

Draft Transportation/Air Quality Conformity Determination for the Orange County Portion of the NY-NJ-CT PM_{2.5} Non-Attainment Area

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1.0 Introduction

The US Environmental Protection Agency (EPA) requires that transportation/air quality conformity be demonstrated by metropolitan planning organizations (MPOs) in air quality non-attainment areas whenever transportation projects that may significantly impact air quality are planned and programmed. The Orange County Transportation Council (OCTC) is the MPO for OC responsible for ensuring that federal transportation dollars (highway and transit) are programmed through a locally driven, comprehensive planning process, involving the development of a Metropolitan transportation plan (MTP) (25-year plan), a Transportation Improvement Program (TIP), and a Unified Planning Work Program (UPWP). OC is also part of NY-NJ-CT non-attainment area for fine particulate matter (PM_{2.5}) along with New York City, Long Island, Westchester and Rockland Counties. All air quality non-attainment areas are subject to a measure known as “transportation conformity,” which requires transportation and air quality officials to coordinate and ensure that transportation projects, such as road construction, do not affect an area's ability to reach its clean air goals. This draft conformity determination is being issued in response to the update of transportation projects in the OCTC TIP¹ and documents the transportation conformity process undertaken by OCTC to demonstrate compliance with EPA Transportation Conformity Regulations for the OC portion of the NY-NJ-CT PM_{2.5} Non-Attainment Area.

2.0 Background

Fine particulate matter, also called PM_{2.5}, is a mixture of microscopic solids and liquid droplets suspended in the air less than 2.5 micrometers (about one-thirtieth the diameter of a human hair) in size. Fine particles can be emitted directly (such as smoke from a fire, or as a component of automobile exhaust) or be formed indirectly in the air from power plant, industrial and mobile source gas emissions such as sulfur dioxide and nitrogen oxides.

The health effects associated with exposure to fine particulate matter may be significant. Scientific studies have shown a strong relationship between elevated fine particulate matter and decreased lung function, asthma attacks, as well as certain cardiovascular problems such as heart attacks and cardiac arrhythmia (as indicated by increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days). While fine particulate matter is unhealthy for anyone to breathe, people with already compromised heart or lung function, as well as older adults and children are particularly at risk.

In July 1997, EPA issued National Ambient Air Quality Standards (NAAQS) for fine particulate matter (PM_{2.5}) to protect the public from exposure to levels of PM_{2.5} that may cause health problems. The 24-hour standard for PM_{2.5} is set at 35 micrograms.² The annual standard for PM_{2.5} is set at 15 micrograms per cubic meter based on the 3-year average of annual mean PM_{2.5} concentrations. Regions not meeting PM_{2.5} NAAQS or that contribute to violations of the standard in other regions are deemed to be part of non-attainment areas by the EPA. Non-Attainment areas are subject to a measure known as “transportation conformity,” which requires local transportation and air quality officials to coordinate planning efforts to ensure that

¹ (NYMTC is the MPO for New York City, Long-Island, Westchester, Rockland and Putnam Counties)

² (When the NAAQS were first established, the 24-hour standard for PM_{2.5} was set at 65 micrograms per cubic meter. Since then the standard has been lowered to 35 micrograms per cubic meter by the EPA to further protect public health.)

transportation projects, such as road construction, do not affect an area's ability to reach its clean air goals.

On April 5th, 2005, the United States Environmental Protection Agency (EPA) designated Orange County (OC) to be part of the NY-NJ-CT PM_{2.5} Non-Attainment Area along New York City, Rockland and Westchester Counties, Long Island, Northern New Jersey and Southwestern Connecticut. As a result of this designation, OC and all the metropolitan planning organizations (MPOs) responsible for planning transportation improvements for these areas are required to demonstrate compliance with the Transportation Conformity Regulations promulgated by the EPA for fine particulate matter (PM_{2.5}).

In September 2006, the EPA revised the 1997 fine particle standard. The 2006 standard strengthened the 24-hour PM_{2.5} standard from 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 35 $\mu\text{g}/\text{m}^3$, and retained the current annual PM_{2.5} standard at 15 $\mu\text{g}/\text{m}^3$. On December 14, 2009, the NY-NJ-CT metropolitan area was classified non-attainment for the new 2006 24-hour PM_{2.5} standard. Transportation conformity for those areas designated as non-attainment under the new standard will apply one year after the effective date of the designations (i.e. December 14, 2010). Accordingly, NYMTC and OCTC plan on demonstrating conformity to the new 2006 24-hour PM_{2.5} standard in the fall of 2010.

3.0 Interagency Consultation & Coordination

As part of EPA's Transportation Conformity Regulations, interagency consultation and coordination are required. The NYS Interagency Consultation Group (ICG) is comprised of representatives from the U.S. Department of Transportation (Federal Highway and Transit Administrations), EPA – Region 2, NYS Department of Environmental Conservation (NYSDEC), the NYS Department of Transportation-Environmental Science Bureau (NYSDOT-ESB) and OCTC. The group provides multi-agency guidance concerning the conformity process, as well as concurrence on the assumptions and methodology used to forecast vehicle miles traveled (VMT) and vehicular speeds with the OCTC Travel Demand Model. Generally, these outputs (VMT and vehicular speeds) form the basis for the "regional emissions analysis" using the most current version of EPA's vehicle emissions model, *MOBILE6.2* to calculate vehicle emissions and the air quality impact of nonexempt projects in the OCTC Metropolitan transportation plan (MTP) and OCTC Transportation Improvement Program (TIP) for Federal Fiscal Year (FFY) 2008-2012.

4.0 Format

The format of this conformity determination follows the required subject matter that must be addressed pursuant to the transportation conformity regulations promulgated by the EPA to protect air quality and public health.

