Volume II: PLAN 2040 Conformity Determination Report (CDR)

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Regional Air Quality Conformity

Introduction

The PLAN 2040 Regional Transportation Plan (RTP) and associated FY 2012-2017 Transportation Improvement Program (TIP), along with the Gainesville-Hall County MPO (GHMPO) 2040 RTP, comprise the latest major update to the regional transportation plans and programs within the Atlanta ozone and particulate matter nonattainment areas. PLAN 2040 and the GHMPO 2040 RTP together demonstrate conformity to the eight-hour ozone standard and the annual PM2.5 standard. The conformity analysis for both the eight-hour ozone and PM2.5 standard is documented in full in this Volume II: Conformity Determination Report.

Federal Clean Air Act Legislation and Transportation Conformity Rule

The Clean Air Act (www.epa.gov/air/caa) requires the United States Environmental Protection Agency (USEPA) to set limits on how much of a particular pollutant can be in the air anywhere in the United States. National Ambient Air Quality Standards (NAAQS) are the pollutant limits set by the USEPA; they define the allowable concentration of pollution in the air for six different pollutants – Carbon Monoxide, Lead, Nitrogen Dioxide, Particulate Matter, Ozone, and Sulfur Dioxide.

The Clean Air Act specifies how areas within the country are designated as either "attainment" or "nonattainment" of an air quality standard, and provides USEPA the authority to define the boundaries of nonattainment areas. For areas designated as nonattainment for one or more NAAQS, the Clean Air Act defines a specific timetable to attain the standard and requires that nonattainment areas demonstrate reasonable and steady progress in reducing air pollution emissions until such time that an area can demonstrate attainment. Each state must develop and submit a State Implementation Plan (SIP) that addresses each pollutant for which it fails to meet the NAAQS. Individual state air quality agencies are responsible for defining the overall regional plan to reduce air pollution emissions to levels that will enable attainment and maintenance of the NAAQS. This strategy is articulated through the SIP. In Georgia, the agency responsible for SIP development is the Georgia Environmental Protection Division (GA EPD).

The delineation and implementation of strategies to control emissions from on-road[1] mobile sources is a significant element of the state plan to improve air quality, thereby creating a direct link between transportation and air quality planning activities within a nonattainment area. The process of ensuring that a region's transportation planning activities contribute to attainment of the NAAQS, or "conform" to the purposes of the SIP, is referred to as transportation conformity. In order to receive federal transportation funds within the nonattainment area, the area must demonstrate through a federally mandated transportation conformity process that the transportation investments, strategies and programs, taken as a whole, contribute to the air quality goals defined in the state air quality plan.

[1] On-road, or highway, sources include vehicles used on roads to transport passengers or freight.

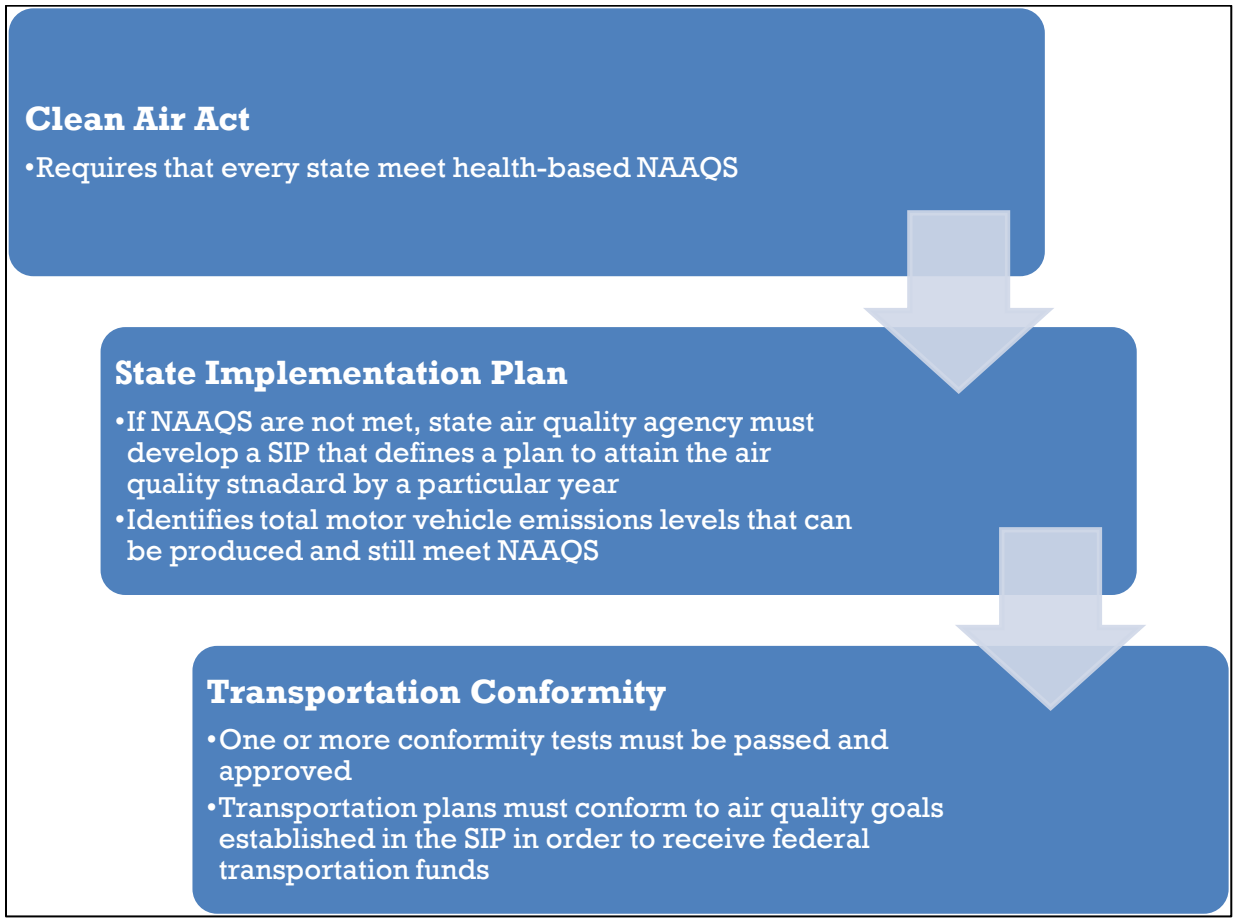
To ensure that conformity requirements are met, Section 176(c) of the Clean Air Act authorizes the USEPA Administrator to "promulgate criteria and procedures for demonstrating and assuring conformity in the case of transportation plans, programs, and projects." This is accomplished through the Transportation Conformity Rule (www.fhwa.dot.gov/environment/air_quality/conformity), developed by the USEPA to outline all federal requirements associated with transportation conformity. The Transportation Conformity Rule in conjunction with the Metropolitan Planning Regulations direct transportation plan and program development as well as the conformity process. The final conformity rule (last updated in March 2010) incorporates revisions resulting from the passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU); the latest transportation funding legislation which specifies the process for development of metropolitan transportation plans and programs for urbanized areas.

The Atlanta Regional Commission (ARC) is the federally designated Metropolitan Planning Organization (MPO) for all or portions of 18 counties within the 19-county Atlanta Urbanized Area.[2] ARC is directly responsible for developing a long-range RTP and short-range TIP that conform to the air quality goals established in the SIP, according to the guidelines outlined in the Metropolitan Planning Regulations and Transportation Conformity Rule. A small portion of the Atlanta Urbanized Area extends into Hall County. In February 2003, the Gainesville-Hall County MPO was designated for the Gainesville Urbanized Area; the planning boundary for the GHMPO covers Hall County in its entirety. Hall County is included both in Atlanta's ozone and PM2.5 nonattainment areas. The ARC performs the planning and technical work required by the Transportation Conformity Rule, including, by agreement with the GHMPO, the emissions modeling for Hall County, and documents the analysis in a combined Conformity Determination Report (CDR). The United States Department of Transportation (USDOT) approves or disapproves the conformity analysis in consultation with the USEPA. A positive conformity determination is required in order for the RTP and TIP to advance.

TRANSPORTATION CONFORMITY IS NOT OPTIONAL. If transportation plans and programs do not conform to the air quality goals established in the SIP, the transportation planning process will be delayed and project implementation may be jeopardized through the imposition of transportation-funding restrictions that direct how federal transportation funds can be applied in an area that does not have a "conforming" plan in place. This is referred to as a conformity "lapse," a situation in which federal transportation funds and approvals are restricted to projects that meet certain very specific criteria.

[2] The ARC metropolitan planning area comprises City of Atlanta and the counties of Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Paulding and Rockdale, as well as portions of the counties of Barrow, Bartow, Newton, Spalding and Walton.

Figure 1: Implementing the Clean Air Act at the Regional Level



Current Attainment Status for NAAQS

Eight-Hour Ozone Standard

Effective June 15, 2004, 20 counties in the Atlanta area were designated as nonattainment under the eight-hour ozone standard with an initial classification of Marginal. Ozone is not emitted directly by any source; it is formed when Nitrogen Oxides (NO_x) and Volatile Organic Compounds (VOC) combine in the atmosphere in the presence of sunlight. Air pollution control strategies are aimed at controlling NO_x and VOC, since they are precursors to ozone formation. The eight-hour ozone nonattainment area encompasses the previous 13-county one-hour ozone maintenance area plus seven additional "ring" counties: Barrow, Bartow, Carroll, Hall, Newton, Spalding, and Walton (see Figure 2 below).

Since then, the region was reclassified as a moderate ozone nonattainment area in April 2008 with an attainment date of June 15, 2010, which is not within the time span of the transportation plan. MVEBs have been established for the 20-county region as part of the Atlanta Early State Implementation Plan for the year 2008. The Georgia EPD submitted a Reasonable Further Progress Plan in 2009, extending the attainment deadline by one year, due to clean data observations. In the fall of 2009, GA EPD submitted an Attainment Plan for the 1997 eight-hour ozone standard to EPA. Currently, the region is waiting on EPA to take action on the plan before developing a maintenance plan.

