Volume II
Conformity Determination Report

March 2014 Update

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Introduction

The PLAN 2040 Regional Transportation Plan (RTP) (March 2014 Update) and associated FY 2014-2019 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 $PM_{2.5}$ standard. The conformity analysis for both the eight-hour ozone and $PM_{2.5}$ 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[2], 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 2012) incorporates revisions resulting from the passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU); the previous transportation funding legislation which specifies the process for development of metropolitan transportation plans and programs for urbanized areas.

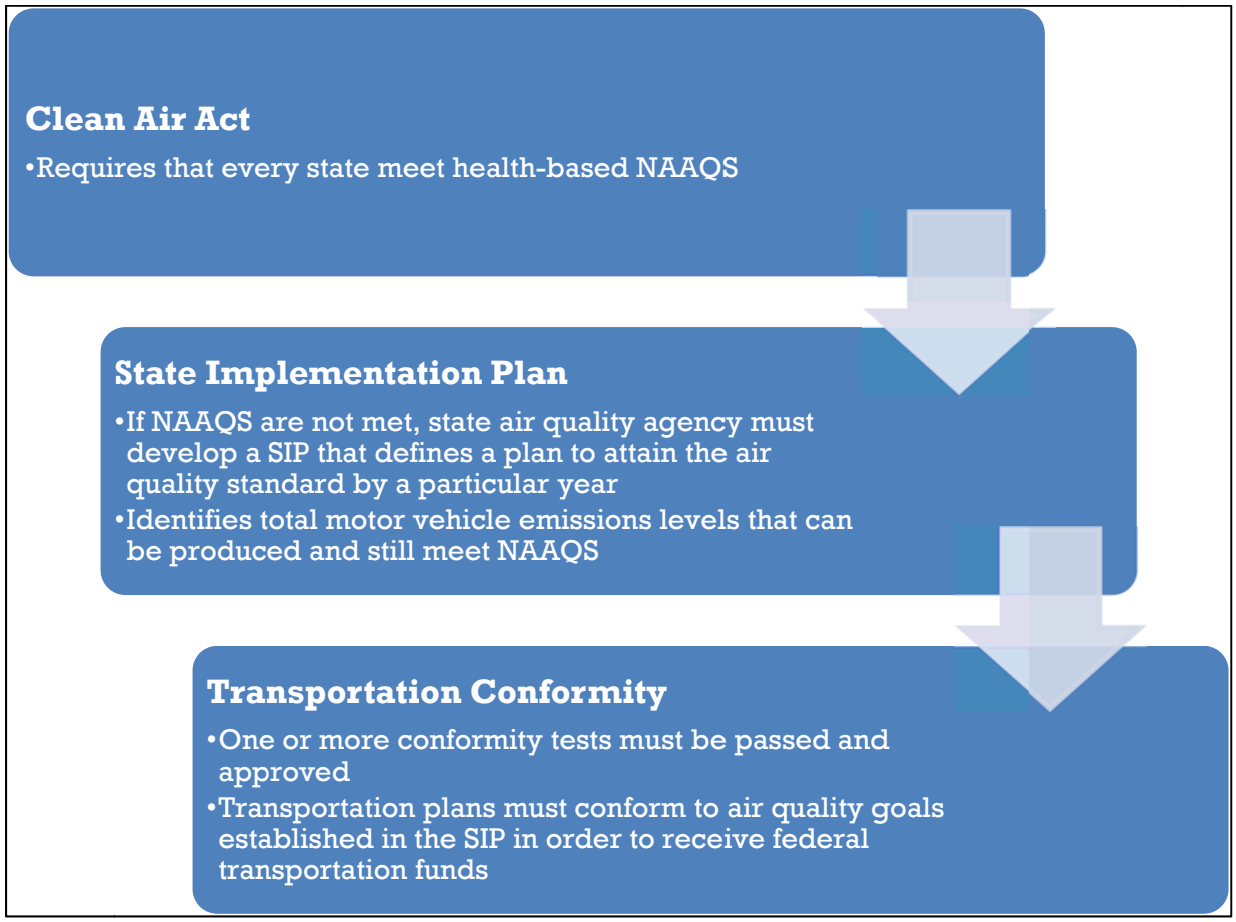
The Atlanta Regional Commission (ARC) is the federally designated Metropolitan Planning Organization (MPO) for all or portions of 18 counties within the 19-county Atlanta Urbanized Area.[3] ARC is directly responsible for developing a long-range RTP and short-range TIP that conform to the air quality 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 $PM_{2.5}$ 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] www.fhwa.dot.gov/environment/air_quality/conformity),

[3] The ARC metropolitan planning area comprises the 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 July 20, 2012, 15 counties in the Atlanta region have been classified as a marginal nonattainment area under the 2008 eight-hour ozone standard; Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding and Rockdale counties (see Figure 2). The following 1997 nonattainment counties were classified as in attainment of the new 2008 ozone standard; Hall, Barrow, Walton, Spalding and Carroll counties. An attainment date of December 31, 2015 has been established under the marginal nonattainment classification. This 15-county area replaces the previously designated 20-county area under the 1997 eight-hour ozone standard. Transportation conformity for the 1997 eight-hour ozone standard was revoked for transportation conformity purposes effective July 20, 2013. Therefore, a conformity analysis is no longer required for the 1997 eight-hour ozone standard.

The 2008 eight-hour ozone standard was set at 0.075 ppm and replaces the 1997 eight-hour ozone standard of 0.084 ppm. The Atlanta region attained the 1997 eight-hour ozone standard with a clean data determination on June 23, 2011. EPA approved the Atlanta 1997 eight-hour ozone Redesignation

Request and Maintenance Plan on December 2, 2013 with an effective attainment date of January 2, 2014 associated with the 2012 Ozone Maintenance Plan[4]. 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.

Motor Vehicle Emissions Budgets (MVEBs) have been established for the previous 20-county region as part of both the Atlanta Reasonable Further Progress (RFP) SIP (submitted to EPA in 2009[5]) and the Atlanta Ozone Maintenance Plan (submitted to EPA in 2012[6]). For years prior to the maintenance planning year (2024), the RFP budgets are required for the conformity test. For years 2024 and later, the Maintenance Plan budgets are required for the conformity test.

Annual $PM_{2.5}$ Standard

On December 17, 2004, the USEPA designated 20 whole counties and two partial counties (Heard and Putnam) near the metropolitan Atlanta area as nonattainment under the 1997 annual fine particulate matter ($PM_{2.5}$) 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 ($PM_{2.5}$) are referred to as "fine" particles and are believed to pose the greatest health risks. The $PM_{2.5}$ nonattainment area encompasses the 2008 eight-hour ozone nonattainment area plus the following additional entire counties Barrow, Carroll, Hall, Spalding, and Walton; and parts of Heard and Putnam counties (refer to Figure 2).