5.0 Latest Planning Assumptions

6.0 Latest Emissions Model

7.0 Consistency with each Metropolitan transportation plan

8.0 Identification of Exempt/Non-Exempt & Regionally Significant Projects

9.0 Timely Implementation of TCMs

10.0 Documentation of Interagency Consultation Requirements

11.0 Public Involvement

12.0 Results of Emissions Analysis

13.0 Evidence of MPO resolutions

5.0 Latest Planning Assumptions

Federal and State regulations require that a conformity determination be based on the latest planning assumptions available at the time the regional emissions analysis begins. Specifically, information on demographic data, transit operating policies, transit service levels, transportation control measures and other key assumptions used to forecast vehicle miles traveled (VMT) and vehicular speeds by functional classification must be the latest information that is available. The VMT forecasts for Orange County are calculated with *Visum* modeling software based on assumptions involving future housing and employment in OC, the vehicular trips generated therefrom and future transportation improvements planned.

Vehicle Miles Traveled:
used to measure vehicular travel in miles regardless of the number of persons in the vehicle.

5.1 Population, Housing, Employment and Travel Data. In order to accurately duplicate existing traffic conditions and forecast future VMT, travel demand models rely on population, housing, employment and travel data to measure how the transportation system envisioned in a and/or Transportation Improvement Program and/or Metropolitan transportation plan will operate in the future. The OCTC Travel Demand Model does this by first incorporating important characteristics of the existing transportation system such as road network, intersection and road capacities, traffic control devices, posted speeds and functional classification. Then housing and employment data are incorporated along with trip generation rates and trip length frequency parameters to replicate current travel patterns. These travel characteristics are then used to forecast future traffic conditions and future travel demand based upon increases in housing, employment, vehicular trips and the likely routes people will take from place to place.

Functional Classification:
A means of grouping streets and highways into classes (e.g. interstates, arterials, collectors or locals) according to the type of service they provide (i.e. long distance vs. local) and the degree of land access permitted.

Housing and employment projections were made for each analysis year being evaluated (i.e. 2012, 2020, 2030, 2035) as part of PM_{2.5} Conformity based on historic growth trends in OC. These projections are used to forecast future VMT in the OC Travel Demand Model and were recently revised with the last update of the OCTC Long Range Transportation Plan (MTP) adopted by OCTC on November 29, 2007. The corresponding transportation/air quality conformity determination for the OCTC MTP was certified by USDOT on December 19, 2007 and most recently on October 1st, 2009. Overall, the projections used to demonstrate conformity are consistent with current Census population estimates for OC and recent projections made by *Urbanomics* issued by NYMTC. Table 1 below shows the projections for Orange County.

- 5.1.1 Population.** Source: Census 2000, Summary File 1. Population and housing information from the 2000 Census together with Census population and housing estimates (July 2006), building permit data and population growth trends over the past 20 years were used as the basis for determining the population and housing forecasts in the OC Travel Demand Model for future analysis years.
- 5.1.2 Employment.** Source: NYS Department of Labor. Employment information indicating the type and location of all businesses in OC along with the number of employed persons in each was obtained from the NYS Department of Labor for the year 2002. This information was separated into six categories (retail, mall, non-retail, office, school and institutional) and aggregated by type and location to determine peak hour trips for each TAZ in the OCTC Travel Demand Model. Employment projections were based upon expected employment from approved development projects since the year 2002, as well as average growth rates in commerce throughout OC. The basic underlying premise is that future employment levels will be directly related to the influx of new people and increased demand for products and services created by the future growth in population.
- 5.1.3 Housing Units.** Source: NYS Office for Real Property Services (ORPS) Land use information for each parcel in OC was obtained for the year 2002 and aggregated by type and location to determine peak hour trips generated for both single-family and multifamily housing in each TAZ of the OC Travel Demand Model. Future single-family and multifamily housing units were projected based upon: proposed residential projects yet to be constructed in each TAZ, average growth rates in housing by municipality and the availability of sewer and water facilities.
- 5.1.4 Households.** Source: Census 2000, Summary File 3. Household information from the 2000 Census was used as a means of checking and verifying the housing data and occupancy information from the NYS Office of Real Property.
- 5.1.5 Vehicles Available.** Source: Census 2000, Summary File 3. Vehicle availability data by household was used to refine the number of trips generated in each TAZ. This was done for TAZ's primarily in cities where the rate of vehicular trips generated per occupied housing unit is less than average rates because people there tend to rely more on mass transit for mobility than other areas of OC.

Table 1. Demographic Forecasts for Orange County

Orange	2000	2002	2012	2020	2030	2035	% Annual Growth	% Total Growth
Population	341,367	346,987	395,026	421,133	465,125	482,045	1.18	41
Employment	110,242	123,372	144,878	155,362	173,293	182,259	1.56	54
Housing Units	122,754	124,787	142,896	154,317	171,000	177,417	1.27	45
Households	114,788	116,689	133,623	144,303	159,903	165,903	1.27	45
Vehicles	200,879	204,206	233,840	266,180	279,830	290,330	1.27	45

5.2 Transit Operating Policies. Coach USA, MTA-MetroNorth Railroad, Newburgh-Beacon Bus Company, Middletown Transit, Monroe Bus Company and Kiryas Joel Transit provide the majority of mass transit services in Orange County along with 9 local dial-a-bus operators. According to Census Journey-to-Work information, only 4.7% of work related travel in OC had a mass transit component, with a majority of this travel involving vehicular trips to and from park and ride lots in OC. While park and ride lots are included in the OC Travel Demand Model as trip generators, transit service is not modeled given the low rate of utilization in OC.

5.3 Transit Service Levels. The travel demand model does not incorporate significant changes in travel attributable to increased future transit service in Orange County. Significant changes in economic and/or environmental conditions together with steep are not forecast as part of future development scenarios.

5.4 Transportation Control Measures. No transportation control measures (TCMs) are identified for Orange County as part of the applicable NYS SIP. Therefore, the TCM implementation conformity criteria do not apply. There are also no transportation projects in the OCTC MTP and TIP that will interfere with the timely implementation of TCMs in other areas.