Concurrently, in 2008, the EPA released a new eight-hour ozone standard of 0.075 ppm. The Georgia EPD has recommended a continuation of the same 20-county nonattainment area with the new standard. This standard has been stayed, however, for EPA reevaluation. Promulgation is currently expected sometime in the summer of 2011.

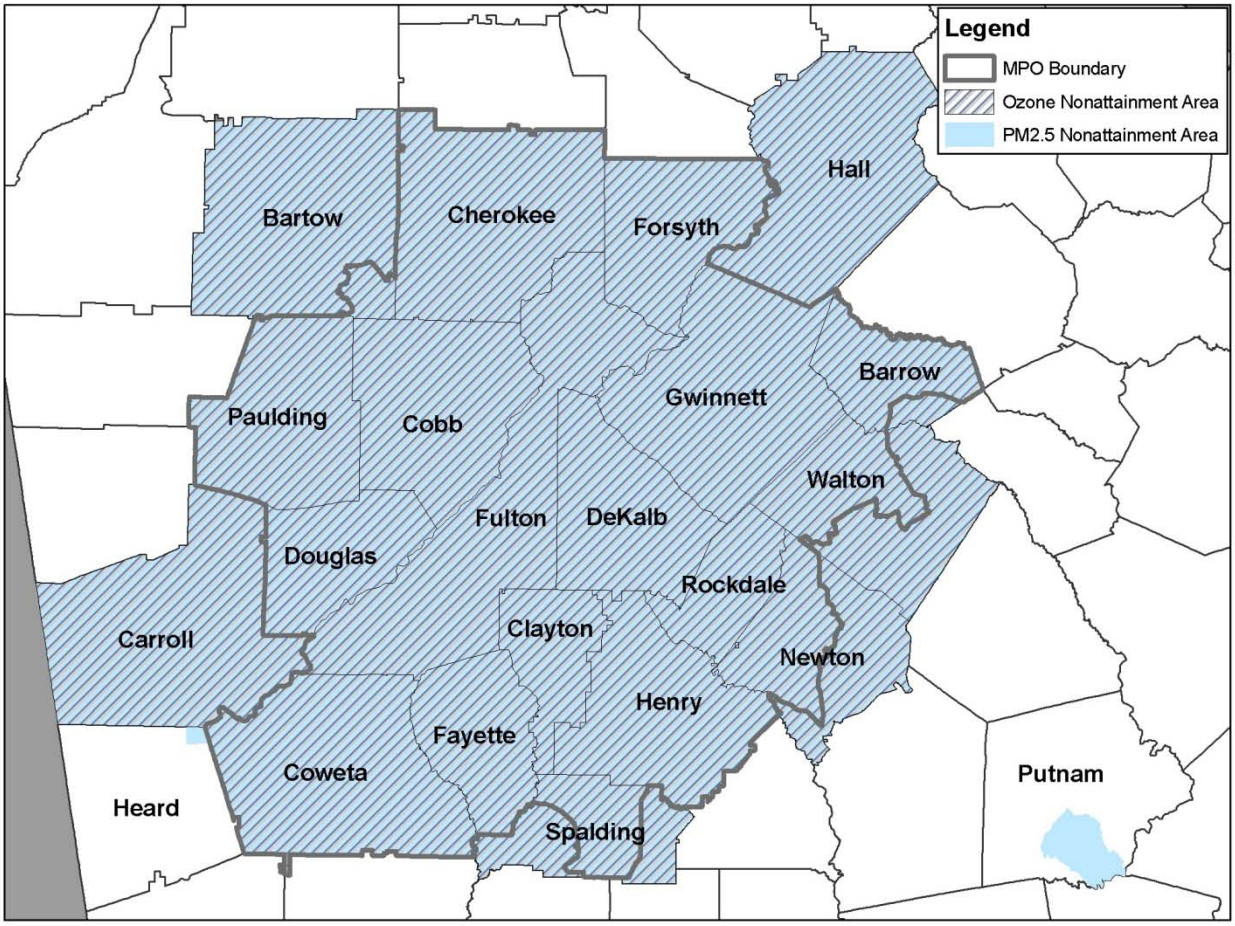
Annual PM2.5 Standard

On December 17, 2004, the USEPA also designated 20 whole counties and two partial counties (Heard and Putnam) near the metropolitan Atlanta area as nonattainment under the annual fine particulate matter (PM2.5) standard. Particulate matter, or PM, is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. The primary source of concern in air quality emissions analysis is direct motor vehicle PM emissions, both from the combustion process and from tire and brake wear; and a precursor to PM formation in the atmosphere, NO_x. Particles less than 2.5 micrometers in diameter (PM2.5) are referred to as "fine" particles and are believed to pose the greatest health risks. The PM2.5 nonattainment area encompasses the previous 13-county one-hour ozone maintenance area plus seven additional "ring" counties: Carroll, Bartow, Hall, Barrow, Walton, Newton, and Spalding counties; and parts of Heard and Putnam counties (refer to Figure 2).

The PM2.5 pollutant has two standards associated with it – an annual standard of 15 micrograms per cubic meter (ug/m^3) measured over the course of a year, and a daily standard of $35ug/m^3$ measured over 24 hours.

Under the PM2.5 standard, there is no classification system to determine stringency of emission control measures or attainment year. PM2.5 nonattainment areas must attain as soon as possible, but no later than April 2010, with an additional five years provided if the state can demonstrate that it is warranted. The PM2.5 attainment SIP was submitted to EPA by EPD on July 6, 2010. The EPD is still awaiting approval of the MVEBs outlined in the SIP for direct PM2.5 emissions as well as NO_x precursor emissions. Until that time an interim emissions methodology is used to determine conformity of the RTP and TIP. Currently, the Atlanta PM2.5 nonattainment area is showing clean data for the annual PM standard. It is anticipated that the region will prepare a maintenance plan for the PM2.5 standard in the near future.

Figure 2: Atlanta Nonattainment Area Boundaries



The purpose of Volume II: Conformity Determination Report, is to document compliance with the relevant elements of the Clean Air Act (Subsections 176(c) (1) (2) and (3)), the Transportation Conformity Rule (40 CFR Parts 51 and 93) and Metropolitan Planning Regulations (23 CFR Part 450) by demonstrating that the PLAN 2040 RTP, GHMPO 2040LRTP and the FY 2012-2017 TIP conform to the purpose of the SIP for both eight-hour ozone and PM2.5. Although a portion of the eight-hour ozone and PM2.5 nonattainment areas extend outside of the ARC 18-county MPO planning boundary, the ARC has conducted the conformity determination for the entire eight-hour ozone and PM2.5 nonattainment areas.

Overview of PLAN 2040 RTP / GHMPO 2040 RTP and FY 2012-2017 TIP

The Atlanta region's current RTP is called *Envision6*. The *Envision6* RTP and FY 2008-2013 TIP were approved in September 2007. Since September 2007, a total of ten amendments to the FY 2008-2013 TIP were conducted, with three out of the ten amendments impacting transportation conformity. TIP amendments were the result of project funding increases, programming of new projects with air quality implications, rebalancing of funds, and the inclusion of the American Recovery and Reinvestment Act (ARRA) funding into the TIP program. A schedule of the conformity determinations associated with Envision6 is provided in Table 1.

Table 1: ARC/GHMPO Recent Conformity Determinations

Date	RTP/TIP	Pollutant
10/10/2007	Envision6 (FY 2008-2013 TIP)	Ozone under the 8 hour standard; PM 2.5
6/10/2009	Envision6 (FY 2008-2013 TIP) - Amendment 4	Ozone under the 8 hour standard; PM 2.5
12/17/2009	Envision6 (FY 2008-2013 TIP) - Amendment 7	Ozone under the 8 hour standard; PM 2.5
9/9/2010	Envision6 (FY 2008-2013 TIP) - Amendment 10	Ozone under the 8 hour standard; PM 2.5

In nonattainment areas, the transportation plan and program must be updated at a minimum every four years. The PLAN 2040 RTP serves as the required four-year update to the Envision6 RTP. PLAN 2040, incorporates a planning process that directly integrates land use and transportation planning initiatives to better accommodate the ARC population forecast of over 8 million people in the 20-county region by the year 2040. Reference Volume I for detail related to PLAN 2040 RTP development.

Statement of Conformity

An updated transportation conformity analysis is required under the eight-hour ozone standard and the PM2.5 standard for the PLAN 2040 RTP and TIP as a result of numerous changes to regionally significant projects.

For the eight-hour ozone conformity analysis the Motor Vehicle Emission Budget (MVEB) test is required to demonstrate conformity. The latest approved MVEB applicable to conformity under the eight-hour ozone standard were established by Georgia EPD as part of the Atlanta Early Progress State Implementation Plan for year 2006.[3]

For the PM2.5 conformity analysis, a No Greater Than Base Year emissions test is used to demonstrate conformity.[4] This test, chosen through interagency consultation, is used as an interim emissions testing requirement until MVEBs are found adequate as part of PM2.5 State Implementation Plan development. Georgia EPD submitted the PM2.5 SIP, and associated MVEBs, to EPA on July 6, 2010. EPA has not yet found the submitted MVEBs adequate; therefore the region continues to use the No Greater Than Base Year test, with 2002 as the required base year for conformity purposes.

The conclusion of the conformity analyses documented below indicates that the ARC & GHPMO TIP's and RTP's support the broad intentions of the Clean Air Act for achieving and maintaining the National Ambient Air Quality Standards for ozone and particulate matter.

Statement of Conformity – Eight-Hour Ozone Standard

The transportation conformity analysis for the 20-county eight-hour ozone nonattainment area was performed with the MVEB Test using the 2006 Atlanta Early Progress State Implementation Plan budgets of **306.75 tons per day** for NO_x and **172.27 tons per day** for VOC. These budgets were found adequate for transportation conformity purposes by USEPA effective April 24, 2007.

The results of the emissions analysis for PLAN 2040 and the GHMPO 2040 RTP demonstrate adherence to the established 20-county MVEB. The conformity analysis was performed for the years 2016, 2020, 2030 and 2040. The analysis years meet the requirements for specific horizon years that the transportation plan must reflect as specified in 93.106(a)(1) of the Transportation Conformity Rule and specific analysis years that the regional emissions analysis must reflect per Section 93.118(b) and 93.118(d)(2). Since the eight-hour ozone standard attainment year falls outside of the PLAN 2040 RTP horizon, a near-term year of 2016 was selected as the initial analysis year. This year is within five years of the conformity determination year of 2011, as suggested by the August 13, 2010 proposed Transportation Conformity Rule Restructuring Amendment revision to 93.118(b).

