

## Regional Air Quality Emissions Summary: Ozone and PM2.5

*FOR THE CONNECTICUT PORTION OF THE NEW YORK-NORTHERN NEW JERSEY-LONG ISLAND OZONE NONATTAINMENT AREA AND THE GREATER CONNECTICUT OZONE NONATTAINMENT AREA*

*FEBRUARY 2019*

The Clean Air Act Amendments (CAAA) of 1990 and federal transportation regulations and legislation recognized the major contributions of transportation sources to the overall air quality problem evidenced throughout the country. To effectuate a reduction in transportation-related emissions and a corresponding improvement in air quality, areas designated as non-attainment or maintenance for a criterion pollutant were required to demonstrate that their transportation plans, programs and projects contributed to the attainment of National Ambient Air Quality Standards (NAAQS) and would not cause a new violation or delay attainment of the NAAQS. This process is referred to as Air Quality Conformity.

Portions of Connecticut are currently classified as nonattainment or maintenance for Ozone and fine particle mater (PM2.5).

### **OZONE**

Connecticut is divided into two non-attainment areas for the 8-hour ozone NAAQS, both are classified as “Moderate” non-attainment areas. Fairfield, New Haven and Middlesex counties are included as part of the New York-Northern New Jersey-Long Island non-attainment area. The remainder of the state is designated as the Greater Connecticut non-attainment area.

In June, 2004, the EPA finalized the 8-hour conformity for Ozone non-attainment areas and the designated the Connecticut portion of the New York-Northern New Jersey-Long Island non-attainment area as a “moderate” non-attainment areas for the 8-hour Ozone standard. Subsequent decisions by the EPA and revisions to the approach for classifying non-attainment areas re-designated both of Connecticut’s non-attainment areas as a “marginal” non-attainment areas with an attainment date of December 31, 2015. Based on 2012-2014 air quality data, the EPA determined that Connecticut’s non-attainment areas did not attain ozone standards by July20, 2015. Both the Greater Connecticut and the New York-New Jersey-Long Island areas were reclassified as “Moderate,” effective June 3, 2016. The new attainment date for these two areas is July 20, 2018.

### **PM2.5**

The US Environmental Protection Agency (EPA) promulgated national ambient air quality standards (NAAQS) for fine particulate matter in 1997. Fine particulate matter is referred to as PM2.5 and is a mixture of microscopic solids and suspended liquid solids in the air. It is formed directly as a by-product of combustion, such as smoke or automobile exhaust, or indirectly from chemical reactions in the atmosphere. Fairfield and New Haven Counties are included in the New York-New Jersey-Connecticut (NY-NJ-CT) PM2.5 non-attainment area.

On April 17, 2007 the Connecticut Department of Energy and Environmental Protection (CTDEEP) submitted a revision to the State Implementation Plan to establish interim progress for achieving the NAAQS for fine particulate matter and motor vehicle emission budgets. The annual emission budgets for the Connecticut portion of the NY-NJ-CT non-attainment area were determined to be adequate

and are used in future analysis years. The EPA has also determined Connecticut’s PM2.5 attainment demonstration SIP to be administratively and technically complete as of January 8, 2009. Effective October 24, 2013, the Connecticut portion of the multi-state PM2.5 non-attainment area was re-designated as “attainment maintenance.” EPA’s guidance for maintenance plans calls for a demonstration of continued compliance by showing that future emissions during the maintenance period will not exceed the level of emission in the attainment inventory. The end of the maintenance period is 2025.

## ASSESSMENT

The Connecticut Department of Transportation is responsible for conducting the air quality emissions assessments for the metropolitan planning organizations in Connecticut. The CTDOT uses the statewide travel demand model to estimate vehicle miles of travel for various classes of highways and during various time periods. The future transportation network includes all planned improvement projects and is based on the complete implementation of the transportation improvement program (TIP) and the current draft metropolitan transportation plan(MTP) with a time horizon of 2019 to 2045.

Motor Vehicle Emissions Budgets (MVEB) were developed jointly by CTDOT and CTDEEP and found to be adequate by the EPA. The MOVES2014a model is used to calculate emissions from transportation travel and establish emissions budgets.