At the time PLAN 2040 was originally adopted, in 2011, $PM_{2.5}$ had two standards associated with it – an annual standard of 15 micrograms per cubic meter ($\mu g/m^3$) measured over the course of a year, and a daily standard of $35\mu g/m^3$ measured over 24 hours. Since then, EPA released a stricter 2012 annual $PM_{2.5}$ standard of $12\mu g/m^3$. Designations for that pollutant will occur in 2014.

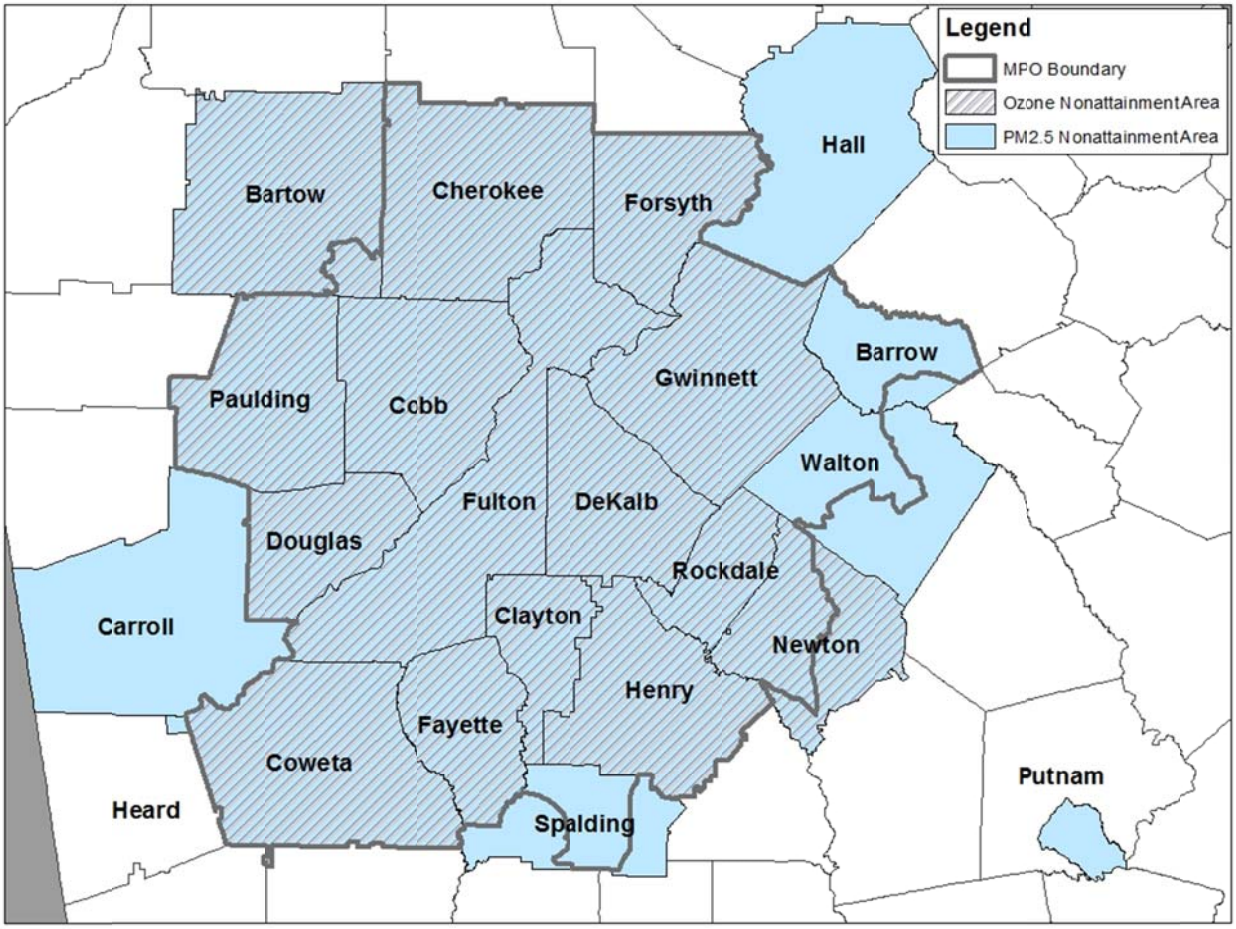
Under the 1997 $PM_{2.5}$ standard, there is no classification system to determine stringency of emission control measures or attainment year. $PM_{2.5}$ nonattainment areas must attain as soon as possible, but no later than April 2010, with an additional five years provided if the state can demonstrate that it is warranted. The $PM_{2.5}$ attainment SIP was submitted to EPA by EPD on July 6, 2010. Since that time, on December 8, 2011, the EPA ruled that the Atlanta area has met the 1997 $PM_{2.5}$ annual standard. As a result, no action was required on the $PM_{2.5}$ attainment SIP. The EPD is still awaiting EPA action on the $PM_{2.5}$ Maintenance Plan. Until that time, an interim emissions methodology is used to determine conformity of the RTP and TIP. Similar to the ozone standard, the new 2012 annual $PM_{2.5}$ standard will have a classification scheme associated with it.

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

[4] Federal Register Notice: 78 FR 72040
[5] Effective December 4, 2013
[6] Effective Jan 2, 2014

CFR Parts 51 and 93) and Metropolitan Planning Regulations (23 CFR Part 450) by demonstrating that the PLAN 2040 RTP (March 2014 Update), GHMPO RTP and the FY 2014-2019 TIP conform to the purpose of the SIP for both eight-hour ozone and annual $PM_{2.5}$. Although a portion of the ozone and $PM_{2.5}$ nonattainment areas extend outside of the ARC 18-county MPO planning boundary, the ARC has conducted the conformity determination for the entire ozone and $PM_{2.5}$ nonattainment areas.

Figure 2: Atlanta Nonattainment Area Boundaries



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

The Atlanta region's current RTP is called PLAN 2040. The PLAN 2040 RTP and FY 2012-2017 TIP were approved by FHWA in consultation with EPA on September 6, 2011. Since September 2011, a total of three amendments to the FY 2012-2017 TIP were conducted, with two out of the three amendments impacting transportation conformity. TIP amendments were the result of project funding increases, programming of new projects with air quality implications, and/or rebalancing of funds. A schedule of the conformity determinations associated with PLAN 2040 is provided in Table 1.

Table 1: ARC/GHMPO Recent Conformity Determinations

Date	RTP/TIP	Pollutant
9/6/2011	PLAN 2040 (FY 2012-2017 TIP)	Ozone under the 1997 eight-hour standard; $PM_{2.5}$ under the 1997 annual standard
12/14/2012	PLAN 2040 (FY 2012-2017 TIP) - Amendment 1	Ozone under the 1997 and 2008 eight-hour standard; $PM_{2.5}$ under the 1997 annual standard
9/23/2013	PLAN 2040 (FY 2012-2017 TIP) - Amendment 3	Ozone under the 2008 eight-hour standard; $PM_{2.5}$ under the 1997 annual standard

In nonattainment areas, the transportation plan and program must be updated at a minimum every four years. The PLAN 2040 RTP Update serves as the required four-year update to the initial PLAN 2040 RTP (July 2011). PLAN 2040, incorporates a planning process that directly integrates land use and transportation planning initiatives to better accommodate the ARC population forecast of approximately 8 million people in the 20-county region by the year 2040. Reference Volume I for detail related to the PLAN 2040 RTP (March 2014 Update) development.