The FY 2012-2017 TIP is a direct subset of PLAN 2040/GHMPO 2040 RTP. The conformity determination for the FY 20012-2017 TIP includes the same set of projects; defined by their design concept, design scope and analysis years, as PLAN 2040 /GHMPO 2040 RTP. The RTP and TIP are financially constrained consistent per 23 CFR Part 450 Subpart C (i.e., cost feasible). The funding source

[3] Federal Register notice of adequacy published April 9, 2007 (72 FR 17550), with an effective date of April 24, 2007. Correction published August 24, 2007 (72 FR 48634).

[4] 40 CFR Part 93.119(e)(2), 71 FR 12468, March 10, 2006

for construction and operation, if applicable, of all projects is identified and presented in Volume I, Appendix A. The FY 2012-2017 TIP also meets all other planning requirements including:

- Each program year of the FY 2012-2017 TIP is consistent with the federal funding that is reasonably expected for that year;
- Required state and local matching funds, and funds for projects funded entirely by state and/or local money, are consistent with the revenue sources expected over the same period;
- The FY 2012-2017 TIP is consistent with the conforming long-range plan such that the regional emissions analysis performed for the long-range plan directly applies to the TIP;
- The FY 2012-2017 TIP contains all projects which must be started in the TIP time frame to implement the highway and transit system envisioned by the long-range plan in each of its horizon years;
- All FY 2012-2017 TIP projects that are regionally significant are part of the specific highway or transit system envisioned in the long-range plan's horizon years;
- The design concept and scope of each regionally significant project identified in the FY 2012-2017 TIP are consistent with PLAN 2040/GHMPO 2040 RTP.

Upon completion of the technical conformity analysis, ARC staff have determined that PLAN 2040/GHMPO 2040 RTP and the FY 2012-2017 TIP together demonstrate compliance with the Clean Air Act as amended in 1990 in accordance with all conformity requirements as detailed in 40 CFR Parts 51 and 93 (the Transportation Conformity Rule) and 23 CFR Part 450 (the Metropolitan Planning Regulations as established in SAFETEA-LU).

Statement of Conformity – PM2.5 Standard

The regional emissions analysis for the annual PM2.5 standard was performed against a 2002 base year emissions inventory of **8.22 average annual tons per day** direct PM2.5 and **432.85 average annual tons per day** of NO_x. The 2002 base year emissions inventory was established as part of this conformity process, as provided for in the preamble of the March 10, 2006, amendment to the Transportation Conformity Rule. The PM conformity analysis was performed for the years 2016, 2020, 2030, and 2040. The analysis years meet the requirements for specific horizon years that the transportation plan must reflect as specified in 93.106(a)(1) of the Transportation Conformity Rule and specific analysis years that the regional emissions analysis must reflect per Section 93.118(b) and 93.118(d)(2). The first analysis year is within five years of the conformity determination, as suggested by the August 13, 2010 proposed Transportation Conformity Rule Restructuring Amendment revision to 93.118(b).

The results of the emissions analysis for PLAN2040/GHMPO 2040 RTP for all analysis years for the Atlanta PM2.5 nonattainment area demonstrate adherence in the level of emissions necessary to meet the No Greater Than Base Year Test.

The FY 2012-2017 TIP is a direct subset of PLAN2040/GHMPO 2040 RTP. The conformity determination for the FY 2012-2017 TIP includes the same set of projects, defined by their design concept, design scope and analysis years, as PLAN2040/GHMPO 2040 RTP. The RTP and TIP are financially constrained per 23 CFR Part 450 Subpart C (i.e., cost feasible). The funding source for construction and operation, if applicable, of all projects is identified and presented in Volume I, Appendix A. The FY 2012-2017 TIP also meets all other planning requirements including:

- Each program year of the FY 2012-2017 TIP is consistent with the federal funding that is reasonably expected for that year;
- Required state and local matching funds, and funds for projects funded entirely by state and/or local money, are consistent with the revenue sources expected over the same period;
- The FY 2012-2017 TIP is consistent with the conforming long-range plan such that the regional emissions analysis performed for the long-range plan directly applies to the TIP;
- The FY 2012-2017 TIP contains all projects which must be started in the TIP time frame to implement the highway and transit system envisioned by the long-range plan in each of its horizon years;
- All FY 2012-2017 TIP projects that are regionally significant are part of the specific highway or transit system envisioned in the long-range plan's horizon years;
- The design concept and scope of each regionally significant project identified in the FY 2012-2017 TIP are consistent with PLAN2040/GHMPO 2040 RTP.

Upon completion of the technical conformity analysis, ARC staff have determined that PLAN2040/GHMPO 2040 RTP and the FY 2012-2017 TIP together demonstrate compliance with the Clean Air Act as amended in 1990 in accordance with all conformity requirements as detailed in 40 CFR Parts 51 and 93 (the Transportation Conformity Rule) and 23 CFR Part 450 (the Metropolitan Planning Regulations as established in SAFETEA-LU).

Interagency Consultation

Section 93.105 of the Transportation Conformity Rule requires procedures to be established for interagency consultation related to the development of the transportation plan and program and associated conformity determination. The interagency consultation group is comprised of ARC, the Georgia Department of Transportation (GDOT), the Metropolitan Atlanta Rapid Transit Authority (MARTA), the Georgia Environmental Protection Division (GA EPD), the Federal Highway Administration (FHWA), the Federal Transit Authority (FTA) and the United States Environmental Protection Agency (USEPA) plus representation from local transit providers (Cobb, Clayton, Douglas and Gwinnett Counties) and the Georgia Regional Transportation Agency (GRTA)[5]. The interagency group also incorporates representation from the Gainesville-Hall County MPO, as it is located within the eight-hour ozone and PM2.5 nonattainment areas along with the ARC. The interagency group meets on a routine basis to address transportation and air quality issues.

Introduction

ARC and GHMPO coordinated activities for this conformity analysis with the interagency consultation group and provided regular briefings to ARC's and GHMPO's transportation technical and policy committees. GHMPO provided ARC staff with project details for travel demand model network coding in April 2011. Draft 2040 RTP documents were provided to GHMPO planning partners (through Transportation Coordinating Committee), to allow for time to comment prior to the scheduled July 27, 2011 final adoption of the plan.

[5] Reference Exhibit 5 for summary of interagency consultation group meetings related to development of the PLAN 2040 RTP and FY 2012-2017 TIP.

The draft PLAN 2040 documents are made available to ARC planning partners (through the TCC and TAQC committees) in May 2011, to allow for time to comment prior to formal adoption or publication, in accordance with 93.105(b)(2)(iii) of the Transportation Conformity Rule. Final PLAN 2040 documents are anticipated to be provided on July 27, 2011, upon approval of PLAN 2040, fulfilling the requirement of 40 CFR 93.105(c)(7).

ARC and GHMPO respond to any concern expressed by the State, a local jurisdiction, or the general public during the development of the RTP and TIP. Such concerns and ARC's and GHMPO's responses are documented in the Public Comment report included in the final PLAN 2040 document set.

The following sections summarize the applicable requirements of Section 93.105 of the Transportation Conformity Rule that identifies specific interagency consultation procedures that must be addressed, and how the requirements have been met for the PLAN 2040 RTP/GHMPO 2040 RTP and the FY 2012-2017 TIP.

Emissions Analysis – Model and Assumptions

Section 93.105(c)(1)(i) of the Transportation Conformity Rule requires that the interagency partners be provided the opportunity for evaluating and choosing a model and associated methods and assumptions to be used in the regional emissions analysis needed to demonstrate conformity.

A detailed listing of the procedures and planning assumptions used for the conformity analysis of the 2040 RTP and FY 2012-2017 TIP is outlined in the "Interagency Review of Planning Assumptions Used in Regional Emissions Analysis," Exhibit 1A, 1B & 1C. These documents were submitted to the interagency consultation group in accordance with Section 93.105(c)(1)(i) of the Transportation Conformity Rule. The documents include assumptions for both the eight-hour ozone and PM2.5 emissions analyses. Interagency approval of these assumptions was granted on January 25, 2011 for Exhibits 1A and 1B, and April 1, 2011 for Exhibit 1C.

The ARC has consulted with the interagency group as to the required version of USEPA's mobile source emission factor model for the PLAN 2040/GHMPO 2040 RTP, MOBILE6.2. This is documented along with the other planning assumptions in Exhibits 1A & 1B. The ARC worked in consultation with the Georgia EPD to develop necessary MOBILE6.2 control files that specify all federally mandated and regional motor vehicle emission control programs.

Regionally Significant Projects

A regionally significant project is a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel. Projects that are regionally significant, regardless of funding source, must be included in the regional emissions analysis in accordance with Section 93.122(a)(1) of the Transportation Conformity Rule.

Section 93.105(c)(1)(ii) of the Rule requires an interagency consultation process for determining which minor arterials and other transportation projects (i.e., those projects that are not classified as principal arterials or above) should be considered regionally significant "for the purposes of regional emissions

analysis." As agreed to by the interagency partners, ARC's policy is that all regional facilities that are functionally classified as minor arterial or above must be included in the travel demand model and regional emissions analysis. The Conformity Project Listing contains descriptions of any proposed regionally significant additions or modifications to the transportation (highway and transit) system that are expected to be operational in each horizon year within the eight-hour ozone and PM2.5 nonattainment areas (and, by default, the 18-county ARC MPO planning boundary and Gainesville - Hall County).

For those regionally significant additions or modifications that fall within the existing 20-county ARC travel modeling domain, projects are identified and described in the following level of detail:

- ARC's highway network identifies intersections with existing regionally significant facilities;
- The effect of such additions or modifications on route options between transportation analysis zones is defined;
- Highway segments identify the design concept and scope sufficiently to model travel time under various traffic volumes, consistent with ARC's modeling method;
- Transit facilities, equipment and services proposed for the future are defined in terms and design concept and scope and operating policies sufficient to model transit ridership; and
- Sufficient description of the transportation network shows a reasonable relationship between forecasted land use and the future transportation system.

