



# Ozone and PM<sub>2.5</sub> Air Quality Conformity Determination

of the 2023-2050 Metropolitan Transportation Plans

and the 2021-2024 Transportation Improvement Programs, As  
Amended

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## 1. Executive Summary

This report documents the air quality conformity analysis of the 2023-2050 Metropolitan Transportation Plans (MTPs) and the 2021-2024 Transportation Improvement Programs (TIPs), as amended carried out under the regulations contained in the United States Environmental Protection Agency's (EPA) final rule, published in the November 24, 1993 Federal Register, with subsequent amendments and additional federal guidance published by EPA, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). The process involved consultation with affected agencies such as EPA, FHWA, FTA, the Connecticut Department of Energy and Environmental Protection (CTDEEP) and the Metropolitan Planning Organizations (MPOs) within the State of Connecticut. The air quality emissions analysis is a responsibility of the Connecticut Department of Transportation (CTDOT), acting as the MPO for this task.

"Conformity" is a requirement of the Federal Clean Air Act Amendments (CAAA) Section 176(c) (42 U.S.C.7506(c)) and EPA conformity regulations (40 CFR 93 Subpart A). These regulations require that each new MTP and TIP be demonstrated to conform to the State Implementation Plan (SIP) before the MTP and TIPs are approved by the MPO or accepted by the United States Department of Transportation (USDOT). This ensures that the MTP and TIPs are consistent with air quality goals and that progress is being made towards achieving and maintaining Federal air quality standards. A conformity determination is undertaken to estimate emissions that will result from an area's transportation system. The analysis must demonstrate that those emissions are within limits outlined in state air quality implementation plans.

Under the transportation conformity regulation, the principal criteria for a determination of conformity for transportation plans and programs are:

- The TIP and MTP must pass an emissions budget test using a motor vehicle emissions budget (MVEB) that has been found to be adequate by EPA for transportation conformity purposes, or an interim emission test;
- The latest planning assumptions and emission models specified for use in conformity determinations must be employed;
- The TIP and MTP must provide for the timely implementation of transportation control measures (TCMs) specified in the applicable air quality implementation plans; and
- Interagency and public consultation.

As the federal air quality districts for ozone and PM<sub>2.5</sub> include several counties and various planning regions, the emission analysis must be coordinated to include the TIPs and MTPs of several regions.

The CTDOT performs this coordination role. Each region submits its draft TIP and MTP to the CTDOT and the CTDOT in turn combines the TIPs and MTPs for all appropriate regions and conducts the analysis on each pollutant's impact for each air quality district in relation to the established MVEBs.

For the 2023-2050 MTP and the 2021-2024 TIPs, as amended, summer day emission estimates for ozone precursors, volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>), and annual emission estimates for particulate matter 2.5 microns or smaller (PM<sub>2.5</sub>) and NO<sub>x</sub> as a precursor were developed for years 2023, 2025, 2035, 2045, and 2050 forecast years. These emission estimates were calculated using EPA's Motor Vehicle Emission Simulator (MOVES3).

The results of this analysis, in Tables 1 and 2 below show that the 2023-2050 MTP and the 2021-2024 TIPs, as amended, mobile emissions are within the MVEBs for all forecast years per pollutant. This analysis

provides a basis for a determination of conformity for the 2023-2050 MTP and the 2021-2024 TIP, as amended.

**Table 1: Ozone Conformity - NOx and VOC Emissions Budget Test Results for Both 2008 and 2015 Ozone NAAQS**

Year	Ozone Area	Tons per day					
		Cube Series 2		Budgets		Difference	
		VOC	NOx	VOC	NOx	VOC	NOx
2023	CT Portion of NY-NJ-LI Area	15.28	18.56	17.6	24.6	-2.32	-6.04
	Greater CT Area	13.58	16.30	15.9	22.2	-2.32	-5.90
2025	CT Portion of NY-NJ-LI Area	13.89	15.54	17.6	24.6	-3.71	-9.06
	Greater CT Area	12.42	13.67	15.9	22.2	-3.48	-8.53
2035	CT Portion of NY-NJ-LI Area	8.66	8.36	17.6	24.6	-8.94	-16.24
	Greater CT Area	7.78	7.47	15.9	22.2	-8.12	-14.73
2045	CT Portion of NY-NJ-LI Area	7.47	7.65	17.6	24.6	-10.13	-16.95
	Greater CT Area	6.74	6.82	15.9	22.2	-9.16	-15.38
2050	CT Portion of NY-NJ-LI Area	7.03	7.61	17.6	24.6	-10.57	-16.99
	Greater CT Area	6.35	6.80	15.9	22.2	-9.55	-15.40

**Table 2: PM2.5 Conformity - Direct PM2.5 and NOx Emission Budget Test Results**

Year	PM2.5 Area	Tons per year					
		Cube Series 2		Budgets		Difference	
		Direct PM <sub>2.5</sub>	NOx	Direct PM <sub>2.5</sub>	NOx	Direct PM <sub>2.5</sub>	NOx
2023	CT Portion of NY-NJ-LI Area	205.36	5954.80	575.80	12,791.80	-370.44	-6837.00
2025	CT Portion of NY-NJ-LI Area	192.15	5003.72	516.0	9,728.10	-323.85	-4724.38
2035	CT Portion of NY-NJ-LI Area	143.73	2792.78	516.0	9,728.10	-372.27	-6935.32
2045	CT Portion of NY-NJ-LI Area	125.72	2530.02	516.0	9,728.10	-390.28	-7198.08
2050	CT Portion of NY-NJ-LI Area	127.35	2531.04	516.0	9,728.10	-388.65	-7197.06

## 2. What is Transportation Conformity?

Transportation conformity is a planning process required by the CAA Section 176(c), which establishes the framework for improving air quality to protect public health and the environment. The goal of transportation conformity is to ensure that FHWA and FTA funding and approvals are given to highway and public transportation activities that are consistent with air quality goals.

The CAA requires that metropolitan transportation plans, TIPs, and Federal projects conform to the purpose of the SIP. Conformity to a SIP means that such activities will not cause or contribute to any new violations of the National Ambient Air Quality Standards (NAAQS); increase the frequency or severity of NAAQS violations; or delay timely attainment of the NAAQS or any required interim milestone. Conformity requirements apply in areas that either do not meet or previously have not met air quality standards for ozone, carbon monoxide, particulate matter, or nitrogen dioxide. These areas are known as “nonattainment areas” or “maintenance areas”, respectively.

Connecticut contains nonattainment areas for ozone (O<sub>3</sub>) and maintenance areas for carbon monoxide (CO) and PM<sub>2.5</sub>.

For MTP and TIP conformity, the determination shows that the total emissions from on-road travel on an area’s transportation system are consistent with the MVEBs and goals for air quality found in the state’s SIP. A conformity determination demonstrates that implementation of the MTP or TIP will not cause any new violations of the air quality standard, increase the frequency or severity of violations of the standard, or delay timely attainment of the standard or any interim milestone.

This document was developed by the CTDOT to demonstrate that the MTP comply with the MVEBs for the nonattainment and maintenance areas that fall within the state’s planning boundary. In accordance with EPA regulation 40 CFR 93 Subpart A, this conformity determination is being issued in response to the adoption of new MTPs.

In addition, the conformity determination demonstrates compliance with the congestion management process in transportation management areas (23 CFR §450.322), development and content of the MTP (23 CFR §450.324), and fiscal constraints for MTPs and TIPs (40 CFR §93.108-119).

## 3. Nonattainment and Maintenance Areas in Connecticut

### a. Ozone Nonattainment Areas

Ozone is an extremely reactive, colorless gas comprised of three atoms of oxygen. Ozone exists naturally in a layer of the earth's upper atmosphere known as the stratosphere, where it shields the earth from the sun's harmful ultraviolet rays. However, ozone found close to the earth's surface, called ground-level ozone, is a component of smog and a harmful pollutant. Ground-level ozone is produced by a complex chemical reaction between VOCs and NO<sub>x</sub> in the presence of sunlight.

Mobile source NO<sub>x</sub> emissions form when nitrogen and oxygen atoms chemically react inside the high pressure and temperature conditions in an engine. VOC emissions are a product of partial fuel combustion, fuel evaporation and refueling losses caused by spillage and vapor leakage.

Exposure to ozone has been linked to a number of respiratory health effects, including significant decreases in lung function, inflammation of airways, and increased symptoms such as cough and pain when breathing deeply. High concentrations of ozone can also contribute to reductions in agricultural crop production and forest yields, as well as increased susceptibility of plants to disease, pests and other environmental stresses

such as harsh weather. This pollutant alone contributes to the majority of unhealthy air quality days in Connecticut, as measured by the Air Quality Index (AQI).

EPA revised the ozone NAAQS in 2008 and again in 2015. The 2008 ozone NAAQS was established at 75 ppb and the 2015 ozone NAAQS revised the standard to 70 ppb. States and portions of states are then subsequently classified as attainment (meeting the standard) or one of the following classifications of nonattainment: marginal, moderate, serious, severe and extreme. The classifications indicate the severity of the exceedance are defined in rules that proceed a newly promulgated NAAQS. Connecticut is nonattainment for both standards and as such must contend with the subsequent nonattainment requirements for both standards. Under the 2008 standard the southwest portion of the state, known as the New York-Northern New Jersey-Long Island (NY-NJ-CT) ozone nonattainment area, is designated as Severe and the rest of the state, known as the Greater Connecticut ozone non-attainment area, is designated as Serious. Under the 2015 standard Connecticut's two nonattainment areas are designated as Moderate.<sup>1</sup>

Under the 2008 standard, the Connecticut ozone nonattainment areas were subsequently reclassified to moderate. EPA determined that 11 of the original marginal areas did not attain the 2008 ozone standards by the July 20, 2015 attainment date and that they must be reclassified as moderate. Both the Greater Connecticut and the Connecticut portion of the NY-NJ-LI nonattainment areas were two of the eleven areas.<sup>2</sup> The "bump-up" designation to moderate was effective on June 3, 2016.