The conformity test requires the emissions from the estimated future transportation system to be less than the EPA-approved MVEBs for all analysis years. The emissions analyses were conducted for the following years:

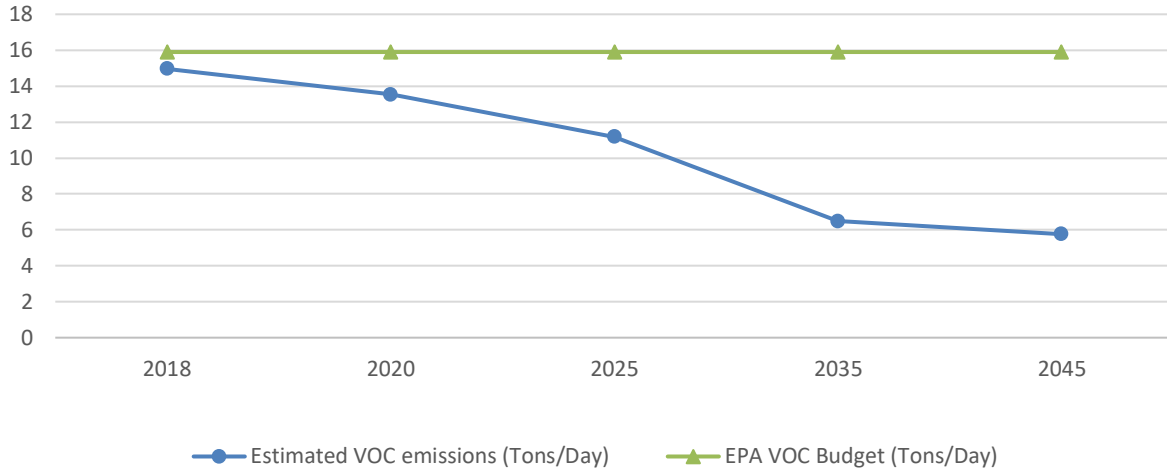
- 2018 – New attainment year and near term analysis year
- 2020 – Interim modeling year (Greater CT Ozone only)
- 2023 – Interim modeling year (CT Portion of NY-NJ-CT Ozone only)
- 2025 – Interim modeling year
- 2035 – Interim modeling year
- 2045 – Metropolitan transportation plan horizon year

The results of the quantitative emissions analysis conducted by CTDOT are shown in the following tables and the analysis year trends are depicted in the charts following the tables.

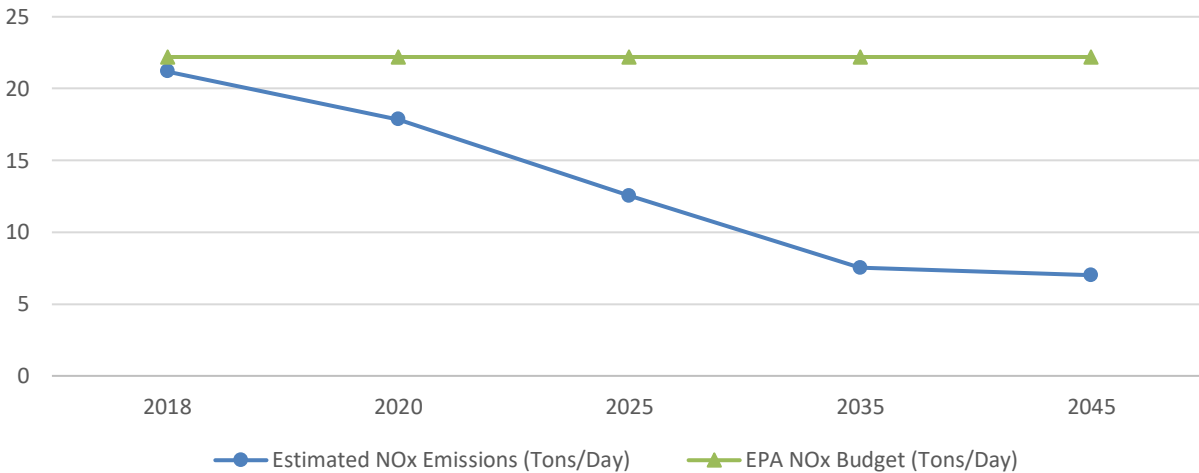
### GREATER CT OZONE MODERATE NONATTAINMENT AREA