Identification of Exempt Projects

Section 93.105(c)(1)(iii) of the Transportation Conformity Rule provides for an evaluation of whether or not projects otherwise exempt per Sections 93.126 and 93.127, should be treated as non-exempt in cases where projects may have adverse impact on emissions. Exempt projects are those considered to be neutral with respect to their impact on air quality or air-quality beneficial, e.g., hazard elimination, shoulder improvement, or increasing sight distance.

A complete draft listing of the proposed projects in the RTP and TIP, including their exempt status, was provided to interagency members on May 24th, 2011, allowing time for the interagency consultation group to review and provide comment as needed prior to Board adoption and USDOT approval of the final RTP and TIP. All procedures used in the analysis and identification of these projects were done in accordance with Section 93.105, and provided for evaluation of any (non) exempt project which may have been perceived to have an adverse impact on mobile source emissions.

Transportation Control Measures (TCMs)

Transportation Control Measures are physical improvements and travel demand management strategies that reduce vehicle-related emissions. A SIP TCM is any TCM that is specifically identified and committed to in an approved SIP for the purpose of reducing emissions of air pollutants from transportation sources by improving traffic flow, reducing congestion or reducing vehicle use. Section 93.105(c)(1)(iv) provides for interagency consultation regarding timely implementation of TCMs included in the SIP. The Transportation Conformity Rule specifically requires the following:

- Assurance that the transportation program does not contradict any TCM commitment made in the SIP;
- Assurance that the transportation program provides for the expeditious implementation of TCMs; and

- Assurance that the status of each TCM is included with each TIP submission until TCMs are fully implemented.

TCM strategies reflected in the eight-hour ozone rate of progress or annual $PM_{2.5}$ SIP fall in one of the five categories listed below. Currently, all TCMs have been implemented in the region except for the conversion of a portion of the I-85 HOV system to a High Occupancy Toll (HOT) system.

Transit - This TCM is intended to promote alternatives to Single-Occupancy Vehicle (SOV) travel by expanding public transit. Activities encompass expansion of transit service, operation improvements, express bus services and signal preemption. There is also a program to convert existing diesel fuel buses to clean fuel.

Traffic Flow Improvements - This TCM comprises improved signalization, intersection improvements, incident management, High Occupancy Vehicle (HOV) lanes and motorist information systems designed to improve traffic flow in the region.

Shared Ride/Demand Management - This TCM is intended to promote alternatives to SOV travel by encouraging carpooling and vanpooling, by providing commute options to employers and by educating employers and commuters, in general, of the benefits of multi-occupancy travel. The TCM also includes a region-wide park-and-ride rideshare program designed to facilitate transfers to other modes as well as to serve bus or rail transit.

Brownfield Redevelopment - This SIP TCM strategy is comprised solely of the redevelopment of a138-acre brownfield site previously owned by Atlantic Steel near Atlanta's central business district into a mixed-use residential and business activity center. The site supports 15 million square feet of retail, residential and office space, as well as 11 acres of public parks.

Alternative Fuel and Other - Clean fuel vehicles are included under this strategy.

Refer to Exhibits 1A and 1B for a listing of TCMs for the Atlanta region that are included in the both the PM2.5 and Ozone State Implementation Plans for Georgia.

Evaluation of Conformity Triggers

Triggers for an RTP and TIP conformity determination are established in Section 93.104(e) of the Transportation Conformity Rule. "Triggers" are actions that establish a new motor vehicle emissions budget for conformity; or that add, delete, or change TCMs; leading to the development of a new transportation plan and TIP conformity determination. A conformity determination is required within two years of the effective date of the following triggers:

- EPA's finding that a motor vehicle emissions budget(s) in a submitted SIP is adequate;
- EPA's approval of a SIP, if the budget(s) from that SIP have not yet been used in a conformity determination;
- EPA's promulgation of an implementation plan which establishes or revises a budget; or
- EPA's approval of a SIP, or promulgation of a federal implementation plan, that adds, deletes, or changes a TCM.

The interagency consultation group discussed conformity triggers on an as-needed basis, as they related to PLAN 2040/GHMPO 2040 RTP and the FY 2012-2017 TIP.

MPO Notification of Non-Federal Regionally Significant Projects

Per Section 93.105(c) (4), the interagency consultation process must establish a mechanism to ensure that recipients of FHWA/FTA funds notify the MPO of any plans for construction of regionally significant non-Federal projects. Regionally significant non-Federal projects are those regionally significant projects that do not require Federal funding or approval. In addition, the following requirements must be met:

- Notification of a planned project to the MPO is required even if the project sponsor has not made a final decision on project construction;
- Inclusion in the MPO transportation model and the regional emissions analysis is required of all known regionally significant non-Federal projects; and
- MPOs must respond in writing to any comments regarding regionally significant non-Federal projects not adequately being accounted for in the regional emissions analysis.

Public Involvement

The official public comment period for PLAN 2040 and the associated FY 2012-2017 TIP started May 20, 2011 and ended June 20, 2011. The public comment period for the GHMPO 2040 RTP and associated FY 2012-2017 TIP started June 14, 2011 and ended July 13, 2011. Following completion of the public comment period, ARC will prepare a Public Comment Response Report, which summarizes all stakeholder and public outreach and comments throughout the development of PLAN 2040. This document, PLAN 2040 Draft Conformity Determination Report, was available for comment within the ARC comment period identified above.

ARC received a number of comments regarding the Conformity Determination Report and related air quality planning issues in the Regional Transportation Plan during the public comment period. Specific questions and answers will be found in the Public Comment Response Report.

ARC's public involvement process for PLAN 2040 comprised the following specific outreach strategies:

- *Leadership Interviews*: In 2009, at the outset of the outreach process for PLAN 2040, 43 interviews were undertaken with a diverse group of leaders from around the region, including local and state elected officials, as well as those representing business, economic, education, environmental and social fields of endeavor.
- *Local Officials*: Throughout the process local officials and their staffs were actively involved in giving input into the process. Over 160 separate meetings were held from 2009-2011 with local officials. This was in addition to joint Land Use Coordinating Committee/Transportation Coordinating Committee that occurred on five different occasions to solidify the plan's connections with land use.
- *Stakeholder Planning Meetings:* The bulk of the outreach for PLAN 2040 occurred in small targeted discussion groups from 2009 through 2011. Out of over 300 total meetings held on PLAN 2040, most were in small group settings, over 105 meetings in all. Three larger stakeholder briefings (50-150 each) brought together these stakeholders at strategic times during the process. Several of these groups met on a continuous basis throughout the process as advisors such as the Social Equity Advisory Committee, the Aging Services Advisory Committee, the Bicycle and

Pedestrian Task Force, the Maintenance and Operations Committee as well as the Interagency Consultation committee on air quality.

- *Targeted Speaking Engagements:* Presentations were made throughout the region, including at each county commission or planning committee and at each of the transit advisory boards and other targeted audiences. In most cases, the speakers provided a PLAN 2040 presentation, including a discussion of conformity.
- *PLAN 2040 Quick Guides:* Two-page online and paper copy guides were prepared for PLAN 2040 to provide the public with a user friendly concise explanation of the most important elements of concepts being studied and included in the plan. These sheets were also compiled into a handout as well as accessed individually on the ARC website. The selection included a quick guide on air quality planning and conformity in the Atlanta region.
- *Online Public Meetings:* ARC organized six online public meetings, incorporating voice-over PowerPoint presentations and surveys to gather public comment. These online public meetings were available 24 hours a day/7 days a week for usually 1 ½ to 2 months each. Resource material was always present to access to more fully understand the subject at hand. Reports of each meeting were then archived for later viewing.
- *Neighborhood Forums*: In conjunction with The Civic League, PLAN 2040 was presented to 9 neighborhood forums across the region. The Civic League invited a broad and diverse group of participants. Most forums had 35-45 people who gathered in groups to discuss the issues presented by ARC staff.
- *Fifty Forward and Transportation Investment Act Outreach and Input*: In the time immediately before the start of the PLAN 2040 process, ARC provided the region with insightful discussions at more than 35 forums and discussion groups to look at the region 50 years into the future. At the other end of the time spectrum, public outreach for the Transportation Investment Act of 2010 investment list that would go to a voter referendum in the summer of 2012, commenced. This included polling, a website to receive input and focus groups in each county of the region. Information from both of these endeavors was fed directly into the PLAN 2040 public involvement process.
- *ARC Board Public Hearing:* It is an ARC public participation policy that the planning process requires a formal public hearing. Two public hearings were held; one in conjunction with the Georgia Department of Community Affairs (DCA) requirements for the land development part of PLAN 2040 and the second was held before the ARC Board at its regularly scheduled May 25, 2011 meeting. At both meetings, materials were available for additional information about the subject of the hearing. Both hearings were recorded by a court reporter. Speakers at the Public Hearing were given three minutes to give their statements or record their comments with a court reporter. These comments were captured verbatim and posted to the ARC PLAN 2040 website.

Fiscal Constraint

The region is currently dealing with a distressed regional economy as the result of economic struggles at the national level. The recession, which began in late 2007, has left a lasting impact on local and state governments across the country in the form of severely declining tax revenues and a significantly reduced level of resources.

The majority of the Atlanta region's transportation system, such as fixed-guideway transit, arterials, and limited-access highways, were built with federal funding that has been critical in fueling the region's growth machine. Uncertainty in how the federal government will manage the increasingly limited national transportation budget in the future is an important consideration for transportation plan development – i.e. continued federal revenues cannot be assumed to stay at current levels definitively in the future.

Over the past several years, ARC has tracked worsening trends impacting the financial capacity of the region to fully fund needed transportation plans and programs. These trends include a probable decline in future federal transportation funding for transit and roads, a further decline in the purchasing power of state motor fuel taxes, and cost inflation in the construction industry. Additionally, the economic downturn that began at year-end 2007 has contributed to significant reductions in the levels of funding for local governments – many of which depend on local SPLOSTs for capital infrastructure improvements – as well as for the State, which has been impacted by decreasing motor fuel sales tax revenue.

