

Resolution 2016-13

Adopt the Transportation/Air Quality Conformity Determination for the Orange County Portion of the NY-NJ-CT PM2.5 Non-Attainment Area

WHEREAS, the Orange County Transportation Council (OCTC) has been designated by the Governor of the State of New York as the Metropolitan Planning Organization (MPO) responsible, together with the State, for the comprehensive, continuing, and cooperative transportation planning process for Orange County; and,

WHEREAS, OCTC is required to submit a Transportation/Air Quality Conformity Determination to the U.S. Federal Highway Administration (FHWA) and to the U.S. Environmental Protection Agency (EPA) in accordance with the final conformity rule promulgated by EPA (40 CFR 51 and 93) when another MPO in the same non-attainment area makes significant revisions to transportation projects in its Transportation Improvement Program (TIP) and/or Long-Range Transportation Plan (LRTP); and,

WHEREAS, there are no significant changes to transportation projects that might impact air quality in the OCTC FFY 2017-2021 TIP or LRTP; and,

WHEREAS, Title 42 USC, Section 7506 (3) (A) states that conformity of transportation plans and programs will be demonstrated if:

1. the plans and programs are consistent with recent estimates of mobile source emissions,
2. the plans and programs provide for the expeditious implementation of certain transportation control measures,
3. the plans and programs contribute to annual emissions reductions consistent with the Clean Air Act of 1990, as amended, and

WHEREAS, Orange County has been designated by the EPA to be a part of the NY-NJ-CT PM2.5 Non-Attainment Area with New York City, Long Island, Westchester and Rockland Counties, and

WHEREAS, changes to transportation projects in the OCTC and NYMTC FFY 2017-2021 TIPs necessitate the need to reevaluate transportation/air quality conformity for the NY portion of the NY-NJ-CT PM2.5 Non-Attainment Area, and

WHEREAS, OCTC has coordinated transportation/air quality conformity and the regional emissions analyses with NYMTC, and

WHEREAS, OCTC and NYMTC have assessed the impact of all non-exempt transportation projects in their TIPs and LRTPs, and

WHEREAS, the results of the regional emissions analyses in the PM2.5 conformity determination demonstrate compliance with the emissions budgets for PM2.5, and

WHEREAS, a 30-day public comment period on the conformity determination and accompanying OCTC FFY 2017-2021 TIP beginning June 29, 2016 and ending July 29, 2016 resulted in no comments; and

WHEREAS, OCTC and NYMTC have issued these conformity determinations contingent upon the approval of the proposed PM2.5 motor vehicle emissions budgets for the New York Metropolitan Area by the EPA; and

WHEREAS, it is the opinion of the Orange County Transportation Council that the transportation projects in the OCTC FFY 2017-2021 TIP and Long Range Transportation Plan continue to conform with the requirements of Title 42 USC, Section 7506 (3) (A) as interpreted by EPA (40 CFR 51 and 93) and that the transportation projects in the Plan and TIP will not cause new air quality violations, worsen existing conditions, or delay timely attainment of National Ambient Air Quality Standards,

NOW, THEREFORE, BE IT RESOLVED that based on the analyses performed by the Orange County Transportation Council and the New York Metropolitan Transportation Council we find that the transportation projects in the OCTC FFY 2017-2021 TIP and OCTC Long Range Transportation Plan conform to transportation/air quality requirements of the U.S. Environmental Protection Agency (40 CFR 51 and 93), related U.S. Department of Transportation guidelines (23 CFR 450) and with Title 42 USC, Section 7506 (3) (A).

CERTIFICATE: The undersigned duly qualified Secretary of the Orange County Transportation Council certifies that the foregoing is a true and correct copy of a resolution adopted by the voting members of the Council on August 2, 2016.