Statement of Conformity

An updated transportation conformity analysis is required under the eight-hour ozone standard and the $PM_{2.5}$ standard for the PLAN 2040 RTP (March 2014 Update) 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 Reasonable Further Progress (RFP) SIP and the Atlanta Ozone Maintenance Plan.

For the $PM_{2.5}$ conformity analysis, a No Greater Than Base Year emissions test is used to demonstrate conformity.[7] This test, selected through interagency consultation, is used as an interim emissions testing requirement until MVEBs are found adequate as part of the Atlanta $PM_{2.5}$ Maintenance Plan. Georgia EPD submitted the $PM_{2.5}$ Maintenance SIP, and associated MVEBs, to EPA on August 30, 2012. EPA has not yet found the submitted MVEBs adequate/approved; 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 and RTP support the broad intentions of the Clean Air Act for achieving and maintaining the National Ambient Air Quality Standards for ozone and fine particulate matter.

Statement of Conformity – Eight-Hour Ozone Standard

On May 5, 2012, the interagency consultation group determined that per §93.109(c)(2)(ii)(B) of the Transportation Conformity Rule it would be acceptable for the 2008 15-county eight-hour ozone nonattainment area to demonstrate conformity through the 20-county modeling methodology developed for the 1997 standard. Any additional emission credits needed in the future to pass conformity tests, however, must come from the 15-county portion of the analysis. Therefore, all models and budgets established for the previous 20-county eight-hour ozone nonattainment area were carried over for the analyses conducted in this plan update. The transportation conformity analysis for the 15-county eight-hour ozone nonattainment area was performed with the MVEB Test using the two sets of adequate budgets outlined in Table 2.

Table 2: Eight-Hour Ozone Conformity Tests

Establishing SIP	Years	Budgets
Reasonable Further Progress (RFP) SIP – effective Dec 4, 2013	All conformity years prior to 2024	NO_x – 272.67 tons/day VOC – 171.83 tons/day
Ozone Maintenance Plan – effective Jan 2, 2014	All conformity years 2024 and later	NO_x – 126 tons/day VOC – 92 tons/day

The results of the emissions analysis for the PLAN 2040 RTP (March 2014 Update) and the GHMPO 2040 RTP demonstrate adherence to the established MVEBs. The conformity analysis was performed for the years 2015, 2020, 2024, 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 inside of the PLAN 2040 RTP (March 2014 Update) horizon, the year 2015 was incorporated into the emissions modeling

[7] 40 CFR Part 93.119(e)(2), 71 FR 12468, March 10, 2006

process. In addition, the year 2024 has been included to meet the requirement to show conformity to the Maintenance Plan. The year 2024 is not required to be directly modeled, but must be demonstrated for consistency with MVEB. Therefore, emissions results are interpolated from a linear trend between 2020 and 2030 per §93.118(d)(2) of the Conformity Rule.

The FY 2014-2019 TIP is a direct subset of the PLAN 2040 RTP (March 2014 Update)/GHMPO 2040 RTP. The conformity determination for the FY 2014-2019 TIP includes the same set of projects; defined by their design concept, design scope and analysis years, as the PLAN 2040 RTP (March 2014 Update)/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 for construction and operation, if applicable, of all projects is identified and presented in Volume I: RTP Appendix A. The FY 2014-2019 TIP also meets all other planning requirements including:

- Each program year of the FY 2014-2019 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 2014-2019 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 2014-2019 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 2014-2019 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 2014-2019 TIP are consistent with the PLAN 2040 RTP (March 2014 Update)/GHMPO 2040 RTP.

Upon completion of the technical conformity analysis, ARC staff have determined that PLAN 2040 /GHMPO 2040 RTP and the FY 2014-2019 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 MAP-21).

Statement of Conformity – $PM_{2.5}$ Standard

The regional emissions analysis for the annual $PM_{2.5}$ standard was performed against a 2002 base year emissions inventory of **6,405 tons/year** direct $PM_{2.5}$ and **194,050 tons/year** 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 2015, 2020, 2024, 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 93.119(g). The year 2024 is not required but is included for consistency with the ozone results. Like for ozone, the year 2024 is linearly interpolated from the modeled output of the years 2020 and 2030.

The results of the emissions analysis for the PLAN 2040 RTP (March 2014 Update)/GHMPO 2040 RTP for all analysis years for the Atlanta $PM_{2.5}$ nonattainment area demonstrate adherence in the level of emissions necessary to meet the No Greater Than Base Year Test.

The FY 2014-2019 TIP is a direct subset of PLAN2040/GHMPO 2040 RTP. The conformity determination for the FY 2014-2019 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: RTP Appendix A. The FY 2014-2019 TIP also meets all other planning requirements including:

- Each program year of the FY 2014-2019 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 2014-2019 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 2014-2019 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 2014-2019 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 2014-2019 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 2014-2019 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 MAP-21).

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, Douglas and Gwinnett Counties) and the Georgia Regional Transportation Agency (GRTA)[8]. The interagency group also incorporates representation from

[8] Reference Exhibit 5 for summary of interagency consultation group meetings related to development of the PLAN 2040 RTP (March 2014 Update) and FY 2014-2019 TIP.

the Gainesville-Hall County MPO, as it is located within the $PM_{2.5}$ nonattainment area 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 October 2013. Draft PLAN 2040 RTP (March 2014 Update) documents were provided to GHMPO planning partners through the Transportation Coordinating Committee (TCC), to allow for time to comment prior to the scheduled March 26, 2014 final adoption of the plan.

The draft PLAN 2040 RTP (March 2014 Update) documents are made available to ARC planning partners through the TCC and the Transportation and Air Quality Committee (TAQC) in January, 2014, 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 RTP (March 2014 Update) documents are anticipated to be provided on March 26, 2014, upon approval of the update, 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 RTP (March 2014 Update) 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 (March 2014 Update) /GHMPO 2040 RTP and the FY 2014-2019 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 2014-2019 TIP is outlined 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. The documents include assumptions for both the eight-hour ozone and $PM_{2.5}$ emissions analyses. Interagency approval of these assumptions was granted on October 23, 2013.

ARC has consulted with the interagency group as to the required version of USEPA's mobile source emission model for the PLAN 2040 RTP (March 2014 Update)/GHMPO 2040 RTP, MOVES2010b. This is documented along with the other planning assumptions in Exhibit 1. ARC worked in consultation with the Georgia EPD to develop necessary MOVES2010b input 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 $PM_{2.5}$ 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 October 22, 2013, 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 any of the eight-hour ozone or annual $PM_{2.5}$ SIPs fall in one of the five categories listed below. Currently, all TCMs have been implemented in the region.