ARC ensures that the PLAN 2040 RTP remains fiscally constrained per federal guidelines. A transportation plan is considered financially constrained if expected project costs do not exceed projected revenues. These requirements hold that long and short range transportation plans cannot propose to spend more money than reasonably anticipated revenues can pay for, including considerations for constructing, operating and maintaining planned projects. Not only is this balancing mandated, it is also sound fiscal policy. Once the federal government takes action through the Conformity Determination that PLAN 2040 meets all federal requirements, of which fiscal constraint is a component, projects can be funded and implemented as programmed in the plan.

Refer to Volume I: Chapter 5 of the PLAN 2040 documentation for additional detail on the financial plan of the Atlanta region's latest RTP and TIP. The Gainesville-Hall Metropolitan Planning Organization's latest financial plan can be found here:

www.ghmpo.org/GHMPO_MTP.asp

The plan presents all revenue estimates for the financial constraint of the GHMPO *2040 Metropolitan Transportation Plan* and the FY 2012-2017 TIP.

Latest Planning Assumptions

Section 93.110, Criteria and Procedures: Latest Planning Assumptions, of the Transportation Conformity Rule, defines the requirements for the most recent planning assumptions that must be in place at the time of the conformity determination process. The planning assumptions relate to the socio-economic forecasts, transit operating policies and transit and toll fare policies that impact the travel demand modeling process. A January 18, 2001, memorandum from USEPA entitled "Use of Latest Planning Assumptions in Conformity Determinations", states that "areas are strongly encouraged to review and strive towards regular 5-year updates of planning assumptions, especially population, employment, and vehicle registration assumptions". ARC completes frequent, recurrent updates of planning assumptions used in the travel demand and

emissions modeling process. ARC reviews the network-based travel model and regional emissions model, and all assumptions and data used in model validation through the consultation process; newer assumptions and data are incorporated as appropriate.

Introduction

ARC updates planning assumptions including (but not limited to) population, employment, socioeconomic variables, and vehicle miles traveled (VMT) on a recurring basis. A detailed listing of the planning assumptions for this conformity analysis of the 2040 RTP Update and FY 2012-2017 TIP is outlined in the "Interagency Review of Planning Assumptions Used in Regional Emissions Analysis" (Exhibit 1). These documents were submitted to the interagency consultation group in accordance with Section 93.105(c)(1)(i) of the Transportation Conformity Rule which requires interagency review of the model(s) and associated methods and assumptions used in the regional emissions analysis. Final Interagency approval was granted on March 1, 2011.

A handful of modifications have been incorporated into the ARC model structure since the major revisions adopted in the *Envision6* RTP / FY 2008-2013 TIP. Some adjustments include benchmarking of calibration and preliminary mode choice modifications due to the completion of the 2009 Transit On-Board Survey (addressed in the Transit Operating Procedure updates section below). Work is currently underway to update the multi-county household travel survey.

Socioeconomic Forecasts

Per Section 93.110(b) of the Transportation Conformity Rule, the transportation plan and program must quantify and document the demographic and employment factors which influence the expected transportation demand, including land use forecasts.

In addition to the structural changes listed above, travel demand model enhancements include updated population and employment estimates. For the PLAN 2040 RTP / FY 2012-2017 TIP, ARC produced forecasts of population, households by income, auto ownership and number of workers and employment by industry and land use type for the 20-county region. ARC produces forecasts through a process briefly outlined below. The process is outlined in more detail in Exhibit 1C.

ARC staff was assisted in the development of these regional forecasts by a Technical Advisory Committee (TAC) of nationally known, local experts on the Atlanta Regional Economy. Chair of the Committee was Dr. Donald Ratajczak, Regents Professor Emeritus of Economics at Georgia State University. Dr. Ratajczak served as director of the Economic Forecasting Center in the J. Mack Robinson College of Business at Georgia State University from 1973 until June 2000 and as a professor of economics in the Andrew Young School of Policy Studies until he retired in 2000. The committee recommended the final adopted forecasts for use by the Commission in 2009. Interagency consultation partners agreed upon these population forecasts on March 1, 2011.

Mathematical models are used to disaggregate the region-level control population and employment forecasts to "small areas": the Superdistrict, census tract and traffic analysis zone (TAZ) level. TAZs are nested within census tracts. Census tracts nest within superdistricts.

The TAZ Disaggregator (TAZ-D) model has been used in Plan2040 to disaggregate the regional controls to small areas. This model runs annually and iteratively. The process is fully integrated with the ARC travel demand model, as impedances (travel costs) from the travel model are a significant influence layer for

spatial allocation of population and job growth. A more detailed explanation of the techniques used to draft population and employment estimates is outlined in Exhibit 1C.

Transit Operating Procedures

The conformity determination for each transportation plan and program must discuss how transit operating policies (including fares and service levels) and assumed transit ridership has changed since the previous conformity determination per Section 93.110(c). A detailed listing of the procedures and planning assumptions (including transit modeling assumptions) for the conformity analysis of PLAN 2040 is outlined in the "Interagency Review of Planning Assumptions Used in Regional Emissions Analysis", previously mentioned.

For a more detailed listing of transit fares by transit provider, please see the Model Documentation of the PLAN 2040 document set. Provided below is a summary of the major transit modeling components.

Zero-Car Household Distribution

The auto ownership model was updated and validated using census data in 2008. New income coefficients were asserted using observed 2000 auto ownership shares as the basis. CTPP TAZ level data were processed to generate the expected auto-ownership levels for each respective income group. Densities were found to still play a role in the decision to own an automobile. As a result, the census calibrations were modified to include a coefficient for zone density, providing a more accurate prediction of auto-ownership in the regional model.

Survey Expansion

ARC conducted a regional transit on-board survey in 2009-2010 to get a better understanding of transit travel behavior. While the full expansion of the survey was not available in time for this model version update, the survey was used to make important updates to the mode choice model. A list of areas that were modified follows:

- New transit coefficients were generated by trip purpose, mode of access and socioeconomic class
- Use of kiss and ride facilities was adjusted
- Walking travel distance to transit was increased
- A pedestrian environment factor was introduced to adjust for easier walking conditions in more urban areas of the region
- The transfer penalty assignment was modified
- These modifications are explained in depth in the ARC Model Documentation.

Fare Changes

As a part of the transportation conformity analysis performed for PLAN 2040, assumptions about transit fares for the existing and planned regional transit system were made and coded in the regional travel demand model. Transit fares are used as supplied by the local transit operators and remain constant over time, throughout the life of the plan, across all network years. The fares reflect current operating plans, as provided to ARC by the various transit operators throughout the region. The transit fare structure used to develop the plan makes use of a fare matrix on a zone-to-zone level with a universal fare structure (flat fare) for all bus and rail lines.

With the addition of new transit operators providing regional transit services, transfer fare agreements between different interconnecting systems and the need to plan for future transit modes, more specific transit coding was needed to accurately reflect the transit levels of service. The current ARC coding approach enables most of the fares to be coded universally for each mode, and all providers are allowed to have different fares. In addition, a protocol was established in the model stream to allow transit fare to be coded by transit link. The current fare values in the model are weighted according to the percentage of riders using a discounted fare pass, and changes to these assumptions can be incorporated directly into the model. The ARC model currently assumes that peak and off-peak fares are equivalent.

In May and June 2011, MARTA will evaluate a potential fare increase. When a final decision is made on this issue, any significant fare changes will be reflected in future RTP updates, as appropriate.

Service Level Changes

At the time of the Envision 6 RTP – FY 2008-2013 TIP, there were a number of transit systems in operation in the 20-county Atlanta non-attainment area including MARTA, GRTA Xpress, Clayton Transit (C-TRAN), Cobb Community Transit (CCT), Gwinnett County Transit (GCT), City of Canton Shuttle, and Hall County Transit (HAT). Heavy rail service was provided by MARTA. Express bus service was provided by MARTA, GRTA, CCT, and GCT. Local bus service was provided by all except for GRTA Xpress, which provides express bus only.

Since the last RTP adoption, significant service level changes have occurred. C-TRAN was eliminated in early 2010. MARTA and GCT were cut back significantly in 2010. After experiencing a threefold increase in the number of Xpress routes since the last plan, GRTA Xpress service cut back service slightly in 2010. Despite small service reductions in 2010, CCT added service since Envision 6. Cherokee County took over the City of Canton Shuttle in 2008 and created the Cherokee Area Transit Service (CATS). HAT reorganized and increased service since the last RTP.

For the Envision 6 RTP, service provided through the Transportation Management Authorities (TMAs) and major universities were included in the model. These included the Atlantic Station Shuttle, the Buckhead Uptown Connection (BUC) Shuttle, Georgia Tech Shuttle, and the Emory/Clifton Corridor TMA Shuttles. In PLAN 2040, new service from Georgia State and Atlanta University Center/Woodruff Library was added along with existing service from Atlantic Station and BUC Shuttles. Service from Georgia Tech and Emory/Clifton Corridor TMA was expanded.

Future Regional Transit Service

The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time per Section 93.110(d).

Future Transit Service

ARC has included several major expansions to the regional transit system over the life of this plan. Specifics about the expansions can be found in the Appendix A project listings. All projects meet the requirements of fiscal constraint and are appropriately accounted for in the federally required travel demand and mobile source emission modeling processes. Provided below is a summary of the planned expansions to the transit system.

PLAN 2040 provides for the expansion of a regional fixed guideway network in addition to an express bus service expansion. Light Rail/Streetcar fixed guideways are planned for:

- I-20 East
- The Beltline
- The Clifton Corridor
- The Peachtree Streetcar from Five Points to Arts Center

Additionally, the I-85 North HOV to HOT Conversion Project in Gwinnett County includes construction of Park and Ride Lots at Hamilton Mill and Cedars Road which provides for express bus service to Downtown and Midtown from these locations.

Future Transit Fares

ARC has assumed that current transit fares as outlined above will remain constant throughout the life of the plan, per the request of transit operators in the region. Transit fares remain constant in order to maintain the relationship between out-of-pocket user expenses and travel time that was originally used to calibrate the impedance function within the travel demand model.