5.5 Key Assumptions.

5.5.1 Demographics. It is assumed that OC will experience near constant levels of growth over the next 25 years similar to those experienced over the past 30 years.

5.5.2 Transportation System. The OC Model further assumes that the regional transportation network will retain its ability to adjust to changes in travel demand with regard to vehicular traffic and mass transit services. This assumes that future transportation funding rates will be maintained and that technological advances in Intelligent Transportation Systems (ITS) will further improve the efficiency of the transportation system.

5.5.3 Projects Evaluated with an Off-model Process

Vehicle emissions reductions attributable to the **Enhanced Commuter Choice** non-exempt program in the OCTC TIP were calculated using methodology from EPA's COMMUTER Model (Release 2) and applied to the emissions totals in the build scenarios of each future analysis year

Enhanced Commuter Choice is a program being used by NYMTC, OCTC, PDCTC and NYSDOT in the Downstate region to increase awareness and use of commuting alternatives such as carpooling, vanpooling and walking. The program also looks to increase "employer support" for programs such as alternative work schedules and the use of pre-tax income to pay for transportation expenses such as Transit Chek. Per the recommendation of USEPA, OCTC utilized the COMMUTER model (Release 2) to estimate

the impact of this program on commuter trips and VMT in Orange County. Local emission factors were applied to the averted trip VMT to estimate the total emissions reductions achieved by the program as indicated in the emissions calculations detailed in the appendix of this document.

6.0 Latest Emissions Model

6.1 General. The overall goal of transportation conformity is to ensure that transportation projects and the transportation system as a whole do not create new air quality violations or exacerbate existing violations. Travel demand modeling provides a means of quantifying vehicle miles traveled (VMT) and average vehicular speeds by functional classification of roadway. These outputs are utilized to calculate vehicular emissions using the most current version of the motor vehicle emissions model, *MOBILE6.2*, specified by the EPA.

6.2 OCTC Travel Demand Model. The traditional gravity modeling process incorporated within VISUM software by PTV of America was utilized to forecast future travel demand and the impact of transportation projects in the OCTC MTP and TIP on air quality. The OC Travel Demand Model incorporates housing, employment, highway, along with trip generation and Census 2000 Journey-to-Work information to replicate existing travel patterns in OC. Trips are distributed and assigned to the least time travel paths between traffic analysis zones based primarily on the methodology recommended in National Cooperative Highway Research Program Report 365 (NCHRP 365), Travel Estimation Techniques for Urban Planning. Using the trip generation and trip length parameters of the calibrated base year (2002) model, future travel conditions, vehicle miles traveled (VMT) and vehicular emissions were forecast using projected increases in housing, employment and vehicle trips therefrom in OC for each analysis year being evaluated. Transit was not modeled given that transit service does not comprise a significant portion of travel in OC.

Based on previous ICG concurrence, OCTC reduced the OC Travel Demand Model VMT estimates by 1.39% per day for participation in the Ozone Action Days program. The on-going program established by NYMTC and NYSDOT in the Downstate region, also known as Clean Air New York is a non-exempt project on the OCTC TIP. This program alerts the public when air quality levels are expected to be unhealthy and seeks their cooperation to change travel and other behaviors to reduce emissions on those days and throughout the year. Messages are broadcast by various media sources, employer organizations, and roadside variable message signs.

6.2.1 Land Use Patterns & TAZs. Traffic Analysis Zones (TAZ's) serve to divide an area geographically into units describing different land use types and intensities. Centroids are the points within TAZs where, for modeling purposes, trips commence and terminate based upon the land use activities therein. To accurately replicate base year traffic conditions, it is necessary to accurately describe the location of land use activities relative to where traffic actually enters and leaves the highway network. Not every driveway need be represented, however, only the significant local and collector roads channeling

traffic to the roads and intersections being evaluated. The OCTC model incorporates a total of 550 TAZs, 515 internal zones and 35 external zones connecting OC with surrounding counties. The 515 internal TAZ's were created by first delineating limited access highways, rights-of-way (rail and power lines), state lands (Stewart Properties and Parks) and natural features (rivers and mountains) which divide OC by restricting directional traffic flow. These districts were then further subdivided into TAZs bounding residential neighborhoods and centers of activity (e.g. Malls and Central Business Districts) where vehicle trips tend to start and end.

6.2.2 Analysis Years. Consistent with 40 CFR Part 93, VMT and vehicular speeds were forecasted by functional classification for the years 2012, 2020, 2030, and 2035, complying with the federal requirements for non-attainment areas without motor vehicle emissions budgets that: the first analysis year be no more than five years from the year in which the conformity determination is being made (2010), that consecutive analysis years be no more than ten years apart and that the horizon year of each MPO's MTP be incorporated into the regional emissions analysis. The analysis year 2035 corresponds to the horizon year of the OCTC MTP, while the year 2030 is the horizon year of NYMTC's MTP. The year 2020 is an intermediate year between the years 2012 and 2030, satisfying the conformity requirement that consecutive analysis years be no more than ten years apart.

6.2.3 Trip Generation. Trip generation is the means of quantifying the number and type of trips to and from each TAZ in the OC Travel Demand Model based upon the type and amount of land use activity therein. Essentially, the purpose of trip generation is to have the model accurately reflect the average trip making characteristics of people within a specific timeframe. In this case, the average trip making characteristics of people in OC were determined for the PM peak hour, the time of day when traffic congestion tends to be the heaviest. Trips in the OC Travel Demand Model were first calculated for each TAZ and then separated into different types based upon purpose. The reason for separating trips by purpose is to account for variable trip lengths. Numerous travel surveys indicate that people are willing to drive farther between home and work than they are between home and shopping. Thus, the purpose of a trip determines its length; trip length together with the number of trips generated in a model determine traffic volumes and vehicle miles traveled.

