

- Vehicle emission budgets for PM_{2.5} and its precursors are not available for use in conformity assessments. Conformity for the region's PM_{2.5} nonattainment areas under the annual PM_{2.5} standard is based on comparisons of future year emissions to 2002 values. Conformity for the region's PM_{2.5} nonattainment areas under the daily PM_{2.5} standard is based on comparisons of future year emissions to 2008 values.
- One major project was completed since the last conformity cycle and is now included in the existing (2011) transportation network for this conformity assessment. That completed project is in Westmoreland County. The project is: Widen Route 22 to 4 lanes between Westinghouse and the Indiana County line.

Section II of this report presents an overview of pertinent provisions of the Clean Air Act and the Transportation Conformity Rule. It also describes the areas of the region designated as nonattainment under the 8-hour ozone standard, the PM_{2.5} air quality standards, the carbon monoxide (CO) standard, and the PM₁₀ standard. The 2040 Plan and the 2011-2014 TIP are described in Section III. Section IV summarizes SPC's transportation modeling process. The methods used to develop emissions estimates for this conformity determination are discussed in Section V. Section VI presents the travel simulations developed for this conformity determination. Section VII highlights significant conformity findings and conclusions. The conformity determinations under the 8-hour ozone standard, the PM_{2.5} and PM₁₀ air quality standards, and the carbon monoxide standard are also made in Section VII. The public review process is outlined in Section VIII. A series of appendices, described in the text, appear at the end of this report.

The conformity findings and conclusions in this report are based on VMT, average speed, and emissions for several analysis years: 2002 – the “inventory” year for use in the conformity tests for the annual PM_{2.5} standard; 2008 – the base year for use in the conformity tests for the daily PM_{2.5} standard; 2011 – the current year; 2014 – the TIP year; 2015 – for consistency with the analysis years being used by Cambria County for conformity assessments for the Cambria County portion of the Johnstown PM_{2.5} nonattainment area; 2018 – a “budget” year for the Greene County 8-hour ozone area and the Indiana County portion of the Clearfield – Indiana 8-hour ozone area; 2025 – an interim year to satisfy the Transportation Conformity Rule requirement that analysis years be not more than ten years apart; 2035 – an interim year to satisfy the Transportation Conformity Rule requirement that analysis years be not more than ten years apart; and 2040 – the Long Range Plan horizon year.

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