In this action, the EPA also established a due date of January 1, 2017, by which states with newly reclassified moderate areas must submit SIP revisions to address moderate nonattainment area requirements for those areas. The reclassified areas must attain the 2008 ozone standards by the July 20, 2018 moderate attainment deadline. Neither of Connecticut's nonattainment areas measured compliance by the deadline. As such, on September 23, 2019, EPA reclassified both areas as serious under the 2008 standard.

On March 20, 2017, EPA notified CTDEEP that EPA had determined the 2017 MVEBs for the Greater Connecticut ozone nonattainment area, submitted as a SIP revision by CTDEEP to EPA on January 17, 2017, to be adequate for transportation conformity purposes. On May 31, 2017, EPA published its adequacy finding in the Federal Register (82 FR 24859) and the MVEBs became effective on June 15, 2017 for transportation conformity purposes.

On June 4, 2018, EPA published a final rule that designated new nonattainment areas for the 2015 Ozone NAAQS (83 FR 25776). These designations were effective on August 3, 2018. The Greater Connecticut non-attainment area is designated as marginal for the 2015 NAAQS while the Connecticut portion of the NY-NJ-LI nonattainment areas is designated as moderate. This analysis demonstrates conformity to the new 2015 Ozone NAAQS for both Connecticut non-attainment areas.

On October 1, 2018, EPA published a final rule approving certain SIP revisions relating to the 2008 8-hour Ozone NAAQS (83 FR 49297), including approval of the MVEB as shown in Table 3.

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<sup>1</sup> [83 FR 25776](#)

<sup>2</sup> [81 FR 26697](#)

**Table 3: Approved Motor Vehicle Emissions Budgets - Ozone**

Year	Area	VOC (tons/summer day)	NOx (tons/summer day)
2017	Connecticut portion of the New York-Northern New Jersey-Long Island, NY-NJ-LI Ozone Area	17.6	24.6
2017	Greater Connecticut Ozone Area	15.9	22.2

### b. PM2.5 Maintenance Area

Fine particulate matter, also called PM<sub>2.5</sub>, is a mixture of microscopic solids and liquid droplets suspended in air, where the size of the particles is equal to or less than 2.5 micrometers (about one-thirtieth the diameter of a human hair). 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 emissions of gases such as sulfur dioxide and nitrogen oxides.

The health effects associated with exposure to fine particles are serious. Scientific studies have shown significant associations between elevated fine particle levels and premature death. Effects associated with fine particle exposure include aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days), lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems such as heart attacks and cardiac arrhythmia. While fine particles are unhealthy for anyone to breathe, people with heart or lung disease, asthmatics, older adults, and children are especially at risk.

In December of 2004, EPA signed the final rulemaking notice to designate attainment and nonattainment areas with respect to the PM<sub>2.5</sub> NAAQS, becoming effective April 5, 2005. In Connecticut, Fairfield and New Haven Counties were included in the New York-Northern New Jersey-Long Island, NY-NJ-CT PM<sub>2.5</sub> nonattainment area. On June 20, 2007, PM<sub>2.5</sub> budgets were found to be adequate for the early progress SIP. CTDEEP submitted a re-designation request and maintenance plan for the Connecticut portion of the NY-NJ-CT area on June 22, 2012. The plan demonstrated that Connecticut's air quality met both the 1997 annual and the 2006 24-hour PM<sub>2.5</sub> NAAQS due to a combination of national, regional and local control measures implemented to reduce emissions and presented a maintenance plan that ensures continued attainment through the year 2025. The end of the maintenance period was established as 2025, consistent with the CAA section 175A (a) requirement that the plan provide for maintenance of the NAAQS for at least 10 years after EPA formally approves the re-designation request.

EPA subsequently determined that the 2017 and 2025 MVEBs in the maintenance plan were adequate for transportation conformity purposes and effective as of February 20, 2013. On September 24, 2013, EPA published its approval of the PM<sub>2.5</sub> re-designation request, establishing October 24, 2013 as the effective date of re-designation to attainment/maintenance for Connecticut's portion of the NY-NJ-CT area for both the 1997 annual and 24-hours PM<sub>2.5</sub> NAAQS. Table 4 summarizes Connecticut's current PM<sub>2.5</sub> MVEBs.

**Table 4: Approved Motor Vehicle Emissions Budgets – PM2.5**

Year	Area	Direct PM <sub>2.5</sub> (tons/year)	NO <sub>x</sub> (tons/year)
2017	Connecticut portion of the New York-Northern New Jersey-Long Island, NY-NJ-LI PM <sub>2.5</sub> Area	575.8	12,791.8
2025	Connecticut portion of the New York-Northern New Jersey-Long Island, NY-NJ-LI PM <sub>2.5</sub> Area	516.0	9,728.1

### c. Carbon Monoxide Attainment Areas

Carbon monoxide is produced by the incomplete burning of carbon in fuels, including gasoline. High concentrations of CO occur along roadsides in heavy traffic, particularly at major intersections and in enclosed areas such as garages and poorly ventilated tunnels. Peak concentrations occur during the colder months of the year when CO vehicular emissions are greater and meteorological inversion conditions occur more frequently, trapping pollutants near the ground.

There were formerly three CO nonattainment areas in the state. These were the Southwestern portion of the state, the New Haven-Meriden-Waterbury area, and the Hartford-New Britain-Middletown area. The remainder of the state was in attainment for CO. Attainment was demonstrated in each of the nonattainment areas and, subsequently, they were designated as full maintenance areas. On September 13, 2004, EPA approved a CTDEEP submittal for a SIP revision for re-designation of these areas to limited maintenance plan status, thus eliminating the need for budget testing. Effective January 2, 2016, the Hartford-New Britain-Middletown area was in full attainment status. The New Haven-Meriden-Waterbury area completed the maintenance period effective December 4, 2018 while the Southwestern Connecticut area was effective May 10, 2019. In the future, “hot-spot” carbon monoxide analyses will not be performed to satisfy “project level” conformity determinations as the whole State of Connecticut is in attainment for CO.

### d. PM10 Attainment Area – Limited Maintenance

EPA previously designated the City of New Haven as nonattainment with respect to the NAAQS for particulate matter with a nominal diameter of ten microns or less (PM10). The PM10 nonattainment status in New Haven was a local problem stemming from activities of several businesses located in the Stiles Street section of the city. Numerous violations in the late 1980’s and early 1990’s of Section 22a-174-18 (Fugitive Dust) of CTDEEP regulations in that section of the city led to a nonattainment designation (CTDEEP, 1994: Narrative Connecticut Department of Energy and Environmental Protection, State Implementation Plan Revision, For PM10, March 1994). Corrective actions were subsequently identified in the SIP and implemented, with no violations of the PM10 NAAQS since the mid-1990s.

On October 13, 2005, EPA published in the Federal Register (70 FR 59690), approval of a request by CTDEEP for a limited maintenance plan and re-designation of the New Haven nonattainment area to attainment for the PM10 NAAQS. This direct final rule became effective on December 12, 2005.

All construction activities undertaken in the City of New Haven are required to be performed in compliance with Section 22a-174-18 (Control of Particulate "Emissions") of the CTDEEP regulations. All reasonable available control measures must be implemented during construction to mitigate particulate matter



emissions, including wind-blown fugitive dust, mud and dirt carry out, and re-entrained fugitive emission from mobile equipment.

As with limited maintenance plans for other pollutants, emissions budgets are considered to satisfy transportation conformity's "budget test". However, future "project level" conformity determination may require "hot spot" PM10 analyses for new transportation projects with significant diesel traffic in accordance with EPA's Final Rule for "PM2.5 and PM10 Hot-Spot Analyses in Project-level Transportation Conformity Rule PM2.5 and PM10 Amendments; Final Rule (75 FR 4260, March 24, 2010) which became effective on April 23, 2010.