6.2.3.1 External Trips. External trips to and from areas outside OC were determined by the directional split of traffic on each major highway and road segment (external links) connecting Orange with the surrounding counties. Trips traveling through OC between external links were estimated using journey-to-work information from the Census 2000 Transportation Planning Package.

6.2.4 Trip Distribution. Trip distribution is the process by which trip origins are apportioned throughout a study area based on the number of trip destinations in each TAZ and the distance/travel time impedance between them. The

underlying premise is that people tend to interact more when the time to do so is less. Thus, there are a greater number of trips between places that are densely developed and located near one another than those less densely developed miles apart. Accordingly, vehicles in the OC Travel Demand Model are routed on the shortest distance/time paths in the OC highway network between TAZs first, and then to other more circuitous routes as traffic congestion makes the shorter distance routes more time consuming.

6.2.5 Model Calibration. Generally, model calibration is the process by which the travel parameters of a model are adjusted to reflect actual base year traffic counts. Traffic volumes assigned by the model are compared to actual traffic counts through regression analysis. The differences between the counts and the assignment volumes are used to modify trip generation rates, trip length exponents and, in some instances, land use quantities where errors become evident. One or two variables are modified followed by a model run to determine the effect of such modifications. This is repeated, iteratively, until volumes assigned by the model meet acceptable error deviation levels as defined in National Cooperative Highway Research Report 255, Highway Traffic Data for Urbanized Area Project Planning and Design.

6.3 MOBILE6.2. The USEPA developed the MOBILE emissions model, with the latest revision occurring on January 27, 2002 through the official release of MOBILE6.2; this version has been required of all states (except California) since January 27, 2004. The emissions model predicts gram per mile emissions of Hydrocarbons (HC), Carbon Monoxide (CO), Nitrogen Oxides (NO_x), Carbon Dioxide (CO₂), and Particulate Matter (PM) under various seasonal and operating conditions. Emission factor tables developed by NYSDOT-ESB based on MOBILE 6.2 were used to measure the air quality impacts of implementing the proposed projects in the Metropolitan Transportation Plan and TIP. The modeling inputs used to develop the emission factor tables are the most recent inputs that have been established in consultation with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Air Quality Conformity Interagency Consultation Group (ICG). These model inputs include the latest existing and future emissions control programs included in the SIP, and the latest MOBILE 6.2 input assumptions on characteristics of the existing and future vehicle fleets traveling on roadways in Orange County.

Latest Emissions Model

In order to conduct the required regional PM_{2.5} emissions analyses for Orange County, emission factors developed by the NYSDOT Environmental Science Bureau in April 2008 were used. The emission factors were generated using the EPA motor vehicle emissions model, MOBILE6.2. The modeling inputs and parameters used to develop the emission factor tables are the most recent inputs for Orange County established in consultation with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Air Quality Conformity Interagency Consultation

Group (ICG). Specific modeling inputs and parameters used to develop the emission factor tables for Orange County are described below:

Evaluation Month - The month of July (i.e., summertime conditions) was specified in the ozone precursor and summer direct PM_{2.5} input files. The month of January was specified in the winter NOX and winter direct PM_{2.5} input files.

Vehicle Registration Distribution - Year 2002 registration data were used to model the 2002 base year. Year 2007 registration data were used to model all future analysis years.

Vehicle Mileage Accumulation Rate - The EPA default mileage accumulation rate data (provided with the MOBILE6.2 model) was used for all modeling years.

I/M Programs - NYSDEC inspection and maintenance (I/M) program data were used in the emission modeling. The NYSDEC file, NYVIPup.d, contains data for the Upstate NY I/M program. This file was used for modeling all future analysis years. No I/M program was in place in Orange County in the 2002 base year.

Anti-Tampering Program – The anti-tampering program data described in the table below was used to model all analysis years:

ANTI-TAMPERING PROGRAM DATA	
Parameter	Years 2002 – 2035
Beginning calendar year	1984
Earliest model year	(Current yr – 25 yrs)
Final model year	(Current yr – 2 yrs)
Light-duty vehicles subject to inspection	LDGV, LDGT1, LDGT2, LDGT3, LDGT4
Heavy-duty vehicles subject to inspection	HDGV2B, HDGV3, HDGV4
Annual or biennial	Annual
Compliance rate	98%
Component inspections (see MOBILE6.2 User's Guide)	All except tailpipe lead deposit test

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Fuel Program and Fuel RVP- Average and maximum fuel sulfur levels and fuel Reid Vapor Pressure (RVP) levels were specified in the input files (as listed in the below).

FUEL SULFUR AND RVP LEVELS				
Dutchess, Orange and Putnam Counties				
Year(s)	Season	Fuel Sulfur Levels (ppm)		RVP (psi)
		Average	Maximum	
2002 - 2003	Summer	85.0	1000.0	6.8
	Winter	137.0	1000.0	12.5
2004	Summer	85.0	303.0	6.8
	Winter	120.0	303.0	12.5
2005	Summer	90.0	303.0	6.8
	Winter	90.0	303.0	12.5
2006 - 2007	Summer	30.0	87.0	6.8
	Winter	30.0	87.0	12.5
2008 - 2009	Summer	30.0	80.0	6.8
	Winter	30.0	87.0	12.5
2010 - 2035	Summer	30.0	80.0	6.8
	Winter	30.0	80.0	12.5
	Winter	30.0	80.0	12.5

Gasoline fuel oxygenate data were also specified in the input files (as listed in the Table below).

GASOLINE FUEL OXYGENATE DATA				
Dutchess, Orange and Putnam Counties (Reformulated Gasoline Program)				
Year(s)	Season	Oxygenate Type	Oxygenate Content (% by volume)	Market Share Fraction of Oxygenate
2002 - 2003	Summer	MTBE	10.4%	0.98
		TAME	1.01%	0.02
	Winter	MTBE	8.7%	0.96
		TAME	0.3%	0.04
2004 - 2035	Summer/Winter	Ethanol	10%	1.00

Temperature and Humidity - For the summer season, county-specific hourly temperatures and relative humidity levels as verified by NYSDEC in Spring 2007 were used in the modeling.