Date: _____

By: _____
Todd Westhuis, P.E., Secretary
Orange County Transportation Council

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

August 2, 2016

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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 and maintenance areas whenever transportation projects that may significantly impact air quality are planned and programmed. The Orange County Transportation Council (OCTC) is the MPO for Orange County responsible for ensuring that federal transportation funding (highway and transit) is programmed through a locally-driven, comprehensive planning process, involving the development of a 25-year Metropolitan Transportation Plan (MTP), a Transportation Improvement Program (TIP), and a Unified Planning Work Program (UPWP). Orange County is also part of the NY-NJ-CT maintenance area for fine particulate matter (PM_{2.5}) along with New York City, Long Island, Westchester and Rockland Counties. They are part of the New York Metropolitan Transportation Council (NYMTC) and MPO. All air quality non-attainment and maintenance areas are subject to this transportation conformity process, which requires transportation and air quality officials to coordinate and ensure that transportation projects do not affect an area's ability to reach its EPA clean air goals. EPA regulations require transportation conformity to be demonstrated for the entire nonattainment or maintenance area whenever significant changes occur to transportation projects that might significantly affect air quality in any portion of the area. This final conformity determination is issued in response to the update of the OCTC Transportation Improvement Program (TIP) for Federal Fiscal Years (FFY) 2017-2021 in accordance with the EPA regulation 40 CFR Part 93 Subpart A. The update of the OCTC TIP necessitated the need to reevaluate transportation/air quality conformity for the New York portion of the NY-NJ-CT PM_{2.5} maintenance area.

2.0 Background

Fine particulate matter 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. This fine particulate matter, also called PM_{2.5}, 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 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} was set at 65 micrograms per cubic meter (µg/m³) and the annual standard was set at 15 µg/m³. The 24-hour PM_{2.5} standard was lowered to 35 µg/m³ in 2006. In 2012, EPA revised the PM_{2.5} NAAQS again by revising the primary annual PM_{2.5} standard to 12 µg/m³. 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.

On April 5th, 2005, the EPA designated Orange County (OC) to be nonattainment for the 1997 annual PM_{2.5} standard as part of the NY-NJ-CT PM_{2.5} Non-Attainment Area that includes 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 EPA Transportation Conformity Regulations.

On December 14, 2009, the NY-NJ-CT metropolitan area was designated non-attainment for the 2006 24-hour PM_{2.5} standard of 35 µg/m³. The boundary of the non-attainment area for the 2006 24-hour PM_{2.5} standard is identical to the boundary of the 1997 annual PM_{2.5} non-attainment area. Thus, NYMTC and OCTC are jointly required to demonstrate conformity to both the 2006 24-hour and 1997 annual PM_{2.5} standards.

Effective April 18, 2014, EPA approved New York State's request to redesignate the New York portion of the NY-NJ-CT PM_{2.5} nonattainment area to attainment for the 1997 annual and 2006 24-hour PM_{2.5} standard. As part of the redesignation to attainment, EPA also approved to the New York State air quality "Maintenance Plan" for PM_{2.5}. Thus, for air quality and transportation planning purposes, the area is referred to as a PM_{2.5} Maintenance Area.

The NY-NJ-CT metropolitan area is classified attainment for the 2012 PM_{2.5} NAAQS. However, the air quality maintenance plan for the 1997 and 2006 particulate matter standards is still in place. Thus, both OCTC and NYMTC remain subject to the transportation/air quality conformity requirements.

The motor vehicle emissions budgets for the New York State portion of the NY-NJ-CT PM_{2.5} area, including Orange County and all NYMTC counties (except Putnam), were found adequate by USEPA on September 18, 2013. These motor vehicle budgets were officially approved as part of the above-referenced air quality maintenance plan on April 18, 2014. As shown in Section 12, Table 3 of this document, the combined OCTC and NYMTC regional emissions analysis demonstrate conformity to the approved motor vehicle emissions budgets.

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), OCTC and NYMTC. 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 Motor Vehicle Emissions Simulator (MOVES), version 2014a, to calculate vehicle emissions and the air quality impact of nonexempt projects in the OCTC Transportation Improvement Program (TIP) for Federal Fiscal Years (FFY) 2017-2021.

4.0 Format

The format of this conformity determination follows the required subject matter that must be addressed pursuant to EPA transportation conformity regulations.

- 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 Transportation Control Measures (TCM)
- 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 *PTV 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:

measures 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 depict 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 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 model current travel patterns. These travel characteristics are 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.