e. State of Connecticut Nonattainment/Attainment Maps

Figure 1: Connecticut Ozone Nonattainment Areas

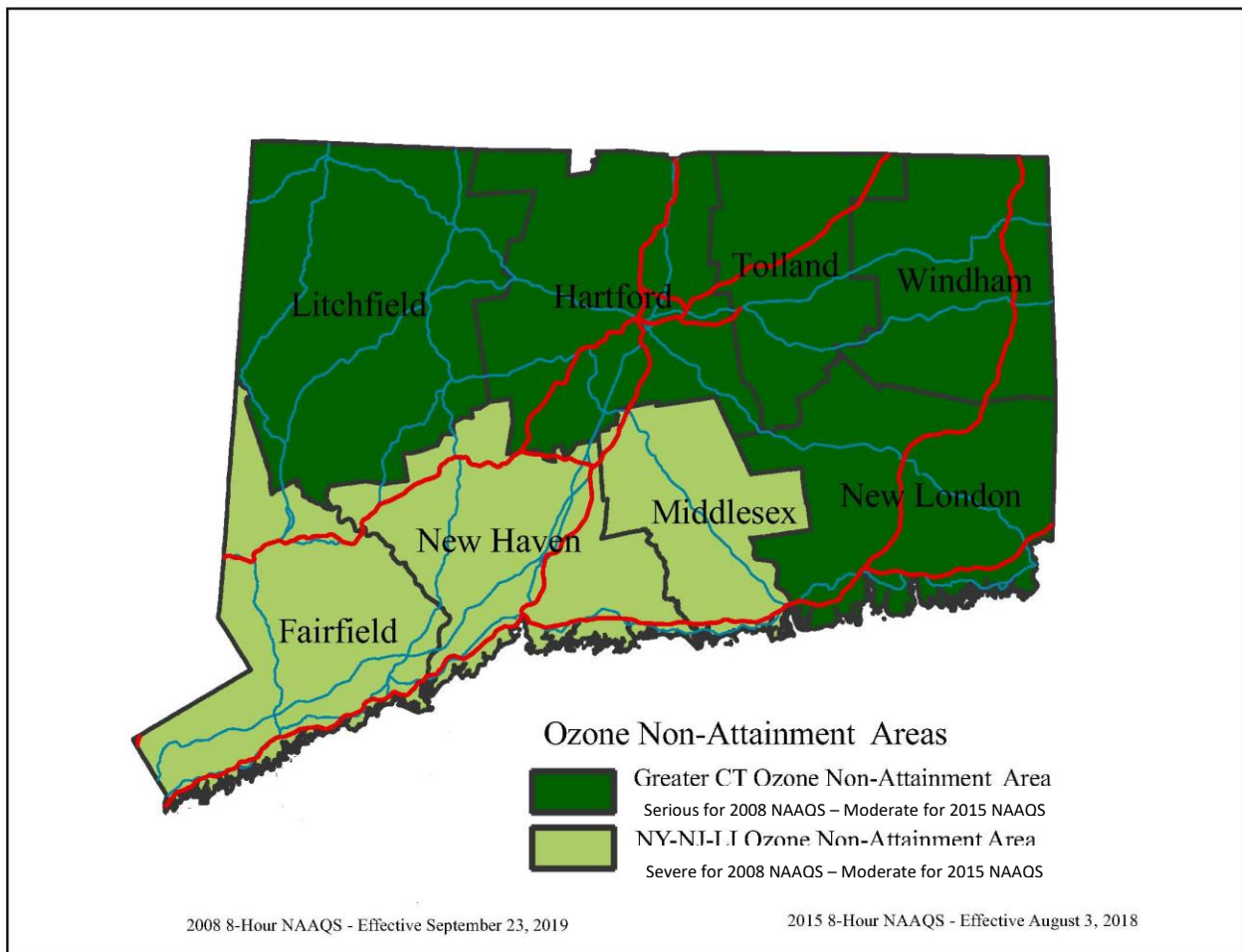
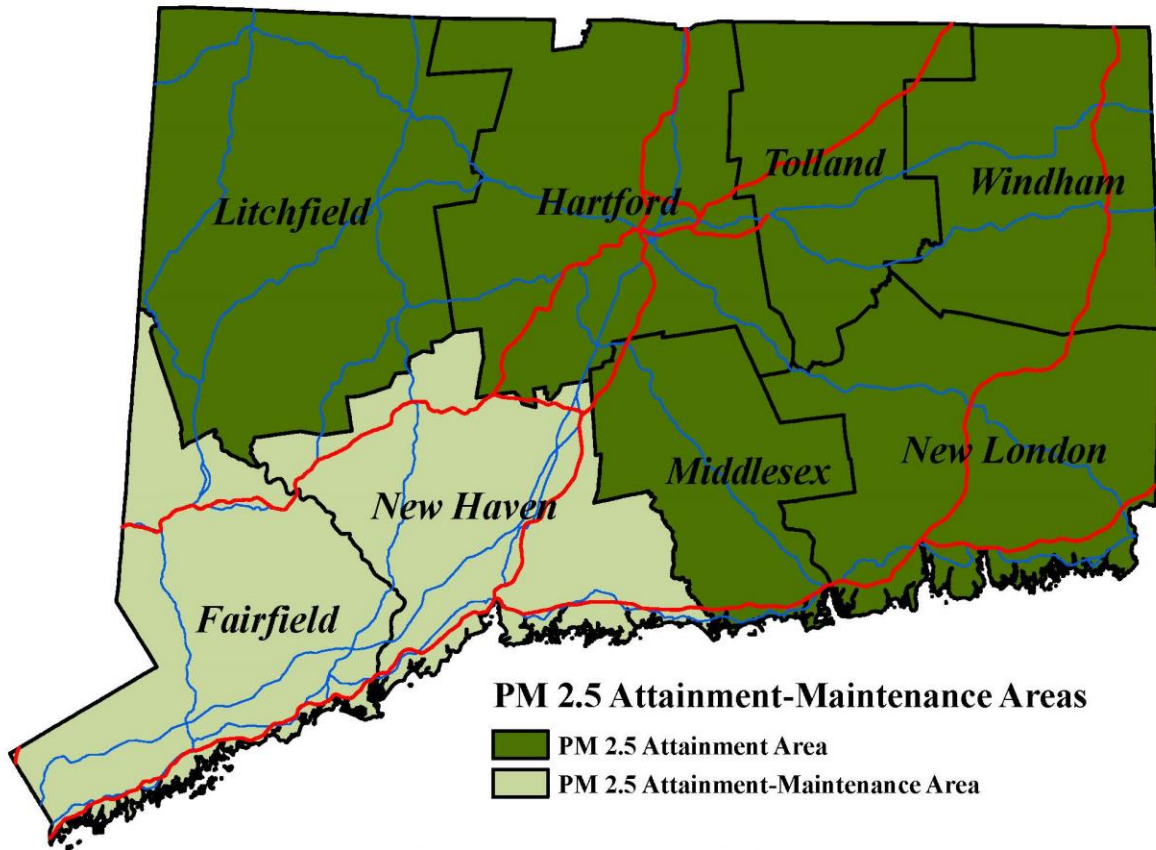
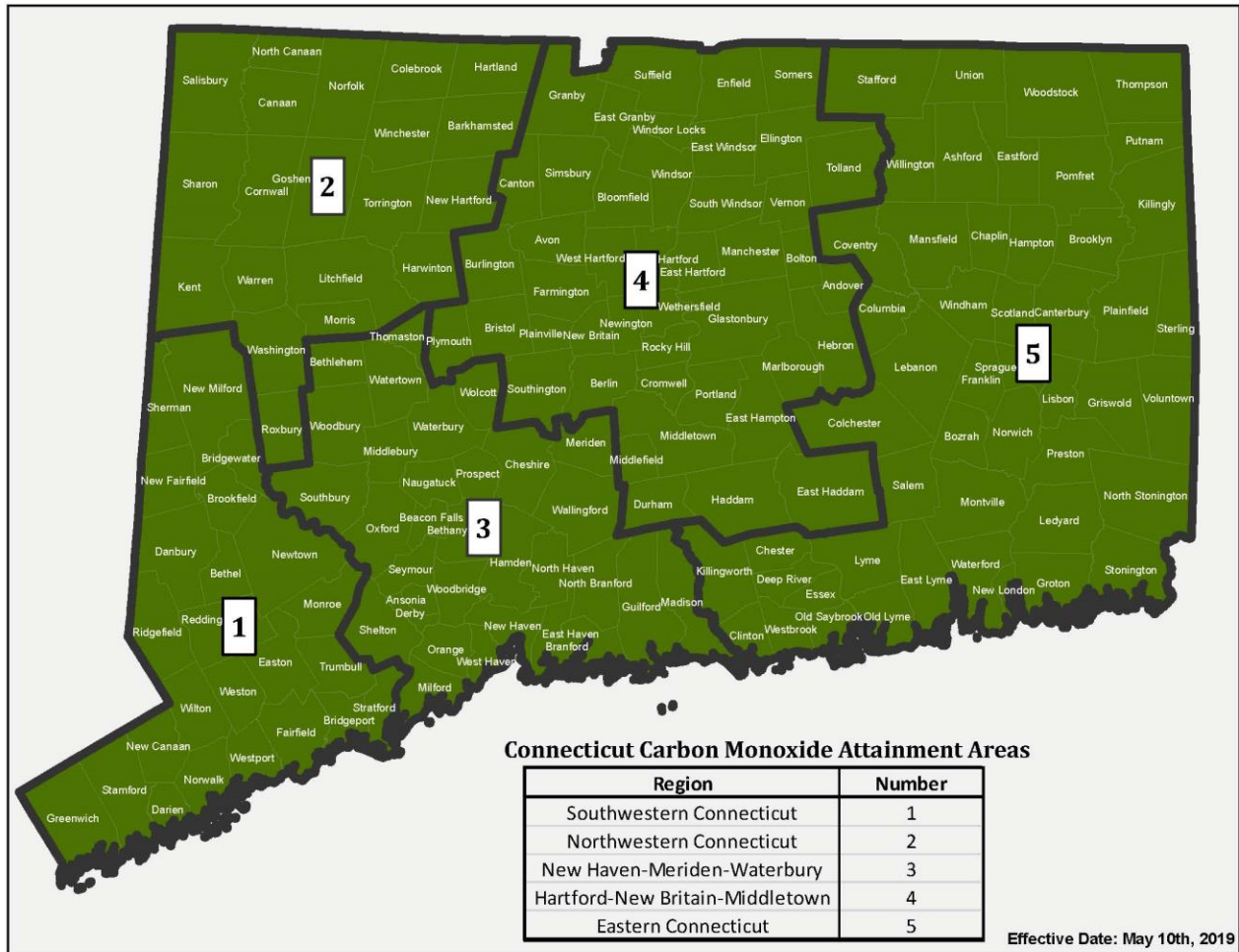


Figure 2: Connecticut PM2.5 Attainment/Maintenance Area



1997 Annual & 2006 24-Hour PM 2.5 NAAQS - Effective October 24, 2013

**Figure 3: Connecticut Carbon Monoxide Attainment Areas**



## 4. How Does Connecticut Demonstrate Conformity?

### a. Transportation Planning Work Program

CTDOT’s FY 2023-2024 Transportation Planning Work Program contains a description of all planning efforts, including those related to air quality, to be sponsored or undertaken with federal assistance during FY 2023 and 2024. Included with this program are several tasks directly related to CTDOT’s responsibilities under Connecticut’s air quality SIP. Additional functions, such as those supporting the preparation of project level conformity analysis, are funded under project related tasks. This work program is available at CTDOT for review.