Tolls and Managed Lanes

There is currently only one toll road existing in the ARC region, SR 400. ARC has assumed that the toll structure on this roadway will remain constant for the life of the plan. The assignment model includes procedures to assign travel to general-purpose travel lanes, HOV/managed lanes, and toll lanes, using a toll diversion model. The highway assignment procedures include a toll diversion model to account for toll roads such as SR 400 and managed lanes identified in PLAN 2040. The toll diversion model converts toll costs to time penalties using value-of-time factors. Expansion of the managed lane system is assumed in PLAN 2040, including major additions on I-75, 575 285, and I-85. PLAN 2040 also plans for the conversion of existing HOV lanes to managed lanes.

The ARC managed lanes procedures are applied as a post-processor to the full ARC model. The toll modeling procedures directly handle toll diversion using Willingness-To-Pay (WTP) diversion curves. With WTP diversion curves, trips are split into toll and non-toll trips prior to being assigned, permitting the trips to be assigned to appropriate toll or non-toll paths for each iteration. An expanded set of toll facility restrictions was partially possible because HOV-2 and HOV-3+ vehicles are separately assigned, where the full ARC model groups these into different auto occupancy classes for assignment. Expanded toll facility restrictions were also added to permit modeling additional combinations of free and tolled access by vehicle class.

Quantitative Analysis

The regional emissions analysis used to demonstrate conformity to both the eight-hour ozone standard and the annual PM2.5 standard relies on a methodology which utilizes ARC's 20-county regional travel demand model.

Updated travel model networks, were created for each analysis year (2016, 2020, 2030, and 2040) to reflect projects as listed in Appendix A. Many projects, previously part of the financially constrained *Envision6* RTP, cannot be funded in PLAN 2040. Regional policy makers have identified these as the highest priority to be added back to the financially-constrained PLAN 2040 RTP should additional funds become available. These projects are identified as "Unfunded Needs" or "Regional Aspirations". A list of these projects can be found in Appendix A.

Eight-Hour Ozone Standard

Emission Factor Inputs

MOBILE6.2 input and output files are provided in Exhibit 2A. This Exhibit contains abbreviated versions of the input files used to calculate emission factors. There is a separate scenario in each input for each of 64 speeds, with only the speed varying. To conserve space, one example speed scenario is included in Exhibit 2A. An abbreviated version of the output files is also provided. Input parameters are listed in Exhibit 1A, Section 3.

HPMS Adjustment Factors

HPMS adjustment factors were calculated in accordance with Section 93.122(b)(3) of the Transportation Conformity Rule. These factors reconcile travel model estimates of VMT in the base year of validation to HPMS estimates for the same period. These factors include summer (seasonal) adjustments to convert from average annual VMT to summer-season VMT. Factors are calculated separately for the 13-county and 7-county portions of the nonattainment area. See Exhibit 1A for more details.

Eight-Hour Ozone Standard – 13-County Area

For the 13-county portion of the eight-hour ozone nonattainment area, ARC's 20-county travel demand model was used to generate VMT and congested speed estimates for all analysis years. There have been no major updates to emissions modeling planning assumptions that have been implemented since approval of Envision 6 RTP/2008-2013 TIP Amendment # 10 on September 9, 2010. Detailed modeling planning assumptions for the 13-county portion of the ozone nonattainment area are outlined in Exhibit 1A. Also, refer to Exhibit 2A for MOBILE6.2 input and output files.

Eight-Hour Ozone Standard – 7-County Area

For the 7-county portion of the eight-hour ozone nonattainment area, ARC's 20-county travel demand model was used to generate VMT and congested speed estimates for all analysis years. There have been no major updates to emissions modeling planning assumptions that have been implemented since approval of Envision 6 RTP/2008-2013 TIP Amendment # 10 on September 9, 2010. Detailed modeling planning assumptions for the 7-county portion of the ozone nonattainment area are outlined in Exhibit 1A. Also, refer to Exhibit 2A for MOBILE6.2 input and output files.

Results of Analysis - Eight-Hour Ozone Standard

The results of the emissions analysis for PLAN 2040 and the GHMPO 2040 RTP for all analysis years for the eight-hour ozone nonattainment area demonstrate adherence to the level of emissions necessary to meet the motor vehicle emissions budgets contained in the Atlanta Early Progress State Implementation Plan for year 2006. Table 2 and Figure 3 document the VOC and NO_x emissions for each analysis year, as compared to the applicable MVEB.

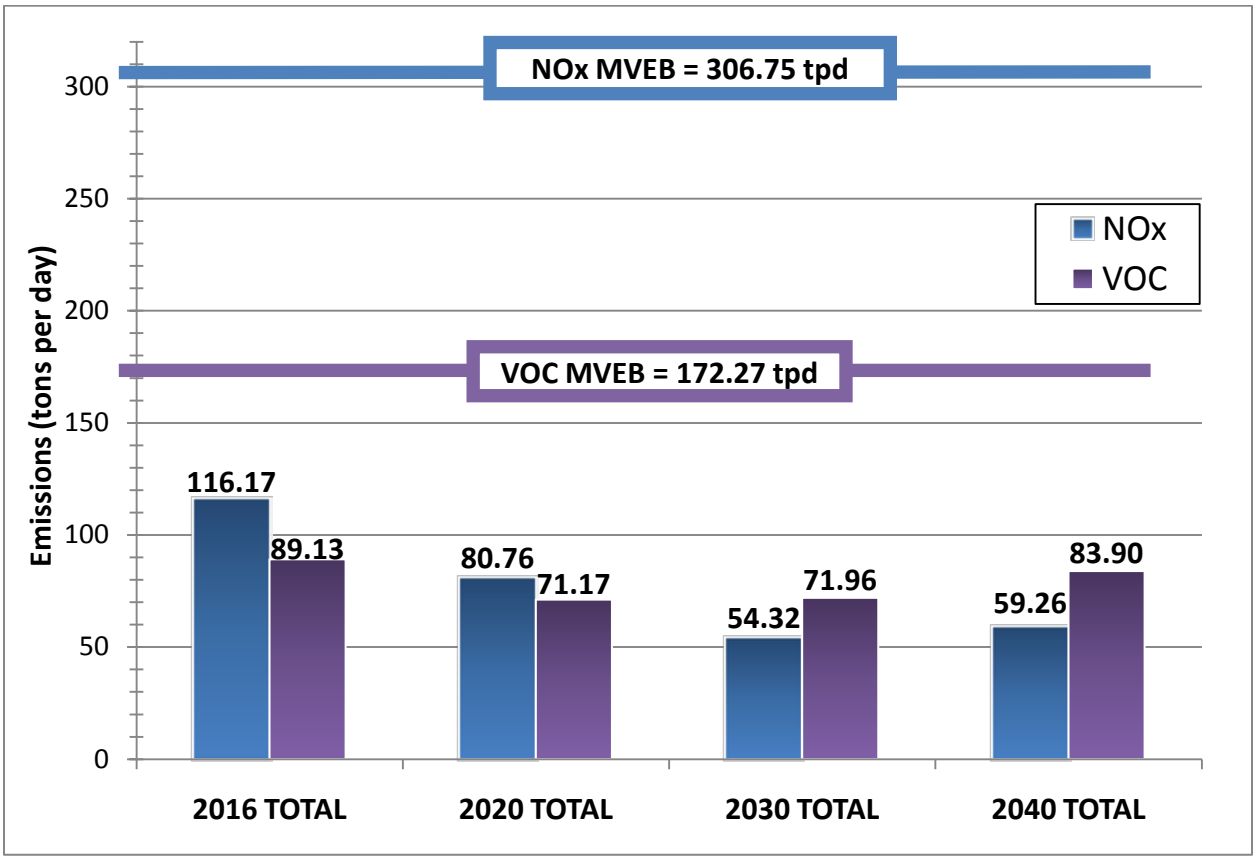
Note: To maintain consistency between procedures used to estimate the motor vehicle emission budgets included in the ozone attainment SIP and the conformity analysis, ARC, in full consultation with Georgia EPD, applies an off-model adjustment to emission results (for the 13-county area only) to reflect an emissions debit resulting from a program to exempt senior citizens from the I/M program. This program was initiated by the Georgia General Assembly in 1996 (O.C.G.A Section 12-9). It exempts from emission testing vehicles ten years old or older driven fewer than 5,000 miles per year and owned by persons 65 years old or older.

It was estimated that this senior I/M exemption increased VOC and NO_x emissions by 0.05 and 0.03 tons per day (these amounts are included in Table 2). This off-model adjustment is conservatively high and was applied to the emission results for VOC and NO_x to produce final emission results for each analysis year in the 13-county area where the I/M program is in place. The same credit loss is assumed for each analysis year.

Table 2 - 20-County Motor Vehicle Emissions Budget Test: Eight-Hour Ozone Standard

	NO_x (tpd)	VOC (tpd)
2006 Atlanta Early Progress SIP Budgets	306.75	172.27
2016 Total	116.17	89.13
2020 Total	80.76	71.17
2030 Total	54.32	71.96
2040 Total	59.26	83.90

Figure 3: 20-County Motor Vehicle Emissions Budget Test: Eight-Hour Ozone Standard



PM2.5 Standard

For this analysis the No Greater Than Base Year Test is used for the regional emissions analysis. This test is applied to both direct PM2.5 and its presumed precursor NO_x. NO_x is the only precursor at this time that has been identified as a required precursor for transportation conformity by EPA[6]. The Georgia EPD, after a review of air quality monitoring data, air quality modeling results, and the scientific literature, has decided to pursue a finding of insignificance for NO_x as a precursor to PM2.5. The No Greater Than Base Year Test requires a demonstration that emissions in all analysis years for the entire 20+ county Atlanta nonattainment area are no greater than 2002 base year emissions for both direct PM2.5 and, unless/until a finding of insignificance is made, NO_x as a presumed precursor.