Housing and employment projections were made for each analysis year being evaluated (i.e. 2017, 2025, 2035, 2040) as part of PM_{2.5} Conformity based on historic growth trends in the county. These projections are used to forecast future VMT in the OC Travel Demand Model and were revised for the update of the OCTC Metropolitan Transportation Plan (MTP). [Note that locally the OCTC MTP is referred to as the *Long Range Transportation Plan (LRTP)*]. Overall, the projections used to

demonstrate conformity are consistent with 2010 Census population and housing for OC and most recent forecasts made by NYMTC. Table 1 below shows the projections for Orange County.

- 5.1.1 Population.** Source: Census 2010. Population and housing information from the 2010 Census together with 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, location and employment levels of all businesses in OC was updated for this conformity determination. 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 Traffic Analysis Zone (TAZ) in the OCTC Travel Demand Model. Employment projections were based upon expected employment from approved development projects since the year 2009, 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 2010 and aggregated by type and location to determine peak hour trips generated for both single-family and multi-family housing in each TAZ of the OC Travel Demand Model. Future single-family and multi-family 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 2010. Household information from the 2010 Census was used as a means of checking and verifying the housing data and occupancy information from the NYS Office of Real Property.

Table 1. Demographic Forecasts for Orange County

Orange	2010	2017	2025	2035	2040	% Annual Growth	% Total Growth
Population	372,813	399,453	428,866	470,192	492,247	1.08	32
Employment	136,680	147,142	159,211	175,303	183,349	1.11	33
Housing Units	137,025	148,583	160,230	175,490	183,120	1.12	34
Households	126,000	136,500	147,000	161,000	168,000	1.11	33

- 5.2 Transit Operating Policies.** Coach USA/Shortline/Hudson Transit, MTA-MetroNorth Railroad, Newburgh-Beacon Bus Company, Middletown Transit, Monroe Bus Company, and the Village of Kiryas Joel provide the majority of mass transit services in Orange County along with eight municipal dial-a-bus operators. According to Census Journey-to-Work information from the 2008-2012 ACS 5-year estimates, 5.1% of work related travel in OC had a mass transit component, with a majority of this travel involving vehicular trips to and from OC park and ride lots. Thus, park and ride lots are included in the OC Travel Demand Model as trip generators. Regional and inter-municipal transit services are also incorporated into the OC Model through traffic analysis zone trip generation.
- 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 increases in fuel costs that may significantly impact vehicular travel are also 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.** For the purposes of transportation conformity, it is assumed that OC will experience near constant levels of growth over the next 30 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.** Local emission factors generated by the Motor Vehicle Emissions Simulator (MOVES), version 2014a 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. The 2017-2021 TIP also includes funding for a substantial increase in revenue miles for the **Newburgh Area Transit Service**. The effect of this project on travel and emissions was estimated based on planned transit revenue miles and projected ridership consistent with the plan developed as part of the OCTC Newburgh Area Transportation and Land Use Study. The results of this analysis were also applied to the emissions totals in the build scenario of each future analysis year.

5.5.4 Planning Assumptions “Lock-in” Date. The Clean Air Act requires that transportation investments be based on the most recent information that is available in order to protect public health over the long-term. Therefore, conformity determinations must be based upon the most recent planning assumptions in force at the time the conformity analysis begins. OCTC began the regional emissions analysis for its proposed amendments on March 9th, 2016 with NYS ICG concurrence.

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 Motor Vehicle Emissions Simulator (MOVES) Model, version 2014a developed by the EPA.

6.2 OCTC Travel Demand Model. The traditional gravity modeling process incorporated within *PTV Visum* software was utilized to forecast future travel demand and the impact of transportation projects in the OCTC MTP and TIP on air emissions. The OC Travel Demand Model incorporates housing, employment, highway, along with trip generation information to depict existing travel patterns. 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 model, future travel conditions, vehicle miles traveled (VMT) and vehicular emissions were forecasted using projected increases in housing, employment and vehicle trips therefrom in OC for each analysis year being evaluated.