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 Exhibit 2 for a listing of TCMs for the Atlanta region that are included in any of the $PM_{2.5}$ or ozone SIPs 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 the PLAN 2040 RTP (March 2014 Update)/GHMPO 2040 RTP and the FY 2014-2019 TIP. The use of the 2008 NO_x and VOC RFP budgets and the 2024 NO_x and VOC Maintenance Plan budgets for this RTP and TIP update satisfies the conformity trigger to use the budgets within two years of the effective date of EPA approval.

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 the PLAN 2040 RTP (March 2014 Update) and associated FY 2014-2019 TIP started January 11, 2014 and ended February 21, 2014. Following completion of the public comment period, ARC prepared a Public Comment Report, which summarized all stakeholder and public outreach and comments throughout the development of the RTP. Responses to specific comments received on the draft plan, including the Conformity Determination Report, during the final comment period are also contained in the report. This document is included as Appendix F of Volume I: PLAN 2040 Regional Transportation Plan.

A legal ad was published in the Fulton County Daily Report on January 10, 2014 summarizing the intent and content of PLAN 2040 RTP (March 2014 Update) and inviting public review and comment through email, fax, phone or TTY. A special webpage was created on the Atlanta Regional Commission website, "PLAN 2040 Regional Transportation Update 2014" where a detailed explanation was given on EPA requirements to assure air quality, a timeline for the plan development process, and specific components of the plan – public notice, as well as the draft CDR and findings. This website address was broadcast widely through the ARC community networks in publications such as the Regional Briefings, the Community Engagement Network newsletter, and the TSpot transportation newsletter. The total audience reached was over 5200 individuals. There were announcements at all of the ARC, GRTA, and GDOT transportation committee and board meetings of the review period.

ARC's public involvement process for the PLAN 2040 RTP (March 2014 Update), combining both the original July 2011 plan and the March 2014 updated plan, 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 of developing PLAN 2040 RTP local officials and their staffs were actively involved in giving input. Approximately 200 separate meetings were held from 2008-2014 with local officials, including regular policy subcommittee meetings consisting of members of the ARC Transportation and Air Quality Committee.
- *Stakeholder Planning Meetings:* In addition to meeting with local elected officials over the past five to six years, a comparable number of technically oriented meetings were held with stakeholder agencies and organizations, including staff of project sponsors. Larger briefings (50-75 each) brought together various stakeholder groups 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. The 2014 plan development employed a variety of technical and policy subcommittees to address particular issues such as managed lane coordination, project implementation policies, and system preservation needs in depth.
- *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 a series of 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 accessible to help people 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 from 2010 to 2011. 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 2009, 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. Public outreach for the Transportation Investment Act of 2010 investment list that went 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.
- *Community Engagement Regional Survey:* In July of 2013, ARC, in partnership with The Civic League, conducted an online regional survey to learn more about how people prefer to receive information about planning activities and interact with ARC. This survey received more than 2,000 responses and was used to help inform aspects of some the outreach activities for PLAN 2040 RTP.
- *PLAN 2040 RTP (March 2014 Update) Pop-Up Open House:* ARC, in partnership with The Civic League, organized an innovative open house that transformed a vacant storefront on a Saturday afternoon in January 2014 in a heavily trafficked area to attract general public participation. In addition, a comprehensive communication effort was conducted to invite regional stakeholders, community leaders and the general public via email, telephone, newsletters, social media and announcements at regularly scheduled meetings. The materials for this open house were also made available online in a Virtual Open House from January 11, 2014 through February 22, 2014, along with opportunity to receive public comments directly from the website as well as via telephone, TTY, email, fax or in writing.
- *ARC Board Public Hearing:* It is an ARC public participation policy that the planning process requires a formal public hearing. The public hearing for the PLAN 2040 RTP (March 2014 Update) was held before the ARC Board at its regularly scheduled January 22, 2014 meeting. At this meeting, materials were available for additional information about the subject of the hearing. The hearing was recorded by a court reporter. No speakers registered to address the ARC Board. Had there been any requests, speakers at the Public Hearing would have been allowed three minutes to give their statements or record their comments with a court reporter. These comments would be captured verbatim and posted to the ARC PLAN 2040 RTP (March 2014 Update) website as part of the aforementioned Appendix F of Volume I.

Fiscal Constraint

The primary purpose of the TIP amendment and conformity determination is to 1) demonstrate the region's ability to meet the air quality requirements for the new 15-county ozone non-attainment area, 2) reflect the latest designs for several regionally significant projects, and 3) respond to a limited number of programming changes for projects. No long-range project costs are impacted beyond the TIP period. The revenue forecasts presented in this section were performed in support of the PLAN 2040 RTP (March 2014 Update), which is expected to be approved by spring of 2014 and will include updates of financial forecasts to reflect MAP-21 funding levels and trends.

As such, the impact on financial constraint is minor and adequate resources are available to implement the proposed amendments. Both FHWA and FTA funding is balanced for the FY 2014-2019 TIP period and the long-range element of the RTP beyond 2019. For financial balancing purposes, the TIP is divided into 2 tiers. Federal planning requirements hold the first 4 years of the TIP (Tier 1) to a higher standard of certainty than subsequent years. Tier 2 includes expected project costs and funding for FY 2018-2019.

Project costs in the first four years of the TIP (FY 2014-2017), consistent with federal financial balancing requirements, do not exceed available revenues. Over the FY 2014-2019 TIP period, $3.87 billion of FHWA funds are assigned to projects (see Table 3), out of $4.17 billion anticipated to be available. FHWA funding forecasts for 2014 include a $270 Million TIFIA Loan to support implementation of the NW Corridor Managed Lanes project. Over the entirety of the plan, $23.2 billion of federally assigned costs are offset by $23.4 billion of anticipated FHWA revenue (both figures are expressed in inflated year of expenditure dollars). Therefore, both the FY 2014-2019 TIP period and long-range element of the RTP meet federal financial constraint requirements for FHWA funds.

FTA funds are also balanced during the TIP period. Over the FY 2014-2019 TIP period, $751 million of FTA funds are assigned (see Table 4) to an equivalent amount in project costs. Over the entirety of the plan, $6.7 billion of federally assigned costs are offset by $6.7 billion of anticipated FTA revenue (both figures are expressed in inflated year of expenditure dollars). Therefore, both the FY 2014-2019 TIP period and long-range element of the RTP meet federal financial constraint requirements for FTA funds.

A more detailed discussion of financial constraint for the RTP, including revenue and cost assumptions, is available in Volume I, Section 5 of the document set.