Emission Factor Inputs

For the PM2.5 standard there are two sets of MOBILE6 input files, one for the 13 counties that make up the former one-hour ozone nonattainment area in which a specific set of emission control measures is in place and one for the seven "ring" counties plus the portions of Heard and Putnam counties. For each set, the input files contain the same assumptions for all analysis years (2016, 2020, 2030 and 2040). Emission factors are combined for the 7-county and partial county portions of the PM2.5 nonattainment area as emission control measures reflected in MOBILE6.2 are the same. Registration distribution is, therefore, calculated for the 9-county area. Note one exception for 2002 base year emission factors. For 2002, separate emission factors are run for Putnam County because the Low-Sulfur Georgia Gasoline program was not implemented in the county until 2003.

MOBILE6.2 input and output files for the PM2.5 analysis are provided in Exhibit 2B. This Exhibit contains abbreviated versions of the input files used to calculate emission factors. There is a separate scenario in each input for each of 64 speeds, with only the speed varying. To conserve space, one example speed scenario is included in Exhibit 2B. An abbreviated version of the output files is also provided. Input parameters are listed in Exhibit 1B, Section 3. The gasoline sulfur and volatility parameters modeled for the PM2.5 analysis reflect updated survey data that was incorporated into EPA's National Mobile Inventory Model (NMIM) by Eastern Research Group, Inc., in May, 2007, under contract to EPD.

PM2.5 Standard – 13 County Areas

For the 13-county portion of the PM2.5 nonattainment area that corresponds to the former one-hour ozone maintenance area, ARC's 20-county travel demand model was used to generate VMT and congested speed estimates for all analysis years.

HPMS Adjustment Factors

The same HPMS adjustment factors developed for the eight-hour ozone part of this conformity analysis were used for the PM2.5 analysis. However, because PM2.5 is an annual standard and, as decided through interagency consultation, the conformity analysis is to reflect average annual conditions, no summer adjustment factors are needed. The HPMS adjustment factors in Exhibit 1B reflect 2000 HPMS and 2000 Model VMT by functional class for the 13-county part of the PM2.5 nonattainment area.

[6] Per EPA's Transportation Conformity Rule amendment addressing PM2.5 precursors: Federal Register, Vol. 70, No. 87, May 6, 2005, pp. 24280-24292.

PM2.5 Standard – 7 County Area

For the 7-county portion of the PM2.5 nonattainment area, ARC's 20-county travel demand model was used to generate VMT and congested speed estimates for all analysis years for the 7-couty area. Updated travel model networks were created for each required analysis year to reflect project changes as listed in Appendix A.

HPMS Adjustment Factors

Exhibit 1B also reflects the HPMS adjustment factors calculated for the 7-county part of the PM2.5 nonattainment area using 2000 HPMS and 2000 Model VMT. Again, because average annual conditions were needed for the PM2.5 analysis, no summer adjustment was applied.

PM2.5 Standard – Partial County Area for Heard and Putnam

As indicated in Figure 2 (above), the Atlanta PM2.5 Nonattainment Area includes small parts of two counties, Heard and Putnam, which fall outside of the core 20 whole counties which make up the eight-hour ozone and PM2.5 nonattainment areas. A travel model is not in place for these counties. A revised off-model technique was developed for use in the region's last RTP *Envision6* to estimate average annual daily VMT and emissions for the partial-county area. For PLAN 2040, this technique has been updated with more recent data, but otherwise remains consistent with the prior methodology.

According to the Transportation Conformity Rule 93.122(a)(7), reasonable methods shall be used to estimate nonattainment or maintenance area VMT on off-network roadways within the urban transportation planning area, and on roadways outside the urban transportation planning area. The methodology to produce the mobile emissions for Heard and Putnam Counties described in this section used reasonable methods and satisfies the requirements of the Conformity Rule.

To estimate VMT for the partial county area it was first necessary to extract those roadways that fall within the nonattainment boundary and identify those facilities that would need to be included in the emissions analysis. Census TIGER files[7] were used to create the initial roadway maps for the nonattainment portion of Heard and Putnam as illustrated in Figure 4.

For Heard County it was found that there are no public roads that fall within the nonattainment boundary. The roads identified are private roads that service Georgia Power's Plant Wansley. These roads do not experience through-traffic and do not need to be included in the regional emission analysis. As such, the remainder of the methodology documented below applies to Putnam County only.

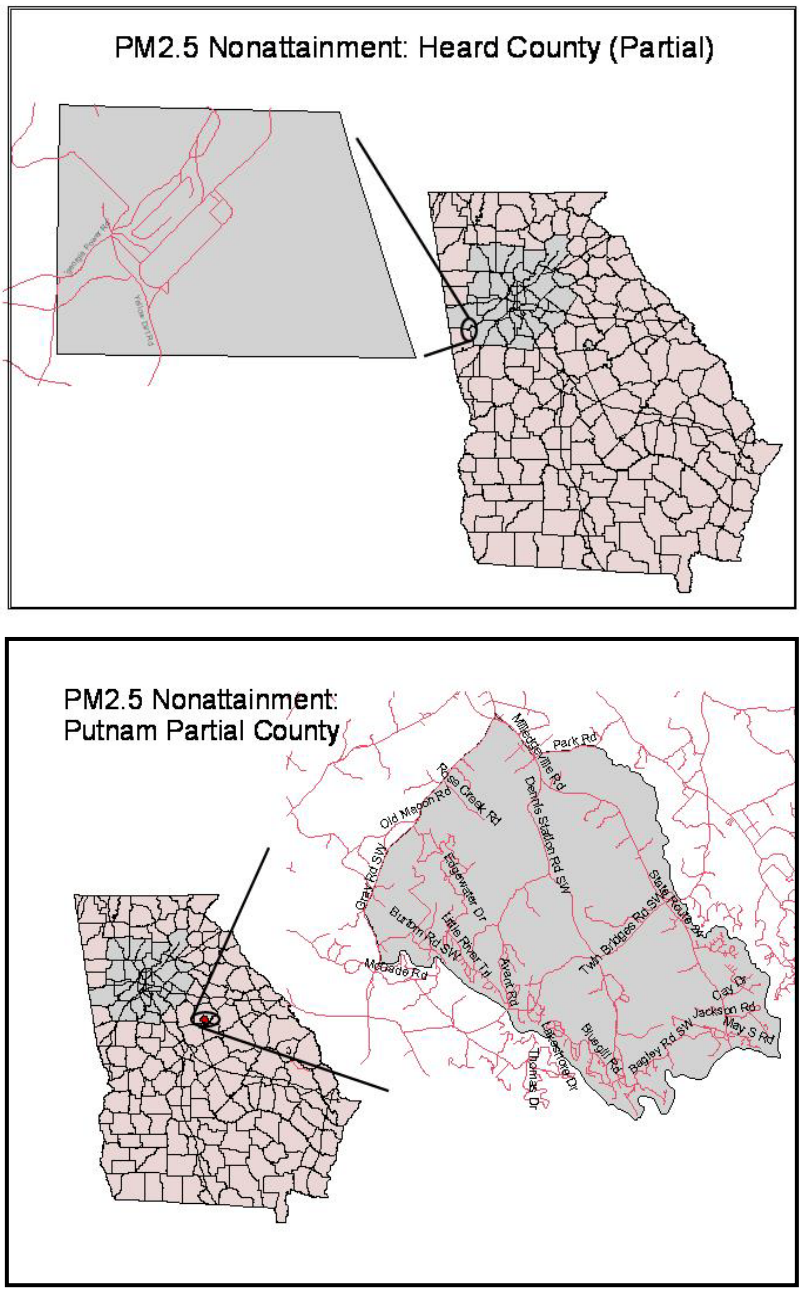
Georgia DOT historical traffic count data were used as the basis for estimating base and future year average annual daily VMT and emission estimates within Putnam County. Historical traffic count data were derived from GDOT's Annual Traffic Count (ATC) program database[8]. This database provides historical traffic count data for years 1984 to 2008 by county by traffic count station. In order to select only those traffic count stations (and therefore roadways) that fall within the nonattainment portion of Putnam County from the ATC database, ArcView GIS was used to map all roads within the applicable

[7] http://www.census.gov/geo/www/tiger/

[8] Database provided to ARC by GDOT Office of Planning in October 2005.

area from the GDOT Roadway Characteristics (RC) shape file for Putnam County[9]. The GDOT RC database also provided other necessary data attributes needed for the emissions analysis, including HPMS functional classification code and roadway length by traffic count station. Figure 5 displays the relevant traffic count stations and the applicable roadway segments that are included in the off-model estimation process.

Figure 4: Heard and Putnam County Roadways within PM2.5 Nonattainment Boundary



[9] The most recent (2004) RC database and shapefiles were used for this analysis. The database and shapefiles were provided to ARC by GDOT Office of Planning in December 2005.

By mapping the traffic count sites and the roadway that each site corresponds to from the RC shapefile, the relevant traffic count stations could be linked to the historical traffic count data in the ATC database. VMT forecasts for these roads could then be produced through linear regression using historical traffic count data for each of the stations identified. Traffic count growth trends were estimated through linear regression using the most recent six years of consecutive traffic count data available; for this analysis the most recent six years that traffic count data are available are 2003-2008. Linear regression can result in negative trends for VMT for individual functional classifications due to historically decreasing traffic counts, or as a result of changes to urban/rural HPMS designation which shifts the functional class bin when traffic counts are reported. For situations where this occurs, the growth rate is held constant so that year 2016, 2020, 2030 and 2040 VMT reflect the 2003-2008 six year average annual VMT. VMT estimates by traffic count station for the partial-county area are included in Exhibit 3A.