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 areas 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 and 6 NYCRR Part 240, VMT and vehicular speeds were forecasted by functional classification for the years 2017, 2025, 2035 and 2040, complying with the federal and New York State requirements for PM_{2.5} non-attainment areas with 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, that the attainment year and any air quality milestone years for the 2006 24-hour PM_{2.5} standard are analyzed, that consecutive analysis years be no more than ten years apart, and that the horizon year of each affected MPO's MTP be incorporated into the regional emissions analysis. Analysis year 2017 meets the requirement that the first analysis year be no more than five years from the date the conformity determination is being made and also is the first future milestone year in the PM_{2.5} Maintenance Plan. 2025 is the final milestone year in the PM_{2.5} Maintenance Plan. Analysis year 2040 corresponds to the horizon year of the OCTC and NYMTC MTPs and 2035 was analyzed to satisfy 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 MOVES2014a. MOVES is the EPA's state of the science model for estimating emissions from all on-road vehicles including cars, trucks, motorcycles and buses. As compared to the previous EPA emissions model, MOBILE6.2, MOVES incorporates substantial recent emissions test data and accounts for changes in vehicle technology and regulations as well as improved understanding of in-use emissions levels and the factors that influence mobile source emissions. Per the federal transportation conformity determination and associated EPA guidance, all regional emissions analyses in every State (except California) that begin on or after March 2, 2013 are required to be based on the MOVES model. EPA released the latest version, MOVES 2014a, in November 2015, MOVES 2014a was used in the OCTC regional emissions analysis.

MOVES can be run in either the inventory mode or the emission rate mode. The inventory mode calculates a total emissions inventory based on vehicle miles of travel and vehicle population data that are input by the user. The emission rate mode produces a look-up table of emission rates including emissions per unit of distance for running emissions, rate per profile for evaporative processes, and rate per vehicle for starts and extended idle processes.

Per EPA guidance, an MPO may select either method to conduct regional emissions analyses. OCTC chose to use the emissions inventory mode to analyze the OCTC travel demand model output for each conformity analysis year. The inventory mode was used because OCTC is only required to perform a limited number of MOVES runs and the OCTC planning boundary is limited to one county. Use of the inventory mode also requires substantially less post-processing of MOVES output data, instead relying on code and algorithms that are already built into the model by EPA.

As noted previously, the transportation network impact of the Newburgh Area Bus Expansion project, and Park and Ride Lot SOV reduction were estimated with an “off-model” methodology using project-specific data. Accordingly, the emissions impact of these projects on the activity cycle of a limited number of passenger vehicles and transit buses were estimated using emission rates that were generated by the emission rate mode in MOVES2014a.

The specific MOVES2014a inputs and parameters used in the OCTC regional emissions analysis, both in the inventory mode and the emissions rate mode are described below:

Domain/Scale: The county scale option was selected.

Calculation Type: The “emissions inventory” calculation mode was used to evaluate the impact of the OCTC Travel Demand Model Output. The “emissions rate” mode was used to evaluate the impact of Orange County park and ride lots and the Newburgh Area Bus Service Expansion.

Time Spans: The time aggregation level is set to “hour.”

Geographic Bounds: The county scale option was selected.

County Data Manager Inputs: The following county-specific MOVES input data bases as received from NYSDEC on November 25, 2015 were used in the regional emissions analysis: AVFT, roadTypeDistribution, monthVMTFraction, dayVMTFraction, fuelSupply, hourVMTFraction, IMCoverage, rampFraction, sourceTypeAgeDistribution, sourceTypePopulation, fuelFormulation, and met data. OCTC-specific averageSpeedDistribution and hpmsVTypeVMT input data bases were developed as described below:

Vehicle Miles Traveled

- Annual Vehicle Miles Traveled (VMT) by Highway Performance Monitoring System (HPMS) Vehicle Type for Orange County (shown in Table 1) were developed from OCTC travel demand model outputs.