VOC Emission Analysis				NO <sub>x</sub> Emission Analysis			
Year	Estimated VOC emissions (Tons/Day)	EPA VOC Budget (Tons/Day)	Difference	Year	Estimated NO <sub>x</sub> Emissions (Tons/Day)	EPA NO <sub>x</sub> Budget (Tons/Day)	Difference
2018	14.96	15.9	-0.94	2018	21.18	22.20	-1.02
2020	13.54	15.9	-2.36	2020	17.84	22.20	-4.36
2025	11.18	15.9	-4.72	2025	12.53	22.20	-9.67
2035	6.49	15.9	-9.41	2035	7.53	22.20	-14.67
2045	5.76	15.9	-10.14	2045	7.01	22.20	-15.19

Estimated VOC Emissions by Analysis Year  
 Compared to Approved EPA Budget  
 Greater CT Non-Attainment Area

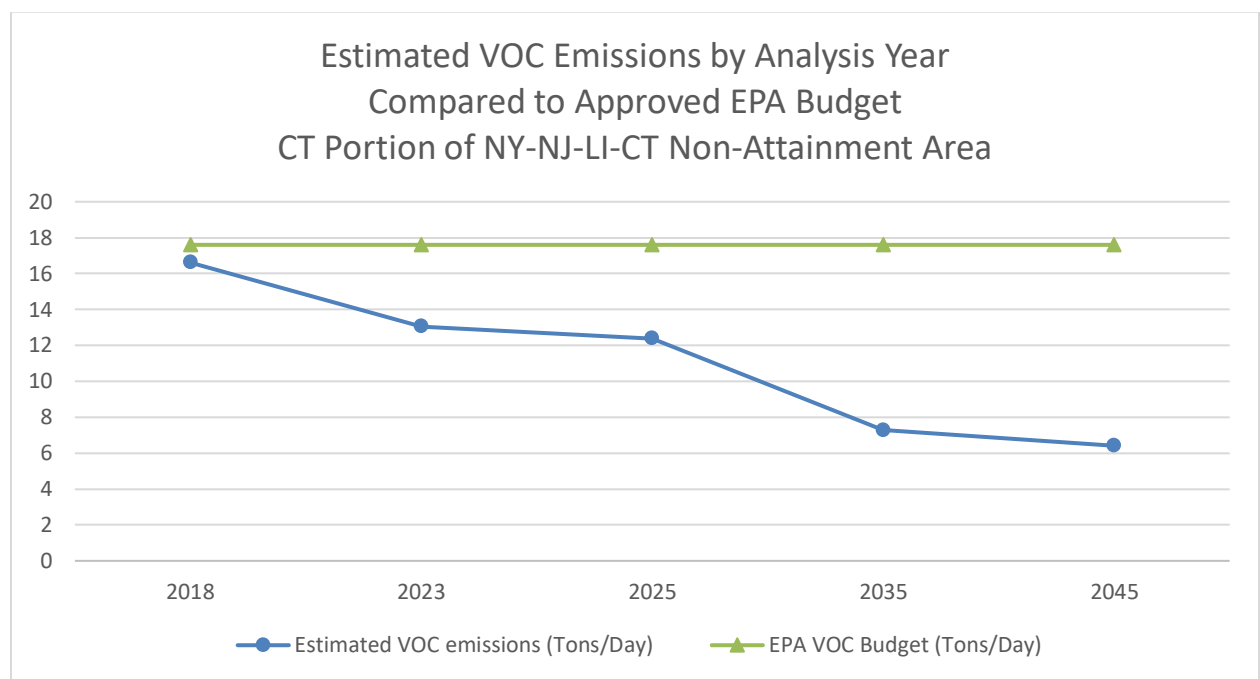


Estimated NOx Emissions by Analysis Year  
 Compared to Approved EPA Budget  
 Greater CT Non-Attainment Area