### b. Interagency Consultation

The conformity rule requires that Federal, State, and local transportation and air quality agencies establish formal procedures to ensure interagency coordination on critical issues. Interagency consultation is a collaborative process between organizations on key elements of the transportation and air quality planning and provides a forum for effective state and local planning and decision-making.

Key organizations included in the interagency consultation are FHWA, FTA, EPA, CTDOT, CTDEEP and the MPOs.

Some goals of interagency consultation are to:

- Ensure all agencies meet regularly and share information;
- Identify key issues early in the process;
- Enable well-coordinated schedules for TIP/MTP conformity determinations and SIP development; and
- Allow collaborative decision on methodologies, assumptions, and conformity test selections.

A list of attendees and call-in participants of the Interagency Consultation Meeting is included in Appendix C along with a copy of the minutes from the meeting.

### c. Public Consultation

The transportation conformity process must also include public consultation on the emissions analysis and conformity determination. This includes posting of relevant documentation and analysis on a “clearinghouse” webpage maintained through the interagency consultation process. All MPOs in the affected nonattainment or maintenance areas must provide thirty-day public comment periods and address any comments received. For this transportation conformity determination, all Connecticut MPOs will hold a thirty-day public comment period. If any public comments were received, they will be attached and can be found in Appendix E.

### d. Scenario Years

The “Action Scenario” is the future transportation system that will result from full implementation of the MTP.

VOC/NOx emission analysis was conducted for ozone season summer day conditions for the following years:

- 2023 (Attainment year and near-term analysis year for both the Greater CT and CT portion of NY-NJ-LI Serious nonattainment areas under the 2008 and 2015 Ozone NAAQS)
- 2025 (Interim modeling year)
- 2035 (Interim modeling year)
- 2045 (Interim modeling year)
- 2050 (Metropolitan Transportation Plan horizon year)

PM2.5 emission analysis was conducted for the following years but for annual average conditions:

- 2023 (Attainment year and near-term analysis year)
- 2025 (Interim modeling year)
- 2035 (Interim modeling year)
- 2045 (interim modeling year)
- 2050 (Metropolitan Transportation Plan horizon year)

## e. Other Planning Documents

The enacting of Section 81 of Connecticut Public Act 13-277 repealed Section 13b-15 of the Connecticut General Statutes, no longer mandating a biennial Master Transportation Plan effective July 1, 2013. The Department's Capital Plan has been expanded to include much of the project information that was formerly included in the Master Transportation Plan.

## 5. Latest Planning Assumptions and Emissions Model

### a. VMT

Vehicle miles of travel (VMT) estimates were developed from CTDOT's statewide network-based travel demand model, Cube Series 2. The 2019 travel model network, to the extent practical, represents all state highways and major connecting non-state streets and roads, as well as the rail, local bus, and express bus systems that currently exist. Future highway networks for 2023, 2025, 2026, 2028, 2030, 2035, and 2045 and transit networks for 2023, 2025, 2028, 2030, and 2040 were built by adding MPOs TIP projects (programmed for opening after 2019) to the 2019 network year. These networks were used to run travel demand models and conduct emissions analyses for the years 2023, 2025, 2035, 2045 and 2050. Projects for each model analysis year for which network changes were required are listed in Appendix B.

It should be noted that the MPOs TIP projects, which have negligible impact on trip distribution and/or highway capacity, have not been incorporated into the network. These include, but are not limited to, geometric improvements of existing interchanges, short sections of climbing lanes, intersection improvements, transit projects dealing with equipment for existing facilities and vehicles, and transit operating assistance. Other projects that reduce the number of vehicle trips, VMT or both may not be included. Such projects include ridesharing and telecommuting programs, bicycling facilities, clean fuel vehicle programs or other possible actions. These types of considerations, while not explicitly accounted for in the travel demand model, will continue to reduce the emissions levels in the regions. Essentially, those projects that do not impact the travel demand forecasts are not included in the networks and/or analysis.

The network-based travel model used for this analysis is the model that CTDOT utilizes for transportation planning, programming and design requirements. This travel demand model uses demographic and land use assumptions based on the 2019 Connecticut Department of Public Health Annual Population Estimates and Connecticut Department of Labor 2019 employment estimates. Population and employment projections for the years 2020, 2030, 2040 and 2050 were developed by the Connecticut Department of Transportation, Travel Demand and Air Quality Modeling Unit.

The model uses a capacity constrained multi-class equilibrium approach to allocate trips among links. The model was calibrated using 2019 ground counts and 2019 Highway Performance Monitoring System (HPMS) Vehicle Miles of Travel data.

In addition, the Employer Commute Options (ECO) Program has been made available to all employers and is incorporated in the travel demand model. It is felt that this process is an effective means of achieving Connecticut's clean air targets. Funding of this effort under the Congestion Mitigation and Air Quality Improvement (CMAQ) program is included in the TIP for FY 2021-2024. It is estimated that this program, if fully successful, could reduce VMT and mobile source emissions by 2% in Southwest Connecticut.

Peak hour directional traffic volumes were estimated as a percentage of the Average Daily Traffic (ADT) on a link-by-link basis. Based on automatic traffic recorder data, 9.0 percent, 8.5 percent, 8.0 percent and 7.5

percent of the ADT occurs during the four highest hours of the day. A 55:45 directional split was assumed. Hourly volumes were then converted to Service Flow Levels (SFL) and Volume to Capacity (V/C) ratios calculated as follows:

$$\text{SFL} = \text{DHV} / \text{PHF} * \text{N}$$

$$\text{VC} = \text{SFL} / \text{C}$$

where: DHV = Directional Hourly Volume

PHF = Peak Hour Factor = 0.9

N = Number of lanes

C = Capacity of lane

Peak period speeds were estimated from the 2000 Highway Capacity Manual based on the design speed, facility class, area type and calculated V/C ratio. On the expressway system, Connecticut-based free flow speed data was available. This data was deemed more appropriate and superseded the capacity manual speed values. The expressway free flow speeds were updated in 2005.

For the off-peak hours, traffic volume is not the controlling factor for vehicle speed. Off-peak link speeds were based on the Highway Capacity Manual free flow speeds as a function of facility class and area type. As before, Connecticut-based speed data was substituted for expressway travel, where available, and was updated in 2005.

ShoreLine East, Hartford Rail Line, New Haven Rail Line, and its branch line schedules were updated in 2019 to reflect new headways and routes. Rail station boardings were then calibrated to a mixture of 2018 and 2019 actual counts for A.M. peak period, Midday off-peak, and Daily boardings along all Connecticut rail lines.

Two special cases exist in the travel demand modeling process. These are centroid connectors and intrazonal trips:

- Centroid connectors represent the local roads used to gain access to the model network from centers of activity in each traffic analysis zone (TAZ). A speed of 25 mph is utilized for these links; and
- Intrazonal trips are trips that are too short to get on to the model network. VMT for intrazonal trips is calculated based on the size of each individual TAZ. A speed of 20 to 24 mph is utilized for peak period and 25 to 29 mph for off-peak.

The Daily Vehicle Miles of Travel (DVMT) is calculated using a methodology based on disaggregate speed and summarized by inventory area, functional classification, and speed. The annual VMT and speed profiles developed by this process are then combined with the emission factors from the MOVES3 model to produce emission estimates for each scenario and time frame.

## b. Emissions Model

For this transportation conformity analysis, the MOVES model, specifically MOVES3, was used to estimate on-road vehicle emissions for the action scenarios. MOVES is a state-of-the-science emission modeling system, developed by EPA, that estimates emissions for mobile sources at the national, county, and project level for criteria air pollutants, greenhouse gases, and air toxics.

MOVES estimates exhaust and evaporative emissions as well as brake and tire wear emissions from all types of on-road vehicles. It also uses a vehicle classification system based on the way vehicles are classified in the FHWA's Highway Performance Monitoring System (HPMS). Other parameters include VMT by vehicle and

road type, vehicle hours traveled (VHT) by vehicle and road type, the number of each type of vehicle in the fleet, vehicle age distribution, model year, travel speed, roadway type, fuel information, meteorological data, such as ambient temperature and humidity, and applicable control measures such as reformulated gasoline (RFG) and inspection and maintenance (I/M) programs. Local inputs were cooperatively developed by CTDEEP and CTDOT, where applicable, using EPA recommended methods.

The HPMS Vehicle Mix file was updated to reflect the average vehicle mix for the 2015-2017 timeframe. A Three-year average was determined to be a more accurate representation of actual vehicle mix than the previous one-year counts as the CTDOT rotates traffic and vehicle counts on a three-year basis.

CTDEEP used local data from 2020 Connecticut registration data for 11 Motorcycle, 43 School Bus, and 54 Motor Home source types. Data from an EPA sponsored decode of 2017 state vehicle registration data was used for 21 Passenger Car, 31 Passenger Truck, 32 Light Commercial Truck, 51 Refuse Truck, 52 Single Unit Short-haul Truck, 53 Single Unit Long-haul truck source types. Local data from analyses of 2011 Connecticut registration data was used for 41 Intercity bus, 42 Transit Bus, 61 Combination Short-haul Truck and 62-Combination Long-haul Truck source types. These data sets were scaled to the project base year using the growth in MOVES Default VMT for the relevant time periods.