Table 3: FY 2014-2019 Yearly TIP Balances – Federal Highway Administration Funds ($YOE)

PROGRAM CATEGORY	2014	2015	2016	2017	2018**	2019**	2014-2019 Total
Congestion Mitigation & Air Quality Improvement (CMAQ)	$ 29,000,000	$ 73,707,412	$ 29,000,000	$ 29,000,000	$ 29,000,000	$ 29,000,000	$ 218,707,412
Donor State Bonus				$ 2,580,500			$ 2,580,500
Federal Earmark Funding	$ 26,534,502	$ 23,505,936	$ 8,475,245	$ 6,353,585	$ 719,921		$ 65,589,189
Highway Safety Improvement Program (HSIP)	$ 27,649,000	$ 30,464,000	$ 29,159,200	$ 29,159,200	$ 30,557,200	$ 32,076,556	$ 179,065,156
National Highway Performance Program (NHPP)	$ 131,379,046	$ 183,165,131	$ 196,391,596	$ 162,707,692	$ 313,466,916	$ 274,154,920	$ 1,261,265,301
National Highway Performance Program (NHPP) Exempt	$ 10,627,200	$ 10,733,600	$ 10,840,000	$ 11,058,400	$ 11,186,400	$ 11,186,400	$ 65,632,000
Public Land Discretionary	$ 1,180,000	$ 1,180,000	$ 1,670,000				$ 4,030,000
Safe Routes to School Program	$ 5,300,000	$ 294,000	$ 210,000	$ 210,000	$ 1,563,088	$ 1,474,274	$ 9,051,362
STP - Enhancements	$ 7,584,800	$ 8,359,800	$ 7,526,400	$ 9,203,097	$ 7,084,800	$ 9,694,880	$ 49,453,777
STP - Off-System Bridge	$ 244,800			$ 1,342,216			$ 1,587,016
STP - Statewide Flexible (GDOT)	$ 199,862,983	$ 113,334,418	$ 172,340,212	$ 227,822,699	$ 263,258,823	$ 177,640,054	$ 1,154,259,189
STP - Urban (>200K) (ARC)	$ 60,391,564	$ 70,000,000	$ 70,000,000	$ 70,000,000	$ 70,000,000	$ 70,000,000	$ 409,291,564
TAP - Urban (>200K) (ARC)	$ 14,360,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 7,200,000	$ 50,360,000
TIFIA Loan*	$ 275,000,000						$ 275,000,000
TIGER V Discretionary Grant*	$ 18,000,000						$ 18,000,000
Transportation, Community and System Preservation	$ 782,640						$ 782,640
Total Cost per Year	**$ 807,896,535**	**$ 521,944,297**	**$ 532,812,653**	**$ 554,056,889**	**$ 734,037,148**	**$ 612,427,084**	**$ 3,763,174,606**
Running Total Cost	**$ 807,896,535**	**$ 1,329,840,832**	**$ 1,862,653,485**	**$ 2,416,710,374**	**$ 3,150,747,522**	**$ 3,763,174,606**	
Forecast Revenue (GDOT STIP Estimates for FY 2014)	**$ 807,896,535**	**$ 647,193,942**	**$ 657,543,190**	**$ 668,041,215**	**$ 678,685,319**	**$ 713,228,023**	**$ 4,172,588,224**
Running Total Revenue	**$ 807,896,535**	**$ 1,455,090,477**	**$ 2,112,633,667**	**$ 2,780,674,882**	**$ 3,459,360,201**	**$ 4,172,588,224**	
Running Total Balance (Revenues less Costs)	**$ -**	**$ 125,249,645**	**$ 249,980,182**	**$ 363,964,508**	**$ 308,612,679**	**$ 409,413,618**	

* Unique one-time funding sources which substantially increased the FY 2014 total

** Fiscal years 2018 and 2019 are not considered to be a part of the federally mandated four-year TIP. FY 2018 and FY 2019 are not fiscally constrained by year. Instead, they are fiscally constrained by planning period timespans.

Table 4: FY 2014-2019 Yearly TIP Balances – Federal Transit Administration ($YOE)

PROGRAM CATEGORY	2014	2015	2016	2017	2018*	2019*	2014-2019 Total
Bus - New (80/20)	$ 3,470,000	$ 15,480,000	$ 1,550,000	$ 1,550,000	$ 1,550,000	$ 1,550,000	**$ 25,150,000**
Bus and Bus Facilities Program	$ 5,415,512	$ 5,415,512	$ 5,415,512	$ 5,415,512	$ 5,415,512	$ 5,415,512	**$ 32,493,072**
Clean Fuels Formula Program	$ 3,700,000	$ 3,700,000	$ 3,700,000	$ 3,700,000	$ 3,700,000	$ 3,700,000	**$ 22,200,000**
Enhanced Mobility of Seniors and Individuals with Disabilities	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	**$ 7,200,000**
State of Good Repair Grants	$ 48,591,797	$ 48,591,797	$ 48,591,797	$ 48,591,797	$ 48,591,797	$ 48,591,797	**$ 291,550,782**
Transit Nonurbanized Area Formula	$ 760,000	$ 760,000	$ 760,000	$ 760,000	$ 760,000	$ 5,760,000	**$ 9,560,000**
Transit Urbanized Area Formula Program	$ 63,936,800	$ 63,936,800	$ 63,936,800	$ 63,936,800	$ 63,936,800	$ 63,936,800	**$ 383,620,800**
Total Cost per Year	**$ 127,074,109**	**$ 139,084,109**	**$ 125,154,109**	**$ 125,154,109**	**$ 125,154,109**	**$ 130,154,109**	**$ 771,774,654**
Running Total Cost	**$ 127,074,109**	**$ 266,158,218**	**$ 391,312,327**	**$ 516,466,436**	**$ 641,620,545**	**$ 771,774,654**	
Forecast Revenue (GDOT STIP Estimates for FY 2014)	**$ 127,074,109**	**$ 139,084,109**	**$ 125,154,109**	**$ 125,154,109**	**$ 125,154,109**	**$ 130,154,109**	**$ 771,774,654**
Running Total Revenue	**$ 127,074,109**	**$ 266,158,218**	**$ 391,312,327**	**$ 516,466,436**	**$ 641,620,545**	**$ 771,774,654**	
Running Total Balance (Revenues less Costs)	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	

* Fiscal years 2018 and 2019 are not considered to be a part of the federally mandated four-year TIP. FY 2018 and FY 2019 are not fiscally constrained by year. Instead, they are fiscally constrained by planning period timespans.

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 (revised in December 2008), 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 PLAN 2040 RTP and FY 2014-2019 TIP is outlined in 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 October 22, 2013.

Since the adoption of the 2011 iteration of PLAN 2040, there have been no major revisions to the ARC travel demand model. ARC has shifted model development resources into the completion of the activity-based travel demand model. This model will replace the current trip-based model in the near future for conformity purposes. Exhibit 1 includes data on model calibration and validation. The current trip-based model is calibrated to the base year 2000, but has been updated and validated to 2010 traffic volumes.

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 (March 2014 Update) / FY 2014-2019 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 1.

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 October 22, 2013.

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 the PLAN 2040 RTP (March 2014 Update) 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 1.