Diesel Sale Fractions - Diesel sale fractions for NYSDOT Region 8 were used in the modeling. Year 2002 diesel fractions were used to model the 2002 base year. Year 2007 diesel sale fractions were used to model all future analysis years.

Vehicle Start Distribution - County-specific vehicle start distribution data as received from NYSDEC in Spring 2007 were used in the modeling.

VMT by Hour - County-specific VMT data (allocated by hour of day) as verified by NYSDEC in Spring 2007 were used in the modeling.

Low-Emission Vehicle (LEV) Standards - The following files were used to model the effects of implementing California's LEV I/LEV II programs in New York State:

- L2CERT.d – Specifies the LEV II 50,000-mile certification standards
- L2EVAP.d – Specifies the phase-in schedule for the LEV II evaporative emission standards
- L2EXH.d – Specifies the phase-in schedule for the LEV II exhaust emission standards
- LEV2.d – Provides fleet penetration fractions for light-duty gasoline vehicles under the LEV I/LEV II programs

Weighted emissions by vehicle type - The emission factors for each individual vehicle type were weighted according to the NYSDOT Region 8 vehicle distributions by roadway functional class and then summed to obtain composite emission factors. NYSDOT developed the vehicle distribution data in 2004 using the most recently available traffic count data.

These model inputs include the latest existing and future emissions control programs included in NYSDEC's statewide mobile source emission inventory, and the latest MOBILE6.2 input assumptions for the existing and future vehicle fleets traveling on roadways in Orange County. The MOBILE6.2 input and external data files are available by contacting the NYSDOT Environmental Science Bureau.

7.0 Consistency with Metropolitan Transportation Plans (MTP)

The transportation projects proposed in the OCTC 2011-2015 TIP and recently approved OCTC Metropolitan transportation plan (MTP) adhere to the goals and objectives of SAFETEA as listed below:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency
- Increase the safety and security of the transportation system for motorized and non-motorized users
- Increase the accessibility and mobility options available to people and for freight
- Protect and enhance the environment, promote energy conservation, and improve quality of life
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight
- Promote efficient system management and operation
- Emphasize the preservation of the existing transportation system.

The OCTC MTP expands upon the planning factors of SAFETEA by integrating the smart growth and sustainable development principles promoted through the Orange County Comprehensive Plan (OCCP), *Strategies for Quality Communities* for:

- Neo-traditional, mixed-use development
- Workforce housing near centers of employment
- Compact development in and around already built environments
- Open space, farmland & environmentally sensitive land preservation
- Pedestrian and bicycle friendly design
- Connectivity between activity nodes
- Access management along arterials and collectors
- Traffic calming to reduce vehicular speeds
- Adequate but not excessive parking
- Transit services and multi-modal centers
- Advances in technology (e.g. Intelligent Transportation Systems)

Generally, the projects in the OCTC 2011-2015 TIP can be categorized into six areas: 1) replacement and rehabilitation of existing highway and transit infrastructure and facilities; 2) safety improvements; 3) mobility enhancements promoting alternative travel modes; 4) operations and systems management increasing the efficiency of the existing transportation system; 5) studies identifying potential transportation improvements and, lastly; 6) capacity projects expanding highway and transit infrastructure and services.

Thus, a comparison of the projects in the OCTC 2011-2015 TIP with the OCTC MTP indicates that both are consistent with one another, SAFETEA and the OCCP.

8.0 Identification of Exempt, Non-exempt and Regionally Significant Projects

8.1 General. An important part of transportation conformity involves identifying transportation projects that may affect regional air quality. The transportation conformity regulations promulgated by the EPA provide guidance on classifying transportation projects as either exempt, nonexempt or regionally significant. **Exempt** transportation projects are those that enhance the safety of the transportation system, promote existing ridesharing programs, improve bicycle and pedestrian modes of travel, and/or involve the operation/replacement of existing transit facilities. **Nonexempt** transportation projects are those, for the most part, that increase the capacity of the transportation system. Examples include the construction of new roads, highway interchanges and train stations, as well as the widening of existing roads and the expansion of transit services and facilities such as park and ride lots. **Regionally significant** projects are those that serve regional transportation needs and that would normally be included in the modeling of a metropolitan area's transportation network. They include all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

8.2 Project Listing. All of the projects in the draft OCTC MTP and OCTC 2011-2015 TIP were classified as either exempt, nonexempt or regionally significant, and sent to the NYS ICG for review and concurrence. The resulting nonexempt and regionally significant transportation projects included in OCTC Regional Emissions Analysis are indicated in Table 2 below.

Table 2. OCTC Nonexempt Transportation Projects

PIN	Project	Agency
814522	Schutt Rd. – Construction, Dunning Rd. to North Galleria Dr.	T/Walkill
881054	Clean Air New York (FKA Ozone Action Days)	NYSDOT
882038	Metropool Ridesharing Program to Van & Carpool Commuters	NYSDOT
882383	Enhanced Commuter Choice	NYSDOT
8T0397	I-86: Widen I86 from I-84 to I-87, Stage 1: Exit 129-131 (2 to 3 lanes)	NYSDOT
MTP	NYS Thruway (I-87) – Construction of interchange at Route 17A	NYSTA
MTP	Route 17A – Widening, Route 17 to Route 94	NYSDOT
MTP	Rte 17(Future I86) - Widening, Exit 126 to Exit 120 (NYS Rte 211)	NYSDOT
MTP	Route 17M – Widening, Route 17 (Exit 123) to I-84	NYSDOT
MTP	Route 17M – Widening, Route 17 to Route 208	NYSDOT
MTP	Route 17M – Widening, South St. to CR13 (Kings Highway)	NYSDOT
MTP	Route 9W – Widening, I-84 to Ulster County Line	NYSDOT
MTP	CR 67 (East Main St.) – Widening, Route 17 to Dunning Rd	OCDPW
MTP	Broadway St. – Widening, West St. to Newburgh Town/City Line	C/Newburgh
MTP	Construction of new arterial road, Route 17M to Main St.	C/Middletown

9.0 Timely Implementation of TCMs

Transportation control measures (TCMs) are not identified for Orange County as part of the applicable NYS SIP. Therefore, the TCM implementation conformity criteria do not apply. There are also no transportation projects in the OCTC MTP and TIP that will interfere with the timely implementation of TCMs in any other areas.