In November 2012, EPA confirmed by telephone to CTDEEP that future conformity determinations utilizing newer versions of MOVES can be made by comparing emission results to the existing budgets based on older versions of MOVES. As new MVEBs are determined by EPA to be adequate for each area, they will be used to make conformity determinations.

For the ozone analysis, MOVES was only run to obtain VOC and NO<sub>x</sub> emissions on a typical summer weekday to compare to the ton per summer day ozone MVEBs. For the PM<sub>2.5</sub> analyses, an annual emissions run was conducted for PM<sub>2.5</sub> and NO<sub>x</sub> to compare to the ton per year PM<sub>2.5</sub> MVEBs. All runs also included the National Low Emission Vehicle (NLEV) program in 2020 and all future years.

## 6. Conformity Tests and Air Quality Emissions Results

For the NY-NJ-LI ozone nonattainment area, VOC and NO<sub>x</sub> transportation emissions from the Action Scenarios must be less than the 2017 transportation emission budgets if analysis year is 2017 or later.

For the Greater Connecticut ozone nonattainment area, VOC and NO<sub>x</sub> transportation emissions from the Action Scenarios must be less than the 2017 transportation emission budgets if analysis year is 2017 or later.

For the NY-NJ-LI PM<sub>2.5</sub> maintenance area, PM<sub>2.5</sub> and NO<sub>x</sub> transportation emissions from the Action Scenarios must be less than the 2017 transportation emission budgets if analysis year is between 2017 and 2024.

For the NY-NJ-LI PM<sub>2.5</sub> maintenance area, PM<sub>2.5</sub> and NO<sub>x</sub> transportation emissions from the Action Scenarios must be less than the 2025 transportation emission budgets if analysis year is 2025 or later.

No tests for CO are required because the CO areas have completed their Limited Maintenance Plans.

The following tables show the MOVES3 modeled emissions for both ozone and PM<sub>2.5</sub> areas compared to the applicable MVEBs for each pollutant. In all cases, the MPOs TIPs meets the required conformity tests.

**Table 5: Ozone Conformity - NOx and VOC Emissions Budget Test Results for Both 2008 and 2015 Ozone NAAQS**

Year	Ozone Area	Tons per day					
		Cube Series 2		Budgets		Difference	
		VOC	NOx	VOC	NOx	VOC	NOx
2023	CT Portion of NY-NJ-LI Area	15.28	18.56	17.6	24.6	-2.32	-6.04
	Greater CT Area	13.58	16.30	15.9	22.2	-2.32	-5.90
2025	CT Portion of NY-NJ-LI Area	13.89	15.54	17.6	24.6	-3.71	-9.06
	Greater CT Area	12.42	13.67	15.9	22.2	-3.48	-8.53
2035	CT Portion of NY-NJ-LI Area	8.66	8.36	17.6	24.6	-8.94	-16.24
	Greater CT Area	7.78	7.47	15.9	22.2	-8.12	-14.73
2045	CT Portion of NY-NJ-LI Area	7.47	7.65	17.6	24.6	-10.13	-16.95
	Greater CT Area	6.74	6.82	15.9	22.2	-9.16	-15.38
2050	CT Portion of NY-NJ-LI Area	7.03	7.61	17.6	24.6	-10.57	-16.99
	Greater CT Area	6.35	6.80	15.9	22.2	-9.55	-15.40

**Table 6: PM2.5 Conformity - Direct PM2.5 and NOx Emission Budget Test Results**

Year	PM2.5 Area	Tons per year					
		Cube Series 2		Budgets		Difference	
		Direct PM <sub>2.5</sub>	NOx	Direct PM <sub>2.5</sub>	NOx	Direct PM <sub>2.5</sub>	NOx
2023	CT Portion of NY-NJ-LI Area	205.36	5954.80	575.80	12,791.80	-370.44	-6837.00
2025	CT Portion of NY-NJ-LI Area	192.15	5003.72	516.0	9,728.10	-323.85	-4724.38
2035	CT Portion of NY-NJ-LI Area	143.73	2792.78	516.0	9,728.10	-372.27	-6935.32
2045	CT Portion of NY-NJ-LI Area	125.72	2530.02	516.0	9,728.10	-390.28	-7198.08
2050	CT Portion of NY-NJ-LI Area	127.35	2531.04	516.0	9,728.10	-388.65	-7197.06

Emission Summary Tables are posted in Appendix D.

This analysis in no way reflects the full benefit in air quality from the MPOs TIPs. The network-based modeling process is capable of assessing the impact of major new highway or transit service. It does not reflect the impact from the many projects, which are categorically excluded from the requirement of conformity. These projects include numerous improvements to intersections, which will allow traffic to flow more efficiently, thus reducing delay, fuel usage and emissions. Included in the MPOs TIPs, but not reflected in this analysis, are many projects to maintain existing rail and bus systems. Without these projects, those systems could not offer the high level of service they do. With them, the mass transit systems function more efficiently, improve safety, and provide a more dependable and aesthetically appealing service. These advantages will retain existing patrons and attract additional riders to the system. The technology to quantify the air quality benefits from these programs is not currently available.



Changes in the transportation system will not produce significant emissions reductions because of the massive existing rail, bus, highway systems, and land development already in place. Change in these aspects is always at the margin, producing very small impacts.

As shown in this analysis, transportation emissions are declining dramatically and will continue to do so. This is primarily due to programs such as federal heavy-duty vehicle standards, reformulated fuels, enhanced inspection and maintenance programs, and Connecticut's low emissions vehicle (LEV) program.

## 7. Conclusions

CTDOT has assessed its compliance with the applicable conformity criteria requirements of the 1990 CAAA. Based upon this analysis, it is concluded that all elements of Metropolitan Transportation Plans conform to applicable SIP and 1990 CAAA Conformity Guidance criteria and the approved transportation conformity budgets.

## 8. Contact Information

Please direct any questions you may have on the air quality emission analysis to:

Connecticut Department of Transportation  
Bureau of Policy and Planning  
Division of Program Development and Forecasting  
Travel Demand / Air Quality Modeling Unit  
2800 Berlin Turnpike  
Newington, CT. 06111  
Email: [DOT.AQUnit@ct.gov](mailto:DOT.AQUnit@ct.gov)

All MOVES modeling files and run streams are available for review upon request. The files will remain available during the 30-day public review period.

## 9. Appendices

In addition to the information required for a conformity determination, the following is attached:

Appendix A: Acronyms  
Appendix B: List of Projects Included in Conformity Analysis by Network Year  
Appendix C: Interagency Consultation Meeting  
Appendix D: Emissions Summary Tables  
Appendix E: Comments Received During Public Review Period

**Appendix A**  
**Acronyms**

<b>Acronym</b>	<b>Meaning</b>
ADT	Average Daily Traffic
AQI	Air Quality Index
CAAA	Clean Air Act Amendments (1990)
CO	Carbon Monoxide
CFR	Code of Federal Regulations
CTDEEP	Connecticut Department of Energy and Environmental Protection
CTDOT	Connecticut Department of Transportation
CMAQ	Congestion Mitigation and Air Quality Improvement Program
DHV	Design Hourly Volume
DVMT	Daily Vehicle Miles of Travel
ECO	Employee Commute Option
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FTP	File Transfer Protocol
FR	Federal Register
HPMS	Highway Performance Monitoring System
I/M	Inspection Maintenance Program
MTP	Metropolitan Transportation Plan
MOVES	Mobile Vehicle Emission Simulator
MPO	Metropolitan Planning Organization
MVEB	Motor Vehicle Emission Budget
NAAQS	National Ambient Air Quality Standards
NLEV	National Low Emission Vehicle
NO <sub>x</sub>	Nitrogen Oxides
PHF	Peak Hour Factor
PM <sub>2.5</sub>	Fine Particulate Matter less than 2.5 micrometers
PM <sub>10</sub>	Fine Particulate Matter less than 10 micrometers
SFL	Service Flow Levels
SIP	State Implementation Plan
STIP	Statewide Transportation Improvement Program
TAZ	Traffic Analysis Zone
TCM	Transportation Control Measure
TIP	Transportation Improvement Program
U.S.C.	United States Code
U.S. DOT	U.S. Department of Transportation
V/C	Volume to Capacity
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound

**Appendix B**

**List of Projects Included in Conformity Analysis by Network Year**

**2023-2050 Metropolitan Transportation Plan & 2021-2024 Transportation Improvement Programs**

MPO	Project Number	Town(s)	Route/Street/Sys	Brief Project Description	Network Year
GBVMPO	0036-0179	Derby	RTE 8	Reconstruct interchanges 16 & 17; extend Pershing Drive & construct local roads. Preliminary design completed	2023
GBVMPO	0036-0184	Derby	RTE 34	Reconstruct and widen Main Street from Bridge St. to Ausonio Dr. to 4 travel lanes	2023
	0304-XXXX	Various	NHL	WATERBURY BRANCH SERVICE EXPANSION - OPERATING - FUNDS TRANSFER TO FTA	2023
CNVMPPO	TBD	Waterbury	Cttransit Waterbury	Add Route	2025
CNVMPPO	TBD	Various	WBL	Expand Service	2025
CNVMPPO	TBD	CT Transit-Bristol	Various	Realign Service	2025
CRCOG	320-0005PE (Station) / 320-0008PE (Track)	Newington (HL)		320-0013CN - The Hartford Line Newington Station	2025
CRCOG	320-0005PE (Station) / 320-0008PE (Track)	West Hartford (HL)		320-0014CN - The Hartford Line West Hartford Station	2025
CRCOG	320-0005PE (Station) / 320-0008PE (Track)	Windsor (HL)		320-0015CN - The Hartford Line Windsor Station	2025
CRCOG	320-0005PE (Station) / 320-0008PE (Track)	Enfield (HL)		320-0017CN - The Hartford Line Enfield Station	2025
CRCOG	320-0005PE (Station) / 320-0008PE (Track)	Enfield (HL)		320-0024CN - The Hartford Line Enfield Station - Short High Level	2025
CRCOG	TBD	Hartford	Albany Ave/Blue Hills Ave	Transit Priority Treatments	2025
CRCOG	TBD	Hartford/West Hartford	Farmington Ave	Transit Priority Treatments	2025
CRCOG	TBD	Hartford	Franklin Ave	Transit Priority Treatments	2025
CRCOG	TBD	Hartford	Main Street	Transit Priority Treatments	2025
CRCOG	TBD	Hartford	Park Street	Transit Priority Treatments	2025
CRCOG	TBD	East Hartford	Burnside Ave/Main Street	Transit Priority Treatments	2025
GBVMPO	0015-0368	Bridgeport	Route 700	Improvement	2025
GBVMPO		Various	WBL	Operation Expansions	2025
GBVMPO		Seymour	WBL	Seymour Station Relocation	2025