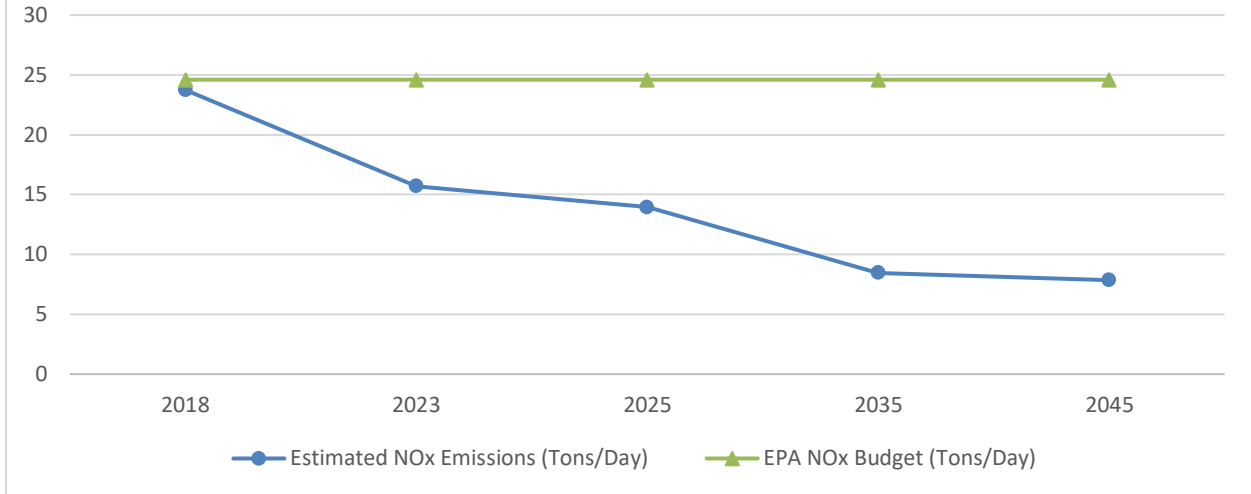


CT PORTION OF NY-NJ-CT OZONE MODERATE NONATTAINMENT AREA

VOC Emission Analysis				NO <sub>x</sub> Emission Analysis			
Year	Estimated VOC emissions (Tons/Day)	EPA VOC Budget (Tons/Day)	Difference	Year	Estimated NO <sub>x</sub> Emissions (Tons/Day)	EPA NO <sub>x</sub> Budget (Tons/Day)	Difference
2018	16.61	17.60	-0.99	2018	23.74	24.60	-0.86
2023	13.06	17.60	-4.54	2023	15.70	24.60	-8.90
2025	12.39	17.60	-5.21	2025	13.94	24.60	-10.66
2035	7.27	17.60	-10.33	2035	8.45	24.60	-16.15
2045	6.41	17.60	-11.19	2045	7.85	24.60	-16.75