10.0 Documentation of Interagency Consultation Requirements

The approval of emissions budgets for both New Jersey and Connecticut relieved MPOs from these states the necessity of coordinating transportation conformity with each other as well as with OC and NYMTC. Essentially, the former Multi-State Interagency Consultation Group now consists of the agencies comprising the NYS-ICG (EPA, USDOT, NYSDOT-EAB, NYSDEC, NYMTC, OCTC). OCTC relied on a high degree of consultation and coordination among these agencies. Periodic monthly meetings and biweekly conference calls were conducted to inform and update the NYS-ICG on the status and methodologies used in the OCTC regional emissions analysis during the entire transportation conformity process.

11.0 Public Involvement

Recognizing the importance of public involvement in the transportation planning process, OCTC Operating Procedures stipulate that private citizens, including public and private agencies, be afforded the opportunity to review and comment on conformity determinations prior to OCTC action. Accordingly, OCTC members were informed that this conformity determination is on the OCTC website at www.co.orange.ny.us/planning/octc for public review during a 30-day period starting July 6th, 2010 and ending on August 5th, 2010.

12.0 Results of Emissions Analyses

12.1 General. OCTC in cooperation with NYSDOT-EAB calculated PM_{2.5} emissions for nonexempt and regionally significant projects in the OCTC MTP and TIP using the latest version of the EPA *MOBILE 6.2* Vehicle Emissions Model.

12.2 Methodology. The emissions analysis was based on speed specific emission factors generated by *MOBILE 6.2* for each link in the OCTC Travel Demand Model network for the morning peak hour, mid-day peak hour, afternoon peak hour and night off-peak hour. Vehicle miles traveled and emissions for each of the four peak hours were factored into peak period values using hourly VMT percentages for OC from the NYS SIP. The resulting peak period VMT and emissions were then adjust to account for seasonal fluxes in traffic during the summer ozone season (June, July & August) and summed to establish total daily VMT and precursor ozone emissions. Annual direct PM_{2.5} and NO_x Emissions were calculated based on 182 days under winter conditions (October 1 – March 31) and 183 under summer conditions (April 1 – September 30). As discussed in Section 6.3, the inputs of the emissions model are traffic volume and speed data provided by OCTC and the most recent fleet characteristics, seasonal

meteorological factors and assumptions concerning reformulated fuel and other control programs established by NYSDEC and through consultation and agreement with the Multi-State Interagency Consultation Group for the NY-NJ-CT PM_{2.5} Non-Attainment Area. The final product calculated annual direct PM_{2.5} emissions and NO_x precursor emissions for the future analysis years of 2012, 2020, 2030 and 2035.

12.3 Regional Analysis. The EPA requires that one of two interim emission tests be used to demonstrate PM_{2.5} conformity. They are either the less than 2002 baseline year test or the build/no-build test. To pass the less than 2002 baseline year test, vehicle emissions for future analysis years must be no greater than emissions for the 2002 baseline year. With the build/no-build test, vehicle emissions for “build” scenarios (those scenarios with nonexempt projects) of each future analysis year must be no greater than emissions from the “no-build” scenario to pass conformity. Regardless of the test selected, the Multi-State Interagency Consultation Group for the NY-NJ-CT PM_{2.5} Non-Attainment Area agreed that the same test must be utilized by all MPOs to demonstrate transportation/air quality conformity.

Since conformity was originally demonstrated on April 4th, 2006, motor vehicle emissions budgets for PM_{2.5} were approved by the EPA for New Jersey and Connecticut, excluding the MPOs in these states from demonstrating transportation/air quality conformity whenever NY counties program new transportation projects that might potentially impact air quality. Both OCTC and NYMTC have chosen the build/no-build test to demonstrate conformity for the New York portion of the NY-NJ-CT PM_{2.5}.

Table 3 summarizes the results of the regional emissions analysis for the OCTC and NYMTC portions of the NY-NJ-CT PM_{2.5} Non-Attainment Area. It shows that build

scenarios will produce less emissions than the no-build scenario for each future analysis year.

Table 3: Regional Emissions Analysis Summary

Direct PM _{2.5}	Future Analysis Years - Results in Tons per year							
	2012		2020		2030		2035	
MPO	Build	No-Build	Build	No-Build	Build	No-Build	Build	No-Build
OCTC	91.79	94.01	74.65	76.41	80.87	82.70	85.12	86.69
NYMTC	1,172.00	1,219.77	955.68	996.24	1,000.95	1,047.94	1,007.96	1,079.74
TOTALS:	1,263.79	1,313.78	1,030.33	1,072.65	1,081.82	1,130.64	1,093.08	1,166.43
Conclusion	<i>pass</i>		<i>pass</i>		<i>pass</i>		<i>pass</i>	

Indirect NO _x	Future Analysis Years – Results in Tons per year							
	2012		2020		2030		2035	
MPO	Build	No-Build	Build	No-Build	Build	No-Build	Build	No-Build
OCTC	3,819.84	3,909.90	1,812.06	1,850.34	1,159.81	1,184.42	1,147.48	1,164.87
NYMTC	44,331.44	45,944.90	20,156.46	20,983.26	13,849.22	14,566.50	12,955.29	13,876.71
TOTALS:	48,151.28	49,854.80	21,968.52	22,833.60	15,009.03	15,750.92	14,102.77	15,041.58
Conclusion	<i>pass</i>		<i>pass</i>		<i>pass</i>		<i>pass</i>	

12.4 Conclusions. The results of the OCTC regional emissions analysis indicate that the transportation projects in the 2011-2015 TIP and MTP will not degrade air quality and that the build scenarios will result in an overall reduction in PM_{2.5} emissions in comparison to the no-build scenarios. Therefore, transportation conformity for projects in the OCTC 2011-2015 TIP and MTP has been demonstrated for the OC portion of the NY-NJ-CT Non-Attainment Area in accordance with EPA transportation conformity regulations, and both the OCTC 2011-2015 TIP and MTP conform with the existing NY State Implementation Plan to improve air quality (SIP).