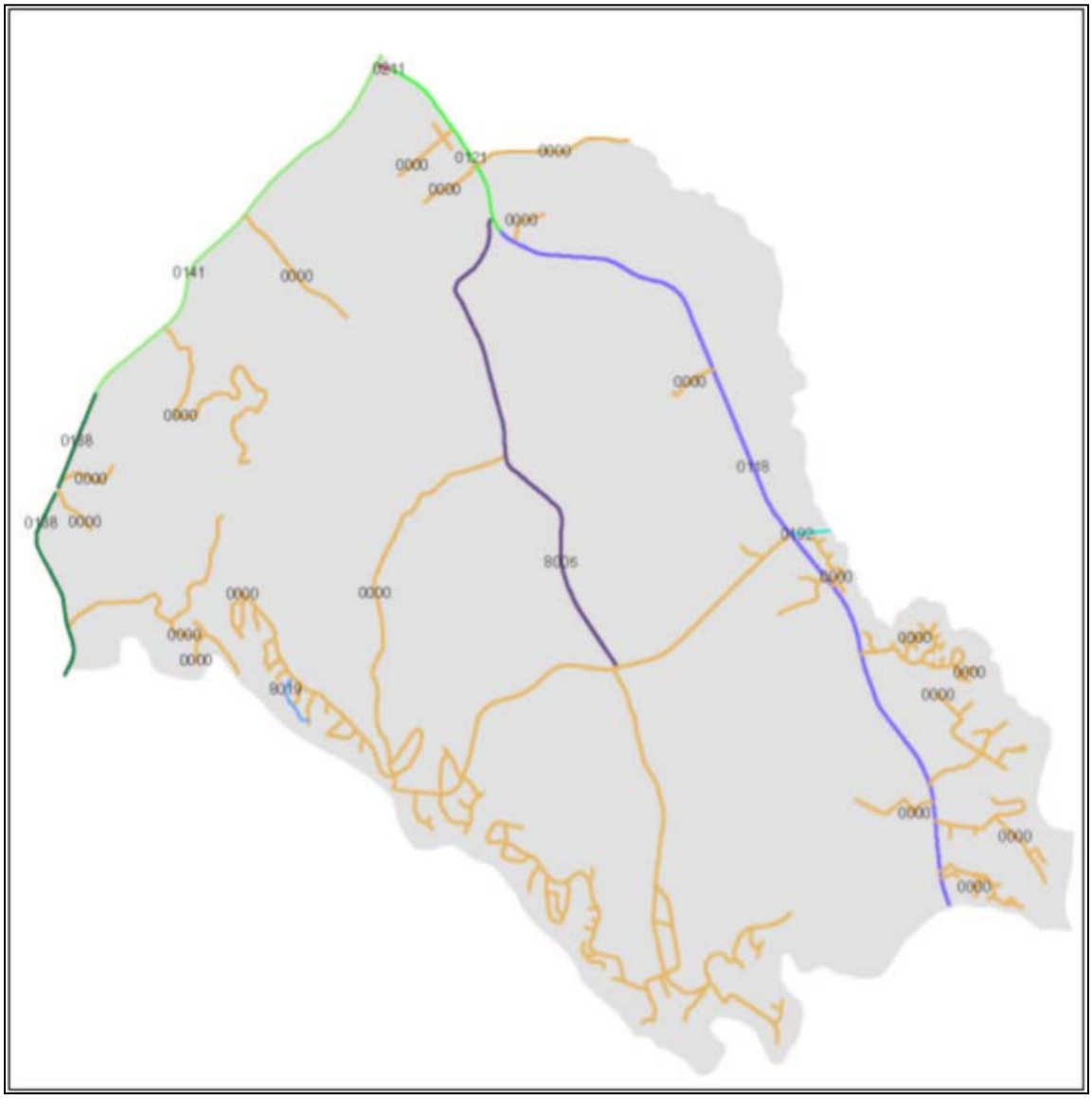
Note that there are no historical traffic count data included in the ATC database for traffic count stations with either a 0000 or 8000 series code. These codes denote traffic count sites for rural local or rural minor collector roads[10]. In order to estimate historical VMT for these roadway types, the percentage of 2005 Putnam County nonattainment area VMT was calculated using those roadways in the nonattainment area selected from the 2004 RC database (Figure 5) as a percentage of total Putnam County VMT derived from the GDOT 445 Series Report for 2008. This percentage was then applied to years 2003 to 2008 to estimate historical Putnam County nonattainment area VMT. VMT data for rural locals and rural minor collectors were estimated by subtracting the nonattainment area VMT for functional classes other than rural local and rural minor collector from the total nonattainment area VMT for each year. It was necessary to further disaggregate the rural local and rural minor collector data to the corresponding traffic count site. This was done by calculating the percentage of each traffic count station's rural local and rural minor collector VMT of total 2008 rural local/minor collector VMT and applying this same percentage to 2003-2008 data. These calculations are included in Exhibit 3B.

Once these calculations were complete, VMT data was re-grouped by HPMS functional class instead of by traffic count station. This enabled the appropriate speed and emission factors to be applied. VMT-weighted speeds were calculated by HPMS functional class using the ARC 20-county travel demand model for the 7-county region only and applied to applicable HPMS functional classes for each analysis year in the partial county area. Emission factors were applied based on the MOBILE6 drive cycle corresponding to each HPMS functional class[11].

[10] Traffic volumes for these roadway links are calculated by GDOT Office of Transportation Data for HPMS reporting purposes and included in the 2004 RC database.

[11] Allocation of HPMS VMT by functional classification to particular drive cycle emission factor based on MOBILE6 technical guidance (August 2004), Section 4.2.
http://www.epa.gov/otaq/models/mobile6/420r0413.pdf.

Figure 5: Putnam County Traffic Count Stations within PM2.5 Nonattainment Area



Note that emission factors used for the Putnam County portion are the same as those used for the 7-county portion of the PM2.5 nonattainment area, with one exception. Emission factors for the required analysis years (2016, 2020, 2030 and 2040) are identical for the 7-county and partial county portion of the PM2.5 nonattainment area as emission control measures reflected in MOBILE6.2 are the same. For the 2002 base year, however, separate emission factors were run for Putnam County because the Low-Sulfur/Low Reid Vapor Pressure (RVP) Georgia Gasoline program was not implemented in the county until 2003. This resulted in a fuel blend in Putnam County in 2002 that is not low-sulfur and that has a higher average annual RVP - 9.8 psi vs. 9.3 psi. 2002 Putnam County emission factors and estimates are included in Exhibit 4.

Results of Analysis – PM2.5 Standard

The results from the regional emissions analysis for PM2.5 are listed below. Results are aggregated over the 13-county, 7-county and Putnam County portions of the PM2.5 nonattainment area. The results of the emissions analysis for the PLAN 2040/FY12-17 TIP for all analysis years for the Atlanta PM2.5 nonattainment area demonstrate adherence to the level of emissions necessary to meet the No Greater Than Base Year Test. Table 3 and Figures 6 and 7 document the average annual PM2.5 and average annual NO_x emissions for each analysis year, as compared to the applicable 2002 base year emissions.

Note: ARC, in full consultation with Georgia EPD, applies an off-model adjustment to emission results (for the 13-county area only) to reflect an emissions debit resulting from a program to exempt senior citizens from the I/M program. This program was initiated by the Georgia General Assembly in 1996 (O.C.G.A Section 12-9). It exempts from emission testing vehicles ten years old or older driven fewer than 5,000 miles per year and owned by persons 65 years old or older.

It was estimated that this senior I/M exemption increased NO_x emissions by 0.03 tons per day (this amount is reflected in Table 3) in 2002. This off-model adjustment is applied to the emission results for NO_x, as a precursor to PM2.5, to produce final emission results for each analysis year in the 13-county area where the I/M program is in place. The same credit loss is assumed for each analysis year.

Table 3: Regional Emissions Analysis: Annual PM2.5 Standard (Direct PM2.5 & NOx Precursor)

	$PM_{2.5}$ Direct (tpd)	**NO_x Precursor (tpd)**
2002 Base Year Test	8.22	432.85
2016 Total	2.99	123.20
2020 Total	2.81	85.57
2030 Total	2.91	57.26
2040 Total	3.21	62.31

Figure 6: Regional Emissions Analysis: Direct PM2.5 Emissions

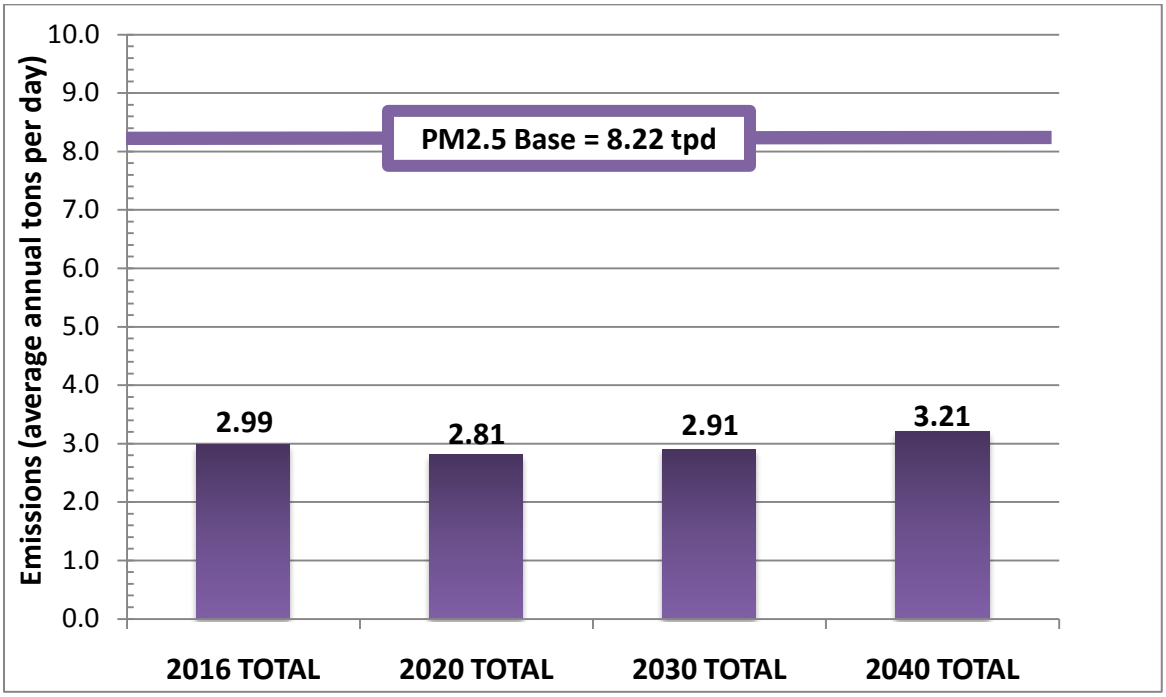


Figure 7: Regional Emissions Analysis, NOx Precursor Emissions