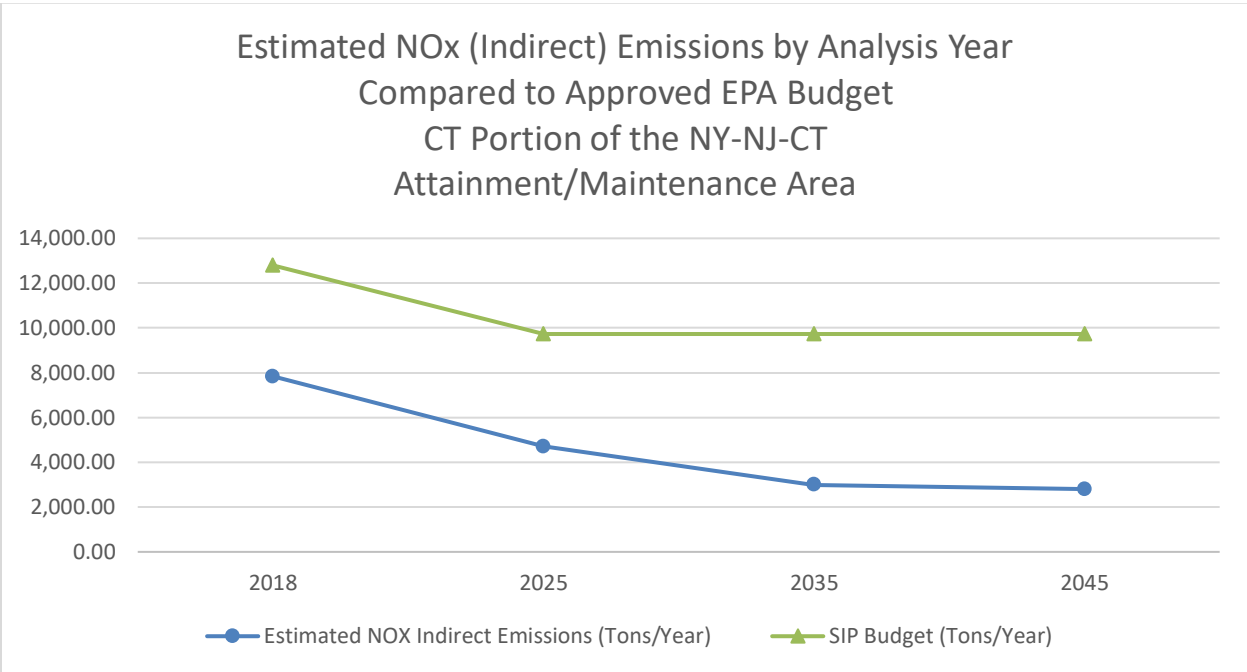
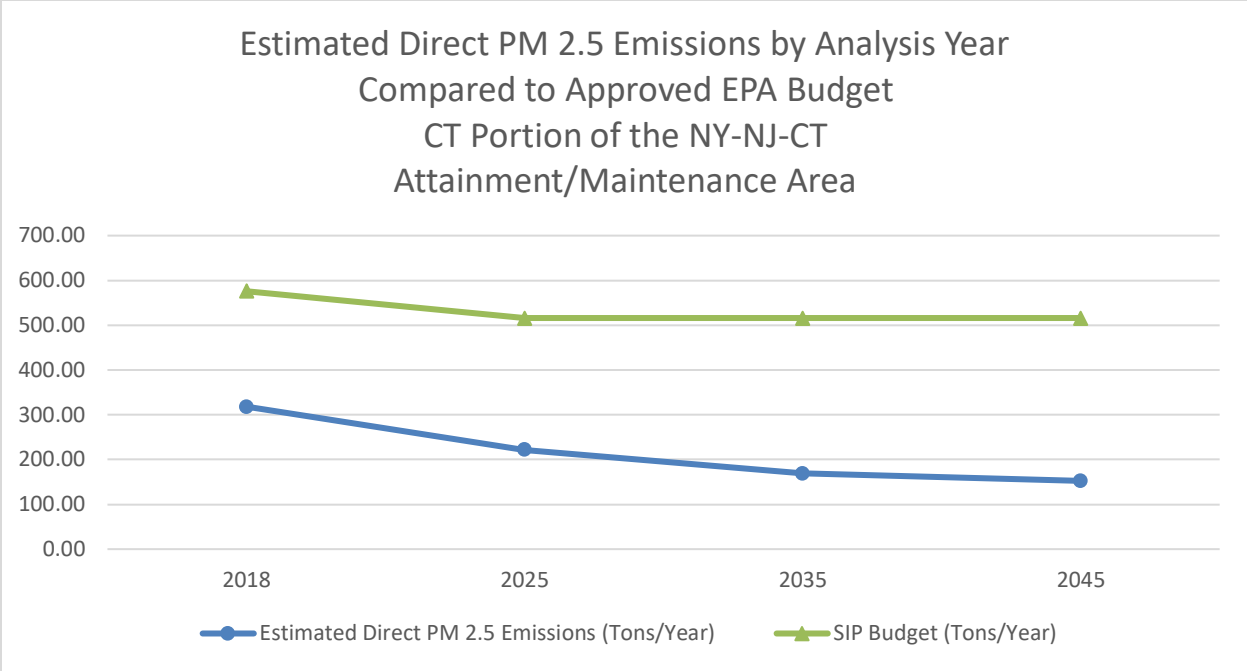


Estimated NOx Emissions by Analysis Year  
Compared to Approved EPA Budget  
CT Portion of NY-NJ-LI-CT Non-Attainment Area



**CT PORTION OF NY-NJ-CT PM 2.5 ATTAINMENT-MAINTENANCE AREA**

Direct PM <sub>2.5</sub> Emission Analysis				NO <sub>x</sub> (indirect) Emissions Analysis			
Year	Estimated PM 2.5 Emissions (Tons/Year)	SIP Budget (Tons/Year)	Difference	Year	Estimated NO <sub>x</sub> Emissions (Tons/Year)	SIP Budget (Tons/Year)	Difference
<b>2018</b>	318.10	575.80	-257.70	<b>2018</b>	7,837.50	12,791.80	-4,954.30
<b>2025</b>	221.60	516.00	-294.40	<b>2025</b>	4,707.90	9,728.10	-5,020.20
<b>2035</b>	169.20	516.00	-346.80	<b>2035</b>	2,987.40	9,728.10	-6,740.70
<b>2045</b>	152.40	516.00	-363.60	<b>2045</b>	2,803.50	9,728.10	-6,924.60



As shown in this analysis, transportation emissions are declining 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 program. Additionally, based on this assessment, it is concluded that all elements of the CTDOT transportation program, the CNVMPO TIP and the CNVMPO Metropolitan Transportation Plan conform to the applicable SIP, 1990 CAA and the approved transportation conformity budgets.