13.0 Evidence of MPO Resolutions

The Orange County Transportation Council approved the OCTC 2008-2012 TIP on September 25th, 2007 and approved its Metropolitan transportation plan along with the required transportation conformity determinations for ozone and PM_{2.5} on November 27th, 2007. US DOT last certified OCTC transportation/air quality conformity determinations on October 1st, 2009

Specific MPO actions included in this conformity analysis:

MPO Product	MPO Approval	USDOT Certifications
OCTC TIP MTP 2035	27-Nov-07	19-Dec-07
OCTC TIP 2011-2015 & MTP 2035 Conformity Update	August 2010*	September 2010*
NYMTC 2035 RTP	17-Sept-09	1-Oct-09
NYMTC TIP FFY 2008-2012 & 2035 RTP Conformity Update	August 2010*	September 2010*

Conformity Determination Statement:

The results of the regional emissions analysis demonstrate that both the **OCTC 2011-2015 Transportation Improvement Program and the OCTC Metropolitan Transportation Plan 2035** comply with National Ambient Air Quality Standards for PM_{2.5}, as required by the Clean Air Act Amendments of 1990 and the New York State Implementation Plan to improve air quality.

Additional Information: The conformity document and regional emissions analysis for the OC portion of the NY-NJ-CT PM_{2.5} Non-Attainment Area can be found at the following Website:
www.co.orange.ny.us/planning/octc

Appendix

Emissions Calculations

OCTC REGIONAL EMISSIONS ANALYSIS

ORANGE COUNTY PORTION OF THE NY-NJ-CT PM_{2.5} NON-ATTAINMENT AREA

2012 ANALYSIS YEAR

Link-By-Link Totals (grams)

Pollutant	Season	Time	Peak Hour		Peak Period	
			No Build	Build	No Build	Build
PM _{2.5}	Summer	AM	16,647	16,318	55,100	54,012
		MD	10,116	9,841	81,233	79,019
		PM	25,810	25,476	75,881	74,899
		NT	5,517	5,287	37,292	35,740
	Winter	AM	14,525	14,239	48,077	47,131
		MD	8,827	8,588	70,884	68,963
		PM	22,521	22,229	66,211	65,354
		NT	4,815	4,616	32,548	31,208
NO _x	Summer	AM	631,465	619,687	2,090,149	2,051,165
		MD	390,634	380,119	3,136,792	3,052,353
		PM	946,960	936,118	2,784,063	2,752,186
		NT	214,089	204,957	1,447,240	1,385,509
	Winter	AM	666,409	654,122	2,205,815	2,165,145
		MD	413,045	402,033	3,316,748	3,228,325
		PM	994,945	983,727	2,925,138	2,892,158
		NT	226,496	216,972	1,531,116	1,466,734

2012 NO BUILD

2012 BUILD

249,506	Summer PM _{2.5} g/day	243,670	Summer PM _{2.5} g/day
50.3	Summer PM _{2.5} tons/year	49.2	Summer PM _{2.5} tons/year
9,458,244	Summer NO _x g/day	9,241,213	Summer NO _x g/day
1,907.9	Summer NO _x tons/year	1,864.2	Summer NO _x tons/year
217,720	Winter PM _{2.5} g/day	212,657	Winter PM _{2.5} g/day
43.7	Winter PM _{2.5} tons/day	42.7	Winter PM _{2.5} tons/day
9,978,817	Winter NO _x g/day	9,752,361	Winter NO _x g/day
2,002.0	Winter NO _x tons/day	1,956.5	Winter NO _x tons/day
		0.02408	ECC Credit PM _{2.5} tons/Year
		0.85345	ECC Credit NO _x tons/Year
94.0	ANNUAL PM _{2.5} tons/year	91.8	ANNUAL PM _{2.5} tons/year
3,909.9	ANNUAL NO _x tons/year	3,819.8	ANNUAL NO _x tons/year

**OCTC REGIONAL EMISSIONS ANALYSIS
ORANGE COUNTY PORTION OF THE NY-NJ-CT PM_{2.5} NON-ATTAINMENT AREA**

**2020 ANALYSIS YEAR
Link-By-Link Totals (grams)**

Pollutant	Season	Time	Peak Hour		Peak Period	
			No Build	Build	No Build	Build
PM _{2.5}	Summer	AM	13,679	13,435	45,278	44,469
		MD	8,299	8,084	66,644	64,913
		PM	21,246	21,014	62,465	61,782
		NT	4,527	4,313	30,603	29,156
	Winter	AM	11,661	11,451	38,598	37,904
		MD	7,075	6,892	56,809	55,340
		PM	18,122	17,917	53,279	52,676
		NT	3,860	3,678	26,091	24,860
NOx	Summer	AM	306,738	302,452	1,015,301	1,001,116
		MD	190,714	185,944	1,531,430	1,493,131
		PM	458,164	455,365	1,347,004	1,338,773
		NT	104,725	99,788	707,942	674,564
	Winter	AM	306,550	302,197	1,014,680	1,000,271
		MD	190,511	185,767	1,529,805	1,491,706
		PM	457,268	454,340	1,344,369	1,335,761
		NT	104,627	99,710	707,281	674,038