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 the PLAN 2040 RTP (March 2014 Update) is outlined in Exhibit 1, as previously mentioned.

For a more detailed listing of transit fares by transit provider, please see the Model Documentation of the PLAN 2040 RTP (March 2014 Update) 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. 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 the PLAN 2040 RTP (March 2014 Update), 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.

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.

Service Level Changes

At the time of the PLAN 2040 (July 2011) – FY 2012-2017 TIP, there were a number of transit systems in operation in the 20-county Atlanta non-attainment area including MARTA, GRTA Xpress, Cobb Community Transit (CCT), Gwinnett County Transit (GCT), City of Canton Shuttle (CATS) 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 PLAN 2040 (July 2011) adoption, only a few service changes have occurred. MARTA has approved a plan to expand the hours of service on the green and red lines, with turn backs starting at 9PM instead of 7PM. CCT has cut 3 routes since 2011, while GCT has expanded coverage within Gwinnett County. GRTA has rerouted service within downtown Atlanta, but service levels have remained similar. CATS and HAT are both providing similar levels of service.

The model includes all university and Transportation Management Authority (TMA) shuttles, which have seen a large share of ridership increase over the past several years. Shuttles include: Atlantic Station Shuttle, Buckhead Uptown Connection (BUC), Georgia Tech Buses and Trolleys, the Emory/Clifton Corridor TMA Shuttles, Georgia State University Shuttles, Atlanta University Center/Woodruff Library Shuttles.

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 Volume I: RTP 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.

The PLAN 2040 RTP (March 2014 Update) provides for the expansion of a regional fixed guideway network in addition to an express bus service expansion. Light Rail/Streetcar/BRT systems are planned for:

- Georgia Multimodal Passenger Terminal in Atlanta
- Clifton Corridor Light Rail Transit – Phase I from Lindbergh MARTA Station to Emory Hospital
- I-20 East Transit Initiative – Phase I Heavy Rail Transit Extension from Indian Creek MARTA Station to Wesley Chapel Road and Bus Rapid Transit Service from Five Points MARTA Station to Wesley Chapel Road
- Atlanta Streetcar Expansion – Phase I Segments
- GA 400 Transit Initiative – Phase I
- Connect Cobb/Northwest Atlanta Transit Corridor Bus Rapid Transit – Phase I

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

Since the adoption of the PLAN 2040 (July 2011) RTP, the governor announced the removal of the SR 400 toll by the end of calendar year 2013. The removal of the toll has been reflected in all conformity years for the PLAN 2040 RTP (March 2014 Update) analysis.

There is currently only one optional toll facility left in the region, the I-85 HOT lane. The State plans on advancing the managed lanes system plan over the coming decades to provide enhance travel time reliability. As a result, by the year 2040 the network of HOT lanes is programmed to include the following facilities north of the perimeter: I-75, I-575, SR 400 and an extension of I-85. In addition, the model reflects a plan to implement a HOT facility on I-75 south of the perimeter and along the top end of the perimeter from I-75 to I-85.

The assignment model includes procedures to assign travel to general-purpose travel lanes, HOV, and toll lanes, using a toll diversion model. The highway assignment procedures include a toll diversion model to account for managed lanes identified in the PLAN 2040 RTP (March 2014 Update). The toll diversion model converts toll costs to time penalties using value-of-time factors.

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 $PM_{2.5}$ 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 (2015, 2020, 2030, and 2040) to reflect projects as listed in Volume I: RTP Appendix A. The analysis year 2024 emissions were linearly interpolated from model runs completed for the years 2020 and 2030. Many projects, previously part of the financially constrained *Envision6* and PLAN 2040 (July 2011) RTPs, cannot be funded in the PLAN

2040 RTP (March 2014 Update). Regional policy makers have identified these as the highest priority to be added back to the financially-constrained RTP should additional funds become available. These projects are identified as "Unfunded Needs" or "Regional Aspirations". A list of these projects can also be found in Volume I: RTP Appendix A.

The PLAN 2040 RTP (March 2014 Update) is the first conformity-analysis update ARC has undertaken since the end of the MOVES conformity grace period on March 2, 2013. As a result, this plan update includes an entire new set of documentation in Exhibit 3 to reflect the development and use of the MOVES model and its inputs by ARC in partnership with GA EPD, GDOT, and with interagency support. The MOVES modeling platform is substantially different from MOBILE6. Regional emissions are more accurately reflected as a result of the improvements in the emissions modeling process implemented in the MOVES model. As a result, there are some substantial differences in the output emissions between this plan update and previous iterations.

Eight-Hour Ozone Standard

In May, 2012, as the Atlanta area was being designated under a smaller 15-county nonattainment area, Interagency reviewed the methodologies prescribed in the conformity guidance for a shrinking nonattainment area. Via 93.109(c)(2)(ii)(B) of the "July 2012 Guidance for Transportation Conformity Implementation in Multi-Jurisdictional Nonattainment and Maintenance Areas" the budget test using existing budgets for a reduced area is still considered a valid test, provided that any additional emissions reductions needed to pass the budget test come from within the new nonattainment area boundary. Therefore, the analysis for the 15-county ozone nonattainment area was carried out using the 20-county travel demand model and existing 20-county budgets, per interagency agreement.

The nonattainment area is broken into a 13-county and 7-county section and the MOVES model is run separately for each area. For a full explanation of how MOVES is run and how inputs are developed see Exhibit 3. In addition, sample MOVES2010b county data manager input files are provided in Exhibit 4. This Exhibit contains abbreviated versions of the input files used to calculate regional emissions.

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 1 for more details.

Results of Analysis - Eight-Hour Ozone Standard

The results of the emissions analysis for the PLAN 2040 RTP (March 2014 Update) 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 RFP State Implementation Plan and the Ozone Maintenance Plan. Table 5 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