MPO	Project Number	Town(s)	Route/Street/Sys	Brief Project Description	Network Year
GBVMPO		Fairfield	Route 58 - Black Rock Turnpike, Moritz Place and Whitewood Drive	Improvement	2025
GBVMPO		Monroe	Route 25 at Pond View Plaza/Judd Road/Purdy Hill Road	Improvement at Pond View Plaza/Judd Road/Purdy Hill Road intersection	2025
GBVMPO		Fairfield	Route 58 - Fairfield Woods Road to Brookside Drive	Improvement	2025
GBVMPO		Fairfield	Route 58	Improvement	2025
GBVMPO		Seymour	New Road	Route 42 & Route 67 Connector	2025
RiverCOG	0082-0316	MIDDLETOWN	RT 9 / RT 17	Rt. 9 / Rt. 17 Operational & Safety Improvements at Ramp (Reconfigure Rt 17 On-ramp to Rt 9 NB)	2025
RiverCOG		RiverCOG		581 alignment	2025
RiverCOG		RiverCOG		582 alignment	2025
RiverCOG		RiverCOG		583 alignment	2025
RiverCOG		RiverCOG		584 alignment	2025
RiverCOG		RiverCOG		585 alignment	2025
RiverCOG		RiverCOG		586 alignment	2025
RiverCOG		RiverCOG		587 new	2025
RiverCOG		RiverCOG		590 alignment	2025
RiverCOG		RiverCOG		640 new	2025
RiverCOG		RiverCOG		641 alignment	2025
RiverCOG		RiverCOG		642 alignment	2025
RiverCOG		RiverCOG		643 alignment	2025
RiverCOG		RiverCOG		644 alignment	2025
RiverCOG		RiverCOG		645 alignment	2025
RiverCOG		MTD		Add a second Meriden to Middletown run to provide 30 minute service vs. 60 minute	2025
RiverCOG		ETD		Bradley Airport Service – Semi-express service to Bradley from Old Saybrook with stops at park and ride lots and the Middletown bus terminal	2025
RiverCOG		MTD		Express bus service from Middletown to CT Fastrack in New Britain	2025
RiverCOG		ETD		RT 80 Service – Old Saybrook to North Branford service through Ivoryton, Winthrop, Killingworth, Madison, and Guilford with CT transit New Haven connection	2025
RiverCOG		RiverCOG		Service frequency changes	2025

MPO	Project Number	Town(s)	Route/Street/Sys	Brief Project Description	Network Year
RiverCOG		RiverCOG		Service frequency changes	2025
RiverCOG		RiverCOG		Service frequency changes	2025
RiverCOG		RiverCOG		Service span changes	2025
RiverCOG		RiverCOG		Shuttles new	2025
RiverCOG		RiverCOG		Systemwide changes	2025
RiverCOG		RiverCOG		Systemwide changes	2025
RiverCOG		RiverCOG		Systemwide changes	2025
RiverCOG		RiverCOG		Xtra mile new	2025
RiverCOG		RiverCOG		Xtra mile new	2025
RiverCOG		RiverCOG		Xtra mile new	2025
SCCOG	0085-0146/0120-0094	VARIOUS	RT 85	Rt. 85 Improvements	2025
SCCOG		COLCHESTER	Route 2	Interchange improvements at Exit 17, add eastbound on-ramp, westbound off-ramp	2025
SCRCOG	0079-0240	MERIDEN	I-91 / I-691 / RT 15	WAS: I-91 / I-691 / Rt. 15 Operational Improvements NOW: Added lines for 2 other projects and corrected cost	2025
SCRCOG	0079-0245	MERIDEN	I-91 / I-691 / RT 15	I-91 / I-691 / Rt. 15 - Interchange Improvs - EB to NB (B/O from 79-240) - (Design-Build)	2025
SCRCOG	0079-0246	MERIDEN	I-91 / I-691 / RT 15	I-91 / I-691 / Rt. 15 - Interchange Improvements - NB & NB to WB (B/O from 79-240)	2025
SCRCOG	0106-0108	ORANGE	RT 1	Operational Lane from Milford to CT 114	2025
SCRCOG	320-0005PE (Station) / 320-0008PE (Track)	North Haven (HL)		320-0012CN - The Hartford Line North Haven Station	2025
	0053-0189	GLASTONBURY	CT 17		2025
CNVMPPO	PP0151-014	Waterbury	I-84	Elimination of I-84 Eastbound Exit 21?	2028
CNVMPPO	TBD	Bristol	Cttransit Bristol/New Britain	Add Route	2028
CRCOG	TBD	Manchester	I-84	Auxiliary lanes between Exits 62 and 63	2028
CRCOG	TBD	Manchester	I-84	Auxiliary lanes between Exits 63 and 64/65	2028
CRCOG	TBD	Windsor Locks	Northern Bradley Connector	Bradley Airport-Northern Bradley Connector	2028
CRCOG	TBD	Bolton	Route 6	Route 6 Corridor Study-Bolton Crossroads – Phase 1: Route 6-Route 44 Connector	2028
MULTIPLE	0084-0114	Oxford/Monroe	Rte 34	Bridge Replacement	2028
RiverCOG	0082-0318	MIDDLETOWN	RT 9	Rt. 9 Removal of Lights in Middletown	2028
SWRMPO	0102-0358	NORWALK	RT 7	Rt. 7 / Rt. 15 Interchange Reconstruction and Reconfiguration	2028

MPO	Project Number	Town(s)	Route/Street/Sys	Brief Project Description	Network Year
	0096-0208	Newtown	I-84	Climbing lane extension & Exit 9 on-ramp reconfiguration	2028
CNVMPPO		Naugatuck	Route 8	Interchange 27 Improvements	2030
CNVMPPO		Naugatuck	Route 8	Interchange 28/29 Improvements	2030
CNVMPPO		Oxford	Route 34	Bridge Relocation	2030
CNVMPPO		Waterbury	Huntingdon Avenue	Roadway Improvements	2030
CNVMPPO		Waterbury	Route 69	Roadway Improvements	2030
GBVMPO		Bridgeport	Railroad Station	Improvement	2030
GBVMPO		Fairfield	Route 58 - Black Rock Turnpike and Burroughs Drive	Improvement	2030
GBVMPO		Fairfield	Route 58 - Burroughs Drive and Katona Drive	Improvement	2030
GBVMPO		Fairfield	Route 58 - Shoprite to Stillson Road	Improvement	2030
GBVMPO		Fairfield	Route 58 - Old Navy to Fairfield Woods Road	Improvement	2030
GBVMPO		Shelton	Constitution Blvd	Extend Constitution Blvd	2030
GBVMPO		Bridgeport	I-95	Improvement	2030
GBVMPO		Bridgeport	Route 8 and Route 25	Improvement	2030
GBVMPO		Shelton	SR 714	Widening of Bridgeport Avenue to provide a consistent 4-lane cross section with turn lanes from Trumbull town line to Constitution Boulevard; includes advance traffic signal system & access management	2030
HVMPO	TBD	Danbury	Sandpit Rd Corridor Improvements	Sandpit Rd Corridor Improvements	2030
HVMPO	TBD	Danbury	West St Corridor Improvements	West St Corridor Improvements	2030
SCCOG		PRESTON	Route 2A	New Parallel 2-lane Route 2A Bridge (Add Second Span to Mohegan Pequot Bridge, alternative F of the 2005 EIS, estimated at 119M(cost escalated 2%/25 years)	2030
SWRMPO	TBD	Norwalk	Various	Transit Service Connecting Wall Street and SONO	2030
SWRMPO		Stamford	1	Route 1 BRT Implementation	2030
SWRMPO		Sta		Stamford Trolley Bus and Network Upgrades	2030
CRCOG	TBD	Windsor Locks	Bradley Park Road	Bradley Airport-East Granby - Bradley Park Road Improvements	2035