Table 2 – OCTC ANNUAL HPMS VMT DATA

HPMS Vehicle Type	HPMS VMT			
	2017	2025	2035	2040
10	29,789,963	32,352,219	36,434,138	38,615,750
25	4,680,777,731	5,084,410,731	5,727,118,250	6,070,595,228
40	47,132,772	50,678,205	56,482,837	59,596,320
50	194,000,591	208,593,280	232,484,800	245,299,724
60	36,740,970	39,504,344	44,028,706	46,455,488
Grand Total	4,988,442,027	5,415,538,779	6,096,548,731	6,460,562,509

Population Data

- Population data for 2017 was based on model input parameters for Orange County as developed by NYSDEC.
- Population data for 2025, 2035, and 2040 was developed for each source type based on OCTC VMT data. The OCTC VMT growth factors for 2025, 2035 and 2040, were applied to 2017 NYSDEC Source type population to obtain population data for years 2025, 2035 and 2040.

Inspection and Maintenance data/other Input files

- Inspection and Maintenance files provided by NYSDOT for future years 2025, 2035 and 2040 were used.
- MOVES2014_NY_LEV database provided by NYSDOT was used for all scenario year runs.
- NYSDEC 2017 inputs were used for other future analysis data including road type distribution, age distribution, ramp fraction, etc.

Development of Data Specific Average Speed Distribution

Average speed distribution data was developed for the years 2017, 2025, 2035, and 2040 based on the OCTC data and the NYSDEC data for Orange County. A visual basic application (VBA) macro was developed to automatically generate speed distribution for AM, MD, PM, and NT time periods in each year. This was done using the following data and procedures:

1. The **roadTypeDistribution** table from the 2017 NYSDEC data for Orange County was used.

OCTC TDM outputs have Road Type, Speed, and VMT for all time periods, but they do not contain source type information. In order to calculate a speed distribution curve (Source Type, Road Type, hourDayID, AverageSpeedBin, AverageSpeedFraction), we utilized data from the 2017 roadTypeDistribution table (Source Type, RoadType, roadTypeVMTFraction) for Orange County (NYSDEC data).

2. VMT for 2017, 2025, 2035, and 2040 for Orange County based on each source type was calculated.

Using the OCTC TDM output, only total VMT by year can be calculated. The model does not generate VMT for every source type, which is required by MOVES. To obtain this data, Orange County VMT by Source Type information from NYSDOT 2017 Annual VMT Projection data was used to calculate VMT percentage for every source type. These percentages were then applied to the OCTC TDM VMT to get VMT by source type for every year of analysis.

3. The SourceTypeVMTFraction for every MOVES Road Type was calculated based on outputs from Steps 1 and 2 using spreadsheet functions.

4. The “SpeedDistribution” VBA macro was run to generate the speed distribution table. The macro does the following:
 - Aggregates the OCTC TDM outputs (AM, MD, PM, NT) VMT to a temporary table based on MOVES road type, and speed bin. The temporary table (on the fly) includes Road Type, Speed Bin, and VMT.
 - Calculates SpeedBin VMTFraction for every source type, road type and hour based on the roadTypeDistribution table (SourceTypeVMTFraction field) and the temporary table (Road Type, Speed Bin, and VMT).
 - SpeedBin VMTFraction is converted to SpeedFraction by using the formula “SpeedBin VMTFraction / SpeedBin Speed”.
 - SpeedFraction for every source type, road type, and hour is normalized.

Development of the Highway Performance Monitoring System Vehicle Type by Year, (HPMSVTypeYear)

MOVES requires that VMT data be consistent with data collected as part of the HPMS program. This was done using the following procedure:

1. Total Base year VMT was calculated using the formula:

Total BaseYearVMT (from Traffic Demand Model for each year) = Sum of all Months { [(Sum of AM Peak Hour VMT from Traffic Demand Model) * AM Period Factor + (Sum of MD Hourly VMT from Traffic Demand Model) * MD Period Factor + (Sum of PM Peak Hour VMT from Traffic Demand Model) * PM Period Factor + (Sum of NT Hourly VMT from Traffic Demand Model) * NT Period Factor] * Monthly Adjustment Factor*Days per Month }

2. NYSDEC HPMS VMT fractions from future years were applied to OCTC HPMS VMT.

The results of the MOVES2014a runs were summarized using the following formulas and procedures:

1. Weekday/Weekend hourly emissions for each pollutant and each month = Sum of the raw hourly emissions (directly from MOVES output) for all source types, all road types, and all processes by pollutantID, by monthID, by dayID, and by hourID.
2. Estimate the numbers of weekday/weekend days for each month.
3. Total emissions of each pollutant at each hour for each month = Weekday /Weekend hourly emission of each pollutant for each month (from Step 1) * number of weekdays/weekend days for each month (from Step 2).
4. Total emissions of each pollutant for each month = sum of total emissions of each pollutant for all 24 hours for both weekdays and weekends for each month (from Step 3).