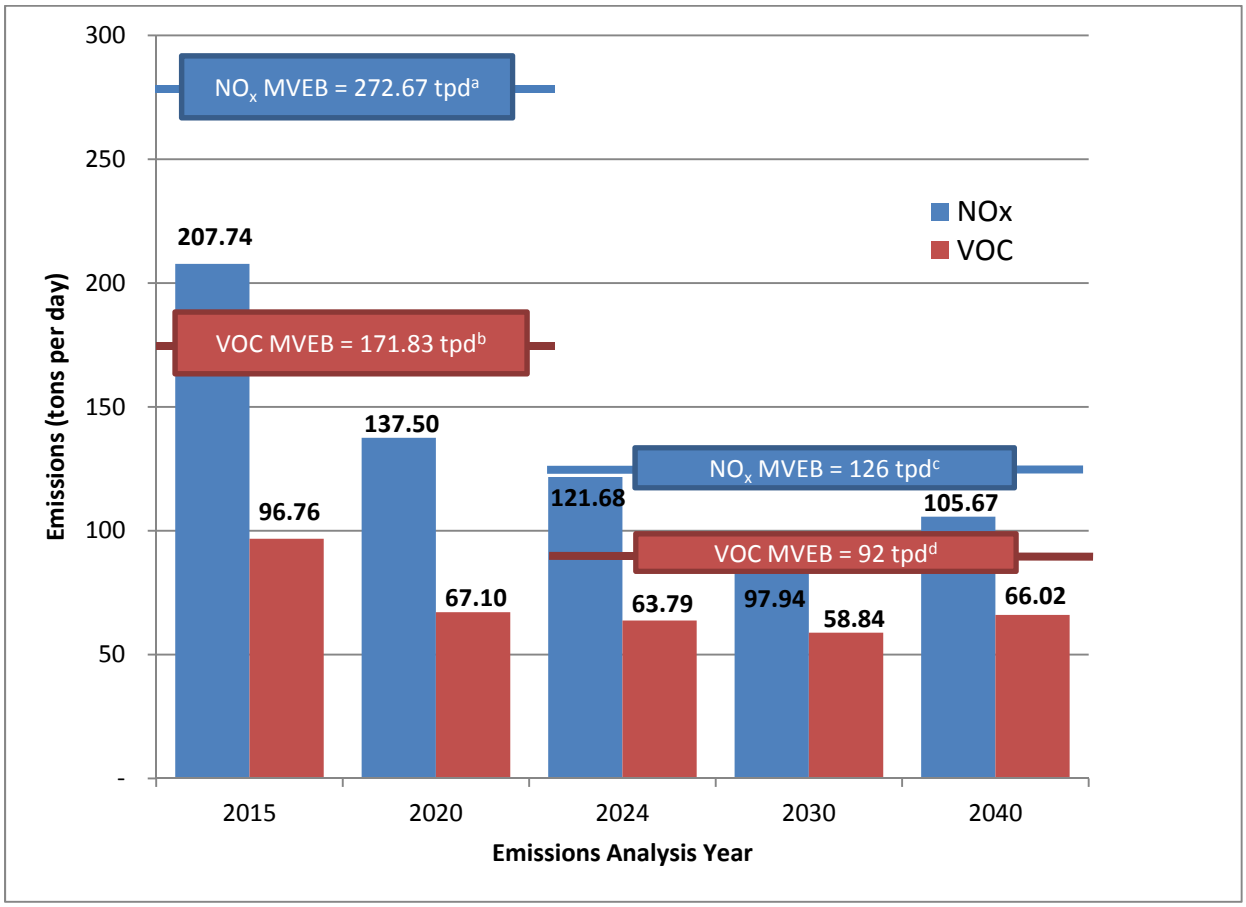
EPD, applies an off-model adjustment to emission results (for the 13-county area only) to reflect an emissions debit resulting from a program to exempt senior citizens from the I/M program. This program was initiated by the Georgia General Assembly in 1996 (O.C.G.A Section 12-9). It exempts from emission 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 5). 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 5: 20-County Motor Vehicle Emissions Budget Test: Eight-Hour Ozone Standard

Conformity Year / MVEB Plan	**NO_x (tpd)**	**VOC (tpd)**
2008 Atlanta RFP SIP Budgets	272.67	171.83
2015 Total	207.74	96.76
2020 Total	137.50	67.10
2024 Atlanta Maintenance SIP Budgets	126	92
2024 Total	121.68	63.79
2030 Total	97.94	58.84
2040 Total	105.67	66.02

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



a – 2008 Reasonable Further Progress (RFP) SIP NO_x Budget
b – 2008 Reasonable Further Progress SIP VOC Budget
c – 2024 Ozone Maintenance Plan SIP NO_x Budget
d – 2024 Ozone Maintenance Plan SIP VOC Budget

$PM_{2.5}$ 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 $PM_{2.5}$ 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[9]. 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 $PM_{2.5}$ and NO_x as a presumed precursor.

For the $PM_{2.5}$ standard there are three sets of MOVES 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, one for the seven "ring" counties, and one for the portion of Putnam County that is part of the Atlanta $PM_{2.5}$ nonattainment area. For each set, the input files contain the same assumptions for all directly modeled analysis years (2015, 2020, 2030 and 2040).

MOVES input files for the $PM_{2.5}$ analysis share many similarities with the ozone analysis. A sample of inputs is provided in Exhibit 4. Full input datasets for both the $PM_{2.5}$ and ozone MOVES runs are available upon request.

The same HPMS adjustment factors developed for the eight-hour ozone part of this conformity analysis were used for the $PM_{2.5}$ analysis. However, because $PM_{2.5}$ 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 1 reflect 2010 HPMS and 2010 Model VMT by functional class for both the 13-county and 7-county part of the $PM_{2.5}$ nonattainment area.

$PM_{2.5}$ Standard – Partial County Area for Heard and Putnam

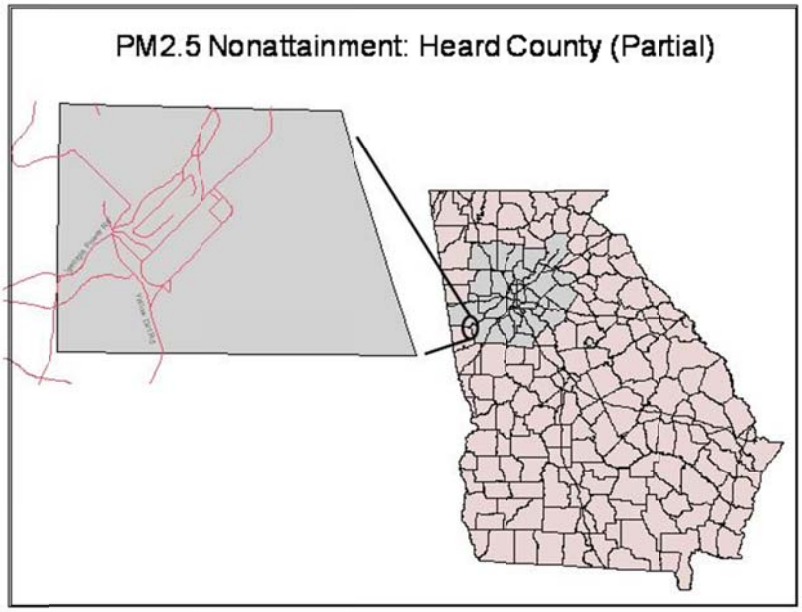
The Atlanta $PM_{2.5}$ Nonattainment Area includes small parts of two counties, Heard and Putnam, which fall outside of the core 20 whole counties which make up the $PM_{2.5}$ nonattainment area (see Figure 4). A travel model is not in place for these counties. According to the Transportation Conformity 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. Therefore, a revised off-travel model technique was developed to estimate average annual daily VMT for use in the MOVES model in the partial county areas.