MPO	Project Number	Town(s)	Route/Street/Sys	Brief Project Description	Network Year
CRCOG	TBD	Buckland	Buckland: Redstone Rd Extension	Buckland: Redstone Rd Extension	2035
CRCOG	TBD	Rocky Hill	Elm Street	Elm Street Connector Roadway	2035
GBVMPO		Monroe	Route 25	Improvement	2035
GBVMPO		Stratford	I-95	Improvement	2035
GBVMPO		Trumbull	Route 25; From Route 111 (Trumbull) to the Monroe-Newtown town line.	Improvement	2035
HVMPO	TBD	Danbury, Bethel, Newtown	84	I-84 Strategic Congestion Relief Projects	2035
SWRMPO	TBD	Norwalk	US 1 (Cross Street)	Widening last remaining section of US Route 1 from two lane to four lane cross-section.	2035
SWRMPO	TBD	Stamford		Canal Street MNRR Bridge Replacement and Complete Street Enhancements	2035
SWRMPO	TBD	Stamford		Elm Street MNRR Bridge Replacement and Complete Street Enhancements	2035
SWRMPO	TBD	Stamford		Greenwich Avenue MNRR Bridge Replacement and Complete Street Enhancements	2035
HVMPO	TBD	Danbury	HARTtransit	Intermodal Hub	2040
HVMPO	TBD	Various	Danbury Branch Line	Track improvements and extension	2040
SWRMPO	TBD	Norwalk	NTD	Intermodal Hub	2040
CRCOG	TBD	FARMINGTON	Monteith Drive	New Bridge Crossing of the Farmington River	2045
GBVMPO		Trumbull	Route 25	Improvement	2045
GBVMPO		Bridgeport	Route 130	Improvement	2045
GBVMPO		Fairfield	Route 130 from Kings Highway to Shoreham Village Drive	Improvement	2045
GBVMPO		Bridgeport, Fairfield	I-95	Major	2045
GBVMPO		Bridgeport, Fairfield	I-95	Major	2045
GBVMPO		Ansonia	RTE 334	Relocate Route 334 to a new alignment	2045
HVMPO	0034-0349	DANBURY	I-84	WAS: I-84 Widening from Danbury Exit 3 to Exit 8 Ramp Improvements NOW: I-84/Rt 7 Improvements (PEL Recommendations)	2045

MPO	Project Number	Town(s)	Route/Street/Sys	Brief Project Description	Network Year
RiverCOG		RiverCOG/Old Lyme	I 95	Widening from the Baldwin Bridge to the Rocky Neck Connector	2045
RiverCOG		RiverCOG/Cromwell	RT 9 Exit 19 Southbound and RT 372	Roadway improvements	2045
SCCOG		New London	I-95	Close exit 84E to Williams Street	2045
SCRCOG	TBD	Wallingford	Route 5	ADDITIONAL LANE	2045
SCRCOG	TBD	Branford	I95 Exit 53	Interchange reconstruction	2045
SWRMPO	TBD	NORWALK	RT 7	Was: Rt. 7 Reconstruction from Grist Mill Road to Rt. 33 Now: Rt. 7 Improvements from Grist Mill Road to Rt. 33	2045

### 2021-2024 Transportation Improvement Programs, As Amended

MPO	Project #	Town	Route/Street Number	Project Description	Network Year
SECCOG		Groton	Chicago/Poquonnock/Mitchell/Benham Intersection	Reconfigure the existing 5-way intersection to 4-way by closing Chicago access	2020
CNVCOG	0080-0128	Middlebury	RT63,64 & I-84	Route 63, 64, and I-84 WB Exit 17 Improvements	2023
CNVCOG	DOT0302XXX1	Various	NHL- Waterbury Branch	Waterbury Branch Expanded Service	2023
SECCOG	0044-0156	EAST LYME	I-95	I-95 Interchange 74 @ Rte 161	2025
CRCOG	0053-0189	GLASTONBURY	CT 17	NHS - Remove Brs. 00388 & 00389 & Revise CT 17 SB @ New London Tpk	2025
SECCOG	0057-0121	GRISWOLD	Carroll Road	Bridge Removal #04671	2025
SCRCOG/RiverCOG	0079-0245	MERIDEN/MIDDLETOWN	I-91/I-691/Route 15	Improve I-691 EB/I-91 NB	2025
SCRCOG	0079-0245	Meriden	I-91/I-691/RT15	I-91/I-691/Route 15 Interchange Improvement (Design-Build)	2025
RiverCOG	0082-0316	MIDDLETOWN	Rt 17 & Rt 9	Rt 17 Ramp to Rt 9 North Improvements	2025
RiverCOG	0082-0318	MIDDLETOWN	Rt 9	Traffic Signals Removal Rte 9	2025
RiverCOG	0082-0318	Middletown	RT9	Route 9 Signal Removal and Route 17 On-Ramp	2025
SECCOG	0085-0146	MONTVILLE/SALEM	Rt 85	CT85 Corridor Improvements	2025
WESTCOG	0102-0358	NORWALK	Rt 15 & Rt 7	Norwalk Rt 15/Rt 7 Interchange	2025
SCRCOG	0106-0108	ORANGE/MILFORD	US1	US 1 OPERATIONAL LANE	2025
SCROCG	PP_083_011	MILFORD	I95 exit 38 -SR 796	Lane re-stripping & dropping lanes for exits	2025
WESTCOG	PP_096_007/0096-0208	NEWTOWN	I84E exit 9	lane addition before and after exit	2025
SCRCOG		New Haven		New Haven Downtown Crossing Phase 4 – Temple Street Crossing	2025
SECCOG		Norwich	I-395/RT 97	Int Ramp Improvements Exit18 & new arterial road connecting Lawler Lane/Canterbury Tpk/Rt 97	2025
SCRCOG/RiverCOG	0079-0240	MERIDEN	I-91/I-691/Rt15	Reconfig I-91/I-691/Rt15 Inter	2035
SCRCOG	0079-0246	MERIDEN	I-91/I-691/Route 15	Improve I-91 NB/I-691 WB/15 NB	2035
SCRCOG	0092-0689	NEW HAVEN	RT 69	CT-15 INT 59 Improvements	2035
SCRCOG		New Haven		New Haven, Bus Rapid Transit	2035

**Appendix C**  
**Interagency Consultation Meeting**

**Interagency Consultation Meeting  
2023 -2050 Metropolitan Transportation Plans  
2021-2024 Transportation Improvement Programs, as amended  
Connecticut Department of Transportation  
October 11, 2022 Virtual Meeting**

**Attendees:**

<b>Name</b>	<b>Organization</b>		<b>Name</b>	<b>Organization</b>
Rob Aloise	CRCOG		Kevin Tedesco	CTDOT
Pete Babich	CTDEEP		Maribeth Wojenski	CTDOT
Paul Farrell	CTDEEP		Grayson Wright	CTDOT
Paul Kritzler	CTDEEP		Ariel Garcia	EPA
Brent McDaniel	CTDEEP		Eric Rackauskas	EPA
Allison Burch	CTDOT		Kurt Salmoiraghi	FHWA
Matthew Cegielski	CTDOT		Eril Shortell	FHWA
Andrew Correia	CTDOT		Meghan Sloan	METROCOG
Graham Curtis	CTDOT		Richard Donovan	NVCOG
Steven Giannitti	CTDOT		Robert Haramut	RIVERCOG
Caroline Kieltyka	CTDOT		Sam Gold	RIVERCOG
Kimberly Lesay	CTDOT		James Rode	SCRCOG
Jennifer Pacacha	CTDOT		Laura Francis	SCRCOG
Marissa Pfaffinger	CTDOT		Rebecca Andreucci	SCRCOG
Sara Radacsi	CTDOT		Kate Rattan	SECCOG
Taylor Reed	CTDOT		Kristin Floberg	WESTCOG
Pamela Sucato	CTDOT		Todd Fontanella	WESTCOG
Zachary Taylor	CTDOT			

The Interagency Consultation Meeting was held to review projects submitted for the MPOs MTPs.

The Conformity Documents will be electronically distributed to the MPOs, FHWA, FTA, EPA and CTDEEP. The MPOs will need to hold a 30-day public review and comment period. At the end of this review period, the MPO will hold a Policy Board meeting to endorse the Air Quality Conformity determination.

There was also a brief discussion on the travel demand model and emissions software planning assumptions employed in the conformity analysis.

The schedule for the Transportation Improvement Programs Conformity Determination Analysis is as follows:

- MPOs transmit signed and dated Concurrence Form to <mailto:DOT.AQUnit@ct.gov>
- CTDOT Travel Demand Model Unit performs the air quality analysis and sends the Air Quality Conformity Determination Report electronically to all MPOs
- MPOs advertise and hold a 30-day public review and comment period for the Air Quality Conformity
- MPOs hold a Policy Board meeting approving and endorsing the Air Quality Conformity and transmit resolutions to [DOT.AQUnit@ct.gov](mailto:DOT.AQUnit@ct.gov) after Policy Board meeting.

It is important that all MPOs follow this schedule to ensure that the MPO TIPs Conformity Determinations can go forward on schedule.

**PLANNING ASSUMPTIONS**

**Ozone and PM<sub>2.5</sub>  
2023 -2050 Metropolitan Transportation Plans  
2021-2024 Transportation Improvement Programs  
October 11, 2022**

<b>Planning Assumptions for Review</b>	<b>Frequency of Review*</b>	<b>Responsible Agency</b>	<b>Date of Last Review</b>
Socioeconomic Data	At least every 5 years	CTDOT	2019 ACS Data
DMV Vehicle Registration Data	At least every 5 years	CTDEEP	2020
State Vehicle Inspection and Maintenance Program	Each conformity round	CTDEEP	Same as currently approved I&M SIP
State Low Emission Vehicle Program	Each conformity round following approval into the SIP	CTDEEP	Same as SIP
VMT Mix Data	At least every 5 years	CTDEEP	2018**
Analysis Years – Ozone	Each conformity round	CTDOT/CTDEEP	2023, 2025, 2035, 2045, and 2050
Analysis Years – PM2.5	Each conformity round	CTDOT/CTDEEP	2023, 2025, 2035, 2045, and 2050
Emission Budget – PM2.5	As SIP revised/updated	CTDEEP	2018: PM2.5 575.8 NOx 12,791.8 2025: PM2.5 516.0 NOx 9,728.1
Emission Budget – Ozone	As SIP revised/updated	CTDEEP	NY Area: VOC 17.6 NOx 24.6 Gr. CT: VOC 15.9 NOx 22.2
Temperatures and Humidity	As SIP revised/updated	CTDEEP	X
Control Strategies	Each conformity round	CTDEEP	X
HPMS VMT	Each conformity round	CTDOT	2019

\* Review of Planning Assumptions does not necessarily prelude an update or calibration of the travel demand model.