5. Total emissions of each pollutant for each year = sum of total emissions of each pollutant for each month for all 12 months (from Step 4).
6. Emission rates per speed bin were developed for passenger vehicles and transit buses.

These model inputs include the latest existing and future emissions control programs included in NYSDEC's statewide mobile source emission inventory, and the latest MOVES2014a input assumptions for the existing and future vehicle fleets traveling on roadways in Orange County as of the date the regional emissions analysis began on March 9th, 2016. The MOVES inputs, outputs, run specs, and VMT and speed distribution files are available from the NYSDOT Environmental Science Bureau or OCTC staff.

7.0 Consistency with Metropolitan Transportation Plans (MTP)

The Transportation Improvement Program (TIP) is a requirement of Federal legislation promulgated by the US Department of Transportation. The most recent federal transportation legislation is entitled the Fixing America's Surface Transportation Act, or the FAST Act. In addition to the TIP, this legislation requires that MPOs produce a Long-Range Transportation Plan (LRTP), and a Unified Planning Work Program (UPWP). The transportation projects proposed in the OCTC 2017-2021 TIP adhere to the goals and objectives of the OCTC MTP and FAST Act as listed below:

FAST Act

- 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 accessibility and mobility options available to people and for freight
- Protect and enhance the environment, promote energy conservation, and improve quality of life.
- Promote consistency of transportation improvements and State and Local planned growth and economic patterns.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Promote efficient system management and operation; and
- Emphasize the preservation of the existing transportation system.
- Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation.
- Enhance travel and tourism.

Generally, the projects in the OCTC 2017-2021 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, the projects in the OCTC 2017-2021 TIP are consistent with the policies in OCTC MTP, and FAST Act.

On August 10, 2005 the Safe, Accountable Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law. SAFETEA-LU amended the State Implementation Plan (SIP) requirements for transportation conformity in CAA section 176(c)(4)(D). Consistent with SAFETEA-LU, USEPA revised 40 CFR 51.390 to only require state transportation conformity SIPs to address three sections of the USEPA Conformity Rule: 40 CFR Part 93.105 (consultation procedures); 40 CFR Part 93.122 (written commitments to implement control measures that are not contained in the transportation plan or Transportation Improvement Program (TIP)); and 40 CFR Part 93.125(c) (written commitments to implement mitigation measures).

On October 3, 2013 the New York State Department of Environmental Conservation submitted a SIP revision that addressed the three provisions of the USEPA Transportation Conformity Rule required by CAA section 176(c)(4)(D). The SIP revision was approved by USEPA, effective September 29, 2014.

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 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 2017-2021 TIP were classified as exempt, nonexempt or regionally significant, and sent to the NYS ICG for review and concurrence. The resulting nonexempt and regionally significant transportation projects indicated in Table 3 below are included in OCTC Regional Emissions Analysis.

Table 3. OCTC Nonexempt Transportation Projects

PIN	Project	Agency
806242	I-84 ITS: RT 17 - I-87	NYSDOT
806243	I-84 ITS: I-87 - RT 9	NYSDOT
875924	CMAQ Funding For Newburgh Area Bus Service	Orange
882347	Orange Park & Ride Lots	NYSDOT

9.0 Timely Implementation of TCMs

With respect to 40 CFR 93.122(a)(4)(ii) and 93.125(c), the SIP specifies in 6 NYCRR Subparts 240-3.1 and 240-3.2, respectively, that written commitments for control and mitigation measures must be obtained prior to a positive conformity determination. There are no Transportation Control Measures specified in the New York State SIP for air quality and no emission reduction credit is claimed in the OCTC regional emissions analysis determination from any measure that is not in the TIP and Plan. Thus, the regional conformity criteria in 6 NYCRR Part 240-3 are met.