2020 NO BUILD

204,988 Summer PM_{2.5} g/day
41.4 Summer PM_{2.5} tons/year

4,601,677 Summer NOx g/day
928.3 Summer NOx tons/year

174,777 Winter PM_{2.5} g/day
35.1 Winter PM_{2.5} tons/day

4,596,135 Winter NOx g/day
922.1 Winter NOx tons/day

76.4 ANNUAL PM_{2.5} tons/year
1,850.3 ANNUAL NOx tons/year

2020 BUILD

200,320 Summer PM_{2.5} g/day
40.4 Summer PM_{2.5} tons/year

4,507,584 Summer NOx g/day
909.3 Summer NOx tons/year

170,779 Winter PM_{2.5} g/day
34.3 Winter PM_{2.5} tons/day

4,501,776 Winter NOx g/day
903.1 Winter NOx tons/day

0.024076 ECC Credit PM_{2.5} tons/Year
0.375886 ECC Credit NOx tons/Year

74.6 ANNUAL PM_{2.5} tons/year
1,812.1 ANNUAL NOx tons/year

**OCTC REGIONAL EMISSIONS ANALYSIS
ORANGE COUNTY PORTION OF THE NY-NJ-CT PM_{2.5} NON-ATTAINMENT AREA**

**2030 ANALYSIS YEAR
Link-By-Link Totals (grams)**

Pollutant	Season	Time	Peak Hour		Peak Period	
			No Build	Build	No Build	Build
PM _{2.5}	Summer	AM	14,824	14,580	49,067	48,261
		MD	8,994	8,770	72,218	70,423
		PM	23,071	22,837	67,828	67,140
		NT	4,907	4,680	33,170	31,635
	Winter	AM	12,583	12,371	41,650	40,948
		MD	7,631	7,441	61,279	59,752
		PM	19,606	19,396	57,641	57,023
		NT	4,164	3,971	28,151	26,847
NO _x	Summer	AM	194,015	191,477	642,189	633,787
		MD	119,977	117,142	963,415	940,650
		PM	300,733	297,635	884,154	875,048
		NT	65,923	62,906	445,637	425,248
	Winter	AM	195,630	193,023	647,535	638,906
		MD	121,100	118,259	972,434	949,617
		PM	300,055	297,289	882,161	874,030
		NT	66,589	63,534	450,142	429,491

2030 NO BUILD

2030 BUILD

222,283	Summer PM_{2.5} g/day	217,459	Summer PM_{2.5} g/day
44.8	Summer PM_{2.5} tons/year	43.9	Summer PM_{2.5} tons/year
2,935,394	Summer NO_x g/day	2,874,733	Summer NO_x g/day
592.1	Summer NO_x tons/year	579.9	Summer NO_x tons/year
188,721	Winter PM_{2.5} g/day	184,570	Winter PM_{2.5} g/day
37.9	Winter PM_{2.5} tons/day	37.0	Winter PM_{2.5} tons/day
2,952,272	Winter NO_x g/day	2,892,044	Winter NO_x g/day
592.3	Winter NO_x tons/day	580.2	Winter NO_x tons/day
		0.02408	ECC Credit PM_{2.5} tons/Year
		0.29057	ECC Credit NO_x tons/Year
82.7	ANNUAL PM_{2.5} tons/year	80.9	ANNUAL PM_{2.5} tons/year
1,184.4	ANNUAL NO_x tons/year	1,159.8	ANNUAL NO_x tons/year

**OCTC REGIONAL EMISSIONS ANALYSIS
ORANGE COUNTY PORTION OF THE NY-NJ-CT PM_{2.5} NON-ATTAINMENT AREA**

**2035 ANALYSIS YEAR
Link-By-Link Totals (grams)**

Pollutant	Season	Time	Peak Hour		Peak Period	
			No Build	Build	No Build	Build
PM _{2.5}	Summer	AM	15,536	15,098	51,423	49,973
		MD	9,426	9,591	75,692	77,019
		PM	24,239	23,784	71,263	69,924
		NT	5,143	4,773	34,765	32,265
	Winter	AM	13,172	12,787	43,601	42,324
		MD	7,987	8,103	64,137	65,067
		PM	20,580	20,155	60,505	59,256
		NT	4,358	4,043	29,463	27,333
NO _x	Summer	AM	189,726	185,024	627,992	612,430
		MD	117,060	119,745	939,996	961,549
		PM	300,061	294,864	882,178	866,900
		NT	64,344	59,674	434,967	403,398
	Winter	AM	191,794	186,923	634,838	618,714
		MD	118,547	120,855	951,935	970,466
		PM	298,563	293,638	877,775	863,296
		NT	65,207	60,459	440,800	408,700

2035 NO BUILD

2035 BUILD

233,143	Summer PM_{2.5} g/day	229,181	Summer PM_{2.5} g/day
47.0	Summer PM_{2.5} tons/year	46.2	Summer PM_{2.5} tons/year
2,885,133	Summer NO_x g/day	2,844,277	Summer NO_x g/day
582.0	Summer NO_x tons/year	573.8	Summer NO_x tons/year
197,706	Winter PM_{2.5} g/day	193,979	Winter PM_{2.5} g/day
39.7	Winter PM_{2.5} tons/day	38.9	Winter PM_{2.5} tons/day
2,905,348	Winter NO_x g/day	2,861,176	Winter NO_x g/day
582.9	Winter NO_x tons/day	574.0	Winter NO_x tons/day
		0.02408	ECC Credit PM_{2.5} tons/Year
		0.28983	ECC Credit NO_x tons/Year
86.7	ANNUAL PM_{2.5} tons/year	85.1	ANNUAL PM_{2.5} tons/year
1,164.9	ANNUAL NO_x tons/year	1,147.5	ANNUAL NO_x tons/year