\*\* Local data was developed from an analysis of Connecticut’s 2020 motor vehicle registration data and an EPA sponsored analysis of 2017 state registration data for the 2017 NEI.

\*\*\* Data available 2018 based on an average of 2015-2017

**Appendix D**  
**Emission Summary Tables**

Pollutants		2023 Emission Quantities (Tons/Day)										Statewide
		NY/NJ/CT Non-Attainment Area				Greater CT Non-Attainment Area						
ID	Name	Fairfield	Middlesex	New Haven	Subtotal	Hartford	Litchfield	New London	Tolland	Windham	Subtotal	
1	Hydrocarbons	7.49761	1.58752	6.86757	<b>15.95269</b>	7.45335	1.79726	2.42111	1.40483	1.06468	<b>14.14122</b>	<b>30.09392</b>
3	Nox	8.31101	1.94505	8.30699	<b>18.56304</b>	8.59803	1.72408	2.93624	1.86321	1.17385	<b>16.29541</b>	<b>34.85845</b>
79	NM Hydrocarbons	6.82696	1.43883	6.21601	<b>14.48180</b>	6.77893	1.64724	2.20183	1.27069	0.97088	<b>12.86959</b>	<b>27.35139</b>
87	VOC	7.20293	1.51737	6.55660	<b>15.27690</b>	7.15180	1.73919	2.32360	1.34022	1.02563	<b>13.58044</b>	<b>28.85733</b>

Pollutants		2025 Emission Quantities (Tons/Day)										Statewide
		NY/NJ/CT Non-Attainment Area				Greater CT Non-Attainment Area						
ID	Name	Fairfield	Middlesex	New Haven	Subtotal	Hartford	Litchfield	New London	Tolland	Windham	Subtotal	
1	Hydrocarbons	6.85249	1.44348	6.27376	<b>14.56973</b>	6.86114	1.65164	2.20994	1.28430	0.97609	<b>12.98311</b>	<b>27.55283</b>
3	Nox	6.96814	1.62375	6.94906	<b>15.54095</b>	7.20910	1.45914	2.44405	1.56762	0.99021	<b>13.67010</b>	<b>29.21105</b>
79	NM Hydrocarbons	6.21431	1.30179	5.64942	<b>13.16553</b>	6.21527	1.50889	2.00156	1.15618	0.88627	<b>11.76818</b>	<b>24.93371</b>
87	VOC	6.55682	1.37299	5.95969	<b>13.88950</b>	6.55781	1.59320	2.11234	1.21967	0.93630	<b>12.41933</b>	<b>26.30882</b>

Pollutants		2035 Emission Quantities (Tons/Day)										Statewide
		NY/NJ/CT Non-Attainment Area				Greater CT Non-Attainment Area						
ID	Name	Fairfield	Middlesex	New Haven	Subtotal	Hartford	Litchfield	New London	Tolland	Windham	Subtotal	
1	Hydrocarbons	4.31574	0.91653	4.06115	<b>9.29342</b>	4.37394	1.06271	1.40833	0.82987	0.63875	<b>8.31360</b>	<b>17.60702</b>
3	Nox	3.71770	0.85835	3.78811	<b>8.36416</b>	3.90376	0.81447	1.31609	0.87087	0.56340	<b>7.46859</b>	<b>15.83275</b>
79	NM Hydrocarbons	3.83650	0.80709	3.56808	<b>8.21168</b>	3.87383	0.95419	1.24911	0.72918	0.56780	<b>7.37411</b>	<b>15.58579</b>
87	VOC	4.04757	0.85116	3.76359	<b>8.66231</b>	4.08528	1.00697	1.31765	0.76901	0.59945	<b>7.77835</b>	<b>16.44067</b>

Pollutants		2045 Emission Quantities (Tons/Day)										Statewide
		NY/NJ/CT Non-Attainment Area				Greater CT Non-Attainment Area						
ID	Name	Fairfield	Middlesex	New Haven	Subtotal	Hartford	Litchfield	New London	Tolland	Windham	Subtotal	
1	Hydrocarbons	3.75481	0.80811	3.55420	<b>8.11712</b>	3.83215	0.92828	1.22659	0.73588	0.56156	<b>7.28444</b>	<b>15.40156</b>
3	Nox	3.38181	0.78317	3.48293	<b>7.64792</b>	3.56989	0.75050	1.18853	0.80255	0.51192	<b>6.82339</b>	<b>14.47130</b>
79	NM Hydrocarbons	3.30113	0.70324	3.08079	<b>7.08515</b>	3.35468	0.82500	1.07657	0.63899	0.49473	<b>6.38996</b>	<b>13.47511</b>
87	VOC	3.48315	0.74170	3.24974	<b>7.47459</b>	3.53759	0.87053	1.13566	0.67386	0.52228	<b>6.73992</b>	<b>14.21451</b>

Pollutants		2050 Emission Quantities (Tons/Day)										Statewide
		NY/NJ/CT Non-Attainment Area				Greater CT Non-Attainment Area						
ID	Name	Fairfield	Middlesex	New Haven	Subtotal	Hartford	Litchfield	New London	Tolland	Windham	Subtotal	
1	Hydrocarbons	3.54954	0.76720	3.37479	<b>7.69153</b>	3.64248	0.87579	1.16062	0.69925	0.53603	<b>6.91417</b>	<b>14.60570</b>
3	Nox	3.36407	0.78128	3.46194	<b>7.60729</b>	3.55550	0.74675	1.17904	0.79852	0.51985	<b>6.79966</b>	<b>14.40695</b>
79	NM Hydrocarbons	3.09742	0.66213	2.90225	<b>6.66179</b>	3.16576	0.77296	1.01150	0.60252	0.46782	<b>6.02056</b>	<b>12.68235</b>
87	VOC	3.26787	0.69825	3.06101	<b>7.02713</b>	3.33781	0.81544	1.06687	0.63528	0.49377	<b>6.34917</b>	<b>13.37630</b>



County	Total Energy Consumption 91 (Joules/Year)	2023 Pollutant Emission Quantities (Tons/Year)				
		NOx	PM 2.5			County Total
		3 Oxides of Nitrogen	110 Engine Exhaust	116 Brakewear	117 Tirewear	
Fairfield	4.10E+16	2978.00095	69.95757	23.26821	11.75533	<b>104.98112</b>
New Haven	4.18E+16	2976.79827	67.55929	20.89200	11.93136	<b>100.38265</b>
<b>Totals</b>	<b>8.28E+16</b>	<b>5954.79922</b>	<b>137.51686</b>	<b>44.16021</b>	<b>23.68670</b>	<b>205.36377</b>

County	Total Energy Consumption 91 (Joules/Year)	2025 Pollutant Emission Quantities (Tons/Year)				
		NOx	PM 2.5			County Total
		3 Oxides of Nitrogen	110 Engine Exhaust	116 Brakewear	117 Tirewear	
Fairfield	3.96E+16	2505.49710	62.84222	23.67016	11.87296	<b>98.38534</b>
New Haven	4.05E+16	2498.21842	60.37604	21.31198	12.07314	<b>93.76116</b>
<b>Totals</b>	<b>8.01E+16</b>	<b>5003.71552</b>	<b>123.21826</b>	<b>44.98214</b>	<b>23.94610</b>	<b>192.14650</b>

County	Total Energy Consumption 91 (Joules/Year)	2035 Pollutant Emission Quantities (Tons/Year)				
		NOx	PM 2.5			County Total
		3 Oxides of Nitrogen	110 Engine Exhaust	116 Brakewear	117 Tirewear	
Fairfield	3.53E+16	1384.70658	35.61356	25.05515	12.41077	<b>73.07947</b>
New Haven	3.61E+16	1408.07716	34.74381	23.21220	12.69190	<b>70.64792</b>
<b>Totals</b>	<b>7.14E+16</b>	<b>2792.78375</b>	<b>70.35737</b>	<b>48.26735</b>	<b>25.10267</b>	<b>143.72739</b>

County	Total Energy Consumption 91 (Joules/Year)	2045 Pollutant Emission Quantities (Tons/Year)				
		NOx	PM 2.5			County Total
		3 Oxides of Nitrogen	110 Engine Exhaust	116 Brakewear	117 Tirewear	
Fairfield	3.47E+16	1219.70728	25.28174	23.75982	12.44799	<b>61.48956</b>
New Haven	3.59E+16	1310.30994	25.51365	25.35450	13.36136	<b>64.22951</b>
<b>Totals</b>	<b>7.06E+16</b>	<b>2530.01722</b>	<b>50.79539</b>	<b>49.11432</b>	<b>25.80936</b>	<b>125.71907</b>

County	Total Energy Consumption 91 (Joules/Year)	2050 Pollutant Emission Quantities (Tons/Year)				
		NOx	PM 2.5			County Total
		3 Oxides of Nitrogen	110 Engine Exhaust	116 Brakewear	117 Tirewear	
Fairfield	3.55E+16	1251.89360	22.83946	28.28492	13.35578	<b>64.48016</b>
New Haven	3.63E+16	1279.14334	22.81905	26.34851	13.70328	<b>62.87084</b>
<b>Totals</b>	<b>7.18E+16</b>	<b>2531.03694</b>	<b>45.65850</b>	<b>54.63344</b>	<b>27.05906</b>	<b>127.35100</b>

**Appendix E**  
**Comments Received During Public Review Period**