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-ESB, NYSDEC, NYMTC, OCTC). OCTC relied on a high degree of consultation and coordination among these agencies. During monthly conference calls, the ICG was informed of the status and methodologies used in the OCTC regional emissions analysis. 6 NYCRR Part 240-2 identifies the appropriate agencies, procedures and allocation of responsibilities for consultation and is consistent with 40 CFR Part 93.105. Those procedures were followed within the OCTC conformity determination process and are addressed in Sections 3 and 10 of this document. In summary, OCTC participated in several monthly and ad-hoc meetings with the Interagency Consultation Group for air quality conformity during the development of the air quality conformity determination. This consultation ensured that OCTC used the latest emissions model and planning assumptions in its regional emissions analysis, appropriately addressed all non-exempt and regionally significant projects, and successfully passed all required emissions reductions tests to support an affirmative conformity determination. Thus, the criteria in 6 NYCRR Part 240-2 are met.

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 an Air Quality Conformity Determination Statement prior to its adoption. Accordingly, OCTC sought public input on its Conformity Statement and draft TIP from June 29, 2016 through July 29, 2016 by notification to all known interested parties and media outlets.

Public & Interagency Review: No comments were received from the public. During the interagency review of the OCTC regional emissions analysis, a MOVES2014a fuel input error was discovered. Accordingly, this input error was corrected and the analysis was re-run. The year 2017 results were not affected; however the emissions from other analysis years changed as follows:

- . 2025: 3% NOx increase, 2% PM_{2.5} increase
- . 2035: 5% NOx increase, 8% PM_{2.5} increase
- . 2040: 6% NOx increase, 10% PM_{2.5} increase.

Overall, while emissions for the OC portion of the NY Metropolitan PM_{2.5} maintenance area increased for the 2025, 2035 and 2040 analysis years, the combined direct and indirect PM_{2.5} emissions from motor vehicles in both OC and NYMTC counties remain well below the State Implementaion Plan (SIP) PM_{2.5} motor vehicle emissions budgets. On July 26th, 2016, the NYS Interagency Consultation Group (NYS ICG) concurred that OCTC would not have to reinstate the 30-day public review as a result of this technical correction. The revised regional emissions analysis results are presented in Table 4 below.

12.0 Results of Emissions Analyses

12.1 General. OCTC in cooperation with NYSDOT-ESB calculated PM_{2.5} emissions for nonexempt and regionally significant projects in the OCTC MTP Update and TIP using MOVES2014a.

12.2 Methodology. The regional emissions analysis was based on the results of the emission inventory runs described in Section 6.3 above. The emissions impact of the Orange County Park and Ride Lots, and the Newburgh Area Transit Service expansion were based on annual average speed and source type specific emission factors generated by MOVES2014a. The final product calculated annual direct PM_{2.5} emissions and NOx precursor emissions for the future analysis years of 2017, 2025, 2035 and 2040.

12.3 Regional Analysis. Table 5 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. The analysis confirms that the required budget tests are passed.

Table 4: Regional Emissions Analysis Summary (Motor Vehicle Emissions Budget Test)

Annual PM _{2.5}	New York Metropolitan PM _{2.5} Non-Attainment Area Emission Budget Test Results in Tons Per Year			
Analysis Year	2017	2025	2035	2040
SIP Budget	3,897.71	3,291.09	3,291.09	3,291.09
OCTC Emissions	124.93	76.01	59.28	56.08
NYMTC Emissions	783.25	465.41	282.09	232.44
<i>TOTAL OCTC+NYMTC Emissions:</i>	908.18	541.42	341.37	288.52
<i>Conclusion</i>	<i>Pass</i>	<i>Pass</i>	<i>Pass</i>	<i>Pass</i>

Annual NO _x	New York Metropolitan PM _{2.5} Non-Attainment Area Emission Budget Test Results in Tons Per Year			
Analysis Year	2017	2025	2035	2040
SIP Budget	68,362.66	51,260.81	51,260.81	51,260.81
OCTC Emissions	2,834.80	1,534.16	920.06	830.02
NYMTC Emissions	32,359.92	17,201.01	9,843.33	8,850.29
TOTAL OCTC+NYMTC Emissions:	35,194.72	18,735.17	10,763.39	9,680.31
Conclusion	Pass	Pass	Pass	Pass

12.4 Conclusions. The corrected results of the combined OCTC and NYMTC regional emissions analyses indicate that on-road emissions associated with the NYMTC and OCTC MTP Update and transportation projects in the NYMTC and OCTC 2017-2021 TIPs are less than the approved motor vehicle emissions budgets in the New York State Implementation Plan for PM_{2.5} in the New York Metropolitan Area.