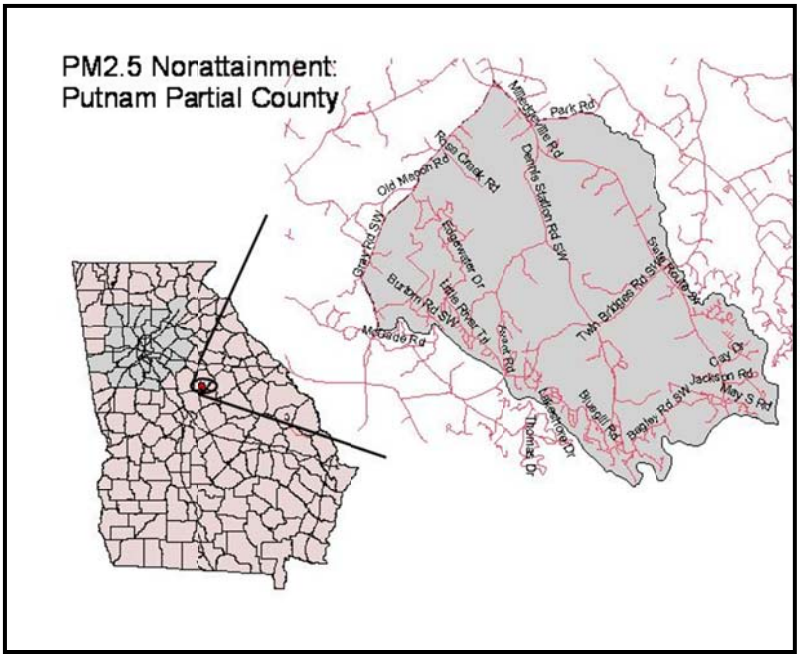
For Heard County the roads identified are private roads that service Georgia Power's Plant Wansley. These roads do not experience through-traffic and, therefore, do not need to be included in the regional emission analysis. As such, this methodology only applies to Putnam County.

The methodology for calculating emissions for Putnam County is presented in its entirety in Exhibit 3.

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

Figure 4: Heard and Putnam County Roadways within $PM_{2.5}$ Nonattainment Boundary





Results of Analysis – $PM_{2.5}$ Standard

The results of the emissions analysis for the PLAN 2040 RTP (March 2014 Update) RTP/GHMPO 2040 RTP for all analysis years for the Atlanta $PM_{2.5}$ nonattainment area demonstrate adherence to the level of emissions necessary to meet the No Greater Than Base Year Test. Results are aggregated over the 13-county, 7-county and Putnam County portions of the $PM_{2.5}$ nonattainment area. Table 6 and Figures 5 and 6 document the average annual $PM_{2.5}$ 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 6) in 2002. This off-model adjustment is applied to the emission results for NO_x, as a precursor to $PM_{2.5}$, 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 6: Regional Emissions Analysis: Annual $PM_{2.5}$ Standard (Direct $PM_{2.5}$ & NO_x Precursor)

	$PM_{2.5}$ Direct (tons/year)	**NO_x Precursor (tons/year)**
2002 Base Year Test	6,405	194,050
2015 Total	2,699	69,691
2020 Total	2,059	46,445
2024 Total	1,974	41,913
2030 Total	1,847	35,130
2040 Total	2,161	37,806

Figure 5: Regional Emissions Analysis: Direct $PM_{2.5}$ Emissions

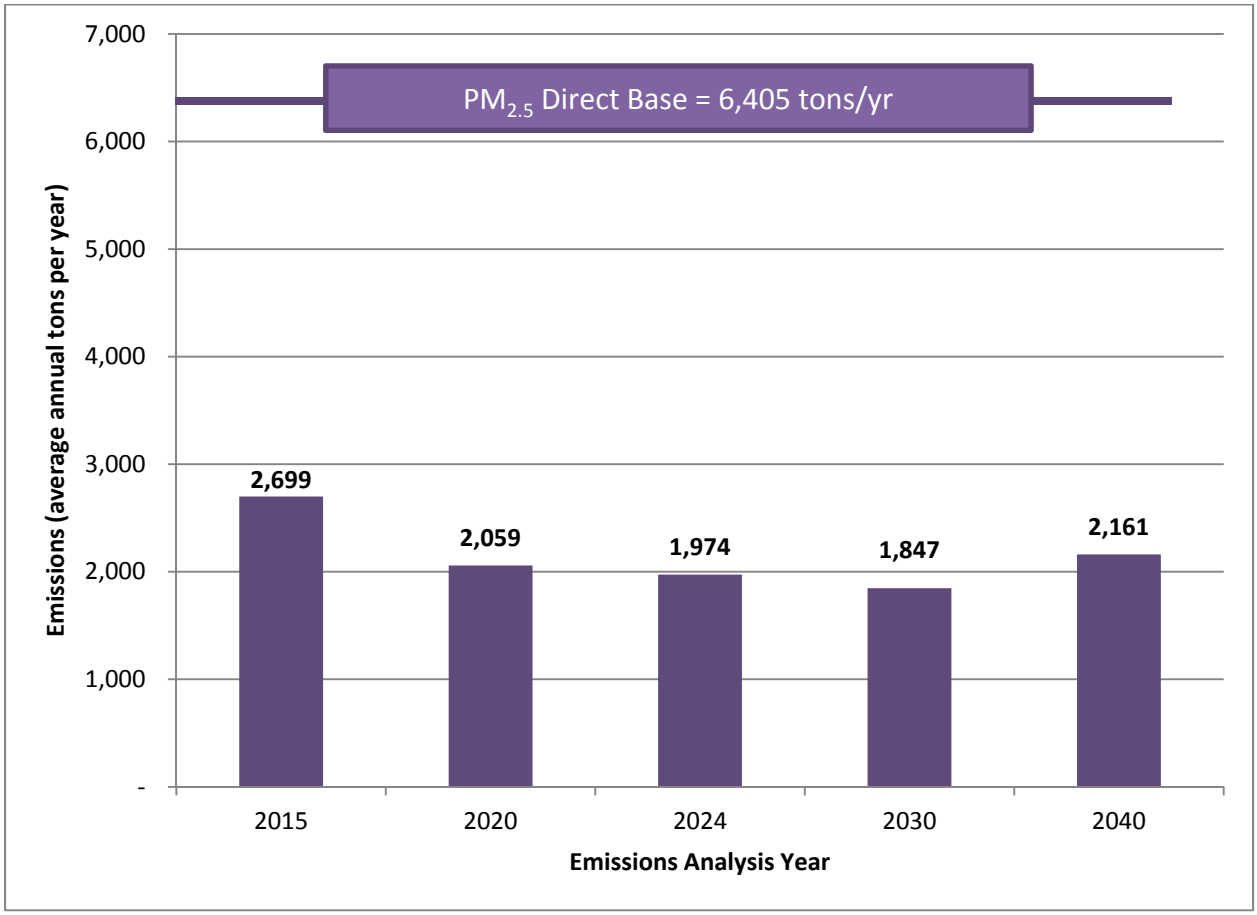


Figure 6: Regional Emissions Analysis, NOx Precursor Emissions