Therefore, transportation conformity for the OCTC MTP and transportation projects in the OCTC 2017-2021 TIP has been demonstrated for OC and the entire New York State portion of the NY-NJ-CT PM_{2.5} Maintenance Area in accordance with the EPA and NYSDEC transportation conformity regulations. Both the OCTC and NYMTC TIPs conform to the existing New York State Implementation Plan for air quality (SIP).

13.0 Evidence of MPO Resolutions

The final MPO resolutions approving this conformity determination will be included in the final documentation after the satisfactory conclusion of the public comment period. Specific MPO actions included in this conformity analysis:

MPO Product	MPO Approval Date	FHWA/FTA Approval
NYMTC MTP	September 04, 2013	September 30, 2014
NYMTC MTP conformity update	September 06, 2016*	September 30, 2016*
NYMTC 2017-2021 TIP, as amended	September 06, 2016*	September 30, 2016*
OCTC MTP Update	November 17, 2015	January 15, 2016
OCTC 2017-2021 TIP conformity	August 02, 2016*	September 30, 2016 *

* anticipated approval dates

Conformity Determination Statement:

The results of the regional emissions analysis demonstrate that the **OCTC MTP and OCTC 2017-2021 Transportation Improvement Program** conform to the New York State Implementation Plan for 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.orangecountygov.com/planning/octc

Appendix

MOVES Emissions Calculations

Regional Emissions Analysis Results: OCTC 2017-2021 TIP Update, June 2016 (without off-model results)

Year	VMT	Pollutant	NOx	PM2.5 - Total (Exhaust+ Brakewear +Tirewear)	PM2.5 - Exhaust Total	PM2.5 - Brakewear	PM2.5 - Tirewear
		pollutantID	3		110	116	117
2017	4,988,442,027	grams/Year	2,572,102,851	113,360,189	95,336,245	11,406,940	6,617,004
		Tons/Year	2,834.80	124.96	105.09	12.57	7.29
2025	5,415,538,779	grams/Year	1,391,808,701	68,971,752	47,419,751	13,840,577	7,711,424
		Tons/Year	1,534.21	76.03	52.27	15.26	8.50
2035	6,096,548,731	grams/Year	834,744,688	53,800,640	27,436,605	17,284,635	9,079,399
		Tons/Year	920.15	59.31	30.24	19.05	10.01
2040	6,460,562,509	grams/Year	753,043,368	50,888,894	21,828,011	19,333,124	9,727,759
		Tons/Year	830.09	56.10	24.06	21.31	10.72

Note: Tons = US Short Tons

Appendix

Orange County Annual VMT

HPMS Vehicle Type	HPMS VMT			
	2017	2025	2035	2040
10	29,789,963	32,352,219	36,434,138	38,615,750
25	4,680,777,731	5,084,410,731	5,727,118,250	6,070,595,228
40	47,132,772	50,678,205	56,482,837	59,596,320
50	194,000,591	208,593,280	232,484,800	245,299,724
60	36,740,970	39,504,344	44,028,706	46,455,488
Grand Total	4,988,442,027	5,415,538,779	6,096,548,731	6,460,562,509

Orange County Off-Model Emissions Results

Pollutant	Analysis Year – Total Emissions Change (tons per year)			
	2017	2025	2035	2040
PM _{2.5}	-0.03	-0.02	-0.02	-0.02
NO _x	-0.45	-0.04	-0.09	-0.07

All detailed emissions files are available by request from the OC Department of Planning by calling Senior Planner Fred Budde at (845) 615-3840.