

Connecticut 2024 Annual Air Monitoring Network Plan



**Connecticut Department of Energy and Environmental Protection
Bureau of Air Management**

DRAFT FOR PUBLIC REVIEW

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Acronyms and Abbreviations

AQI	Air Quality Index
AQS	Air Quality System
BC	Black carbon (aethalometer)
CAA	Clean Air Act
CBSA	Core-based statistical area
CFR	Code of Federal Regulations
CO	Carbon monoxide
CSN	Chemical Speciation Network
DEEP	Connecticut Department of Energy and Environmental Protection
DAS	Data acquisition system
EMP	Enhanced monitoring plan for ozone
EPA	Environmental Protection Agency
FEM	Federal equivalent method
FRM	Federal reference method
IMPROVE	Interagency Monitoring of Protected Visual Environments
LC	Local conditions of temperature and pressure
LISTOS	Long Island Sound Tropospheric Ozone Study
MSA	Metropolitan statistical area
NAAQS	National Ambient Air Quality Standards
NCore	National core monitoring stations
NO _x	Nitrogen oxides
NO _y	Reactive oxides of nitrogen
OAQPS	Office of Air Quality Planning and Standards
OTR	Ozone Transport Region
PAMS	Photochemical assessment monitoring stations
PM _{2.5}	Fine particulate matter (<2.5 microns)
PM ₁₀	Respirable particulate matter (<10 microns)
PM _{10-2.5}	Coarse particulate matter (PM ₁₀ – PM _{2.5})
PWEI	Population-weighted emission index
QA	Quality assurance
QA/QC	Quality assurance/quality control
SLAMS	State and local monitoring stations
SO ₂	Sulfur dioxide
SOP	Standard operating procedure
STP	Standard conditions of temperature and pressure (40 CFR 50.3: 25°C and 760 mm Hg)
UVC	Ultra-violet carbon (aethalometer)
VOC	Volatile organic compound

Introduction

The Connecticut 2024 Air Monitoring Network Plan (Plan) is prepared by the Connecticut Department of Energy and Environmental Protection (DEEP) in accordance with 40 CFR 58.10. This plan meets the requirement to develop and submit to the Environmental Protection Agency (EPA) an annual air quality monitoring network plan to describe the air monitoring network and propose any planned changes to air quality monitoring sites and monitored air pollutants to occur within 18 months following submittal.

The draft 2024 Network Plan will be posted on DEEP's website between May 22, 2024 and June 23, 2024 at [DEEP: Air Monitoring Network](#). Comments from stakeholders and the public may be submitted to:

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Background

The Clean Air Act of 1970 (CAA) established the EPA as the principal administrative body to enact regulations to meet the requirements of the CAA and subsequent amendments thereto. One such requirement directed EPA to set primary and secondary air quality standards, known as the National Ambient Air Quality Standards (NAAQS) for the six "criteria pollutants" that Congress determined presented serious negative impacts to human health and welfare. For areas within Connecticut that do not meet a NAAQS, DEEP develops State Implementation Plans (SIPs) to detail the steps to be taken to bring air quality into attainment. Ambient air quality monitoring is essential to track progress towards meeting clean air goals and demonstrate attainment.

While DEEP monitors ambient air quality in Connecticut primarily for comparison with the NAAQS, there are other important objectives to ambient air quality monitoring. This monitoring provides local air quality data to the public, supports air quality forecasting and the Air Quality Index (AQI), supports long-term health assessments and other scientific research, assists with air permitting and identifying long-term air quality trends to gauge effectiveness of air pollution control strategies and serves as an accuracy check on computer-based air quality models. Additionally, emerging air monitoring technology such as small sensors and mobile monitoring platforms can be strategically deployed in historically overburdened communities or other areas of concern to determine localized air quality impacts too granular to be observed by the DEEP's static network.

Network Overview

DEEP currently operates 14 stations in its air-monitoring network (Figure 1) as part of the national State and Local Air Monitoring Stations (SLAMS) network, established under the CAA. In October 2006, EPA instituted a network of core multi-pollutant sites. These sites are known as the National Core (NCore) network, the primary purpose of which is to consolidate monitoring of multiple pollutants at fewer sites for efficiency and cost savings. In addition, the NCore sites provide a comprehensive suite of high-resolution pollutant data for NAAQS compliance assessment, research studies and long-term trends analysis. There are two NCore sites located in Connecticut: Criscuolo Park in New Haven, and Mohawk Mountain in Cornwall. The NCore network is part of the SLAMS network.

Proposed Network Changes

Details of the proposed monitoring network configuration are described in the following site information pages. Besides infrastructure maintenance and improvements, DEEP is not proposing any significant changes to the monitoring network during the period 2024-2025. However, DEEP plans to implement the following changes:

- Employ EPA protocol quality control standards (nitric oxide in O₂-free nitrogen) combined with gas-phase titration with ozone for automated NO₂ quality control checks.
- Purchase and employ field calibrators enabled with photometer feedback control for ozone analyzer calibrations in compliance with recently released EPA guidance for ozone transfer standards.



Figure i: Connecticut DEEP Air Monitoring Network

Monitoring Site Information

The ambient air monitoring sites currently operated by DEEP are listed in the Table 1 below. Detailed information for each monitoring site is provided in a later section of this plan.

Table 1: Monitoring Network Summary

Town	Site	PM2.5 (FRM)	PM2.5 (FRM, collocated)	PM2.5 (continuous FEM)	PM2.5 (continuous FEM, secondary)	PM10/PM10-2.5 (FRM)	PM10/PM10-2.5 (FRM, collocated)	PM10/PM10-2.5 (continuous FEM)	PM10/PM10-2.5 (cont. FEM, secondary)	PM Speciation (CSN)	PM Speciation (IMPROVE)	PM2.5 Carbon (BC/UVC, continuous)	Ozone	SO2	CO	NO2	NO/NOy	Total Column NO2/HCHO	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation	Mixing Height
Bridgeport	Roosevelt School		1/6	X				X						X								X				
Cornwall	Mohawk Mountain	1/3		X				X†			1/3	X	X	X	X		X	X		X	X	X	X	X	X	
Danbury	Western Connecticut State University	1/6		X				X†				X	X							X	X	X		X		
East Hartford	McAuliffe Park			X				X				X	X			X				X	X	X	X	X		
Greenwich	Point Park												X							X	X	X				
Groton	Fort Griswold			X				X†					X									X				
Hartford	Huntley Place	1/6		X				X				X			X	X			X	X	X	X		X		
Madison	Hammonasset State Park												X					X		X	X	X				
Middletown	Connecticut Valley Hospital												X							X	X	X		X		
New Haven	Criscuolo Park	1/3	1/6	X	X	1/3	1/6	X†	X†	1/3		X	X	X	X	X	X	X		X	X	X	X	X	X	X
Stafford	Shenipsit State Forest												X							X	X	X				
Stratford	Stratford Lighthouse												X									X				
Waterbury	Bank Street			X				X†												X	X	X				
Westport	Sherwood Island State Park												X			X		X		X	X	X		X		X

X=Existing **P** = Planned in 2024/2025 **T** = Terminated in 2024/2025 † Indicates non-regulatory PM10 (PM10 LC only)

National Ambient Air Quality Standards (NAAQS)

The EPA’s Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for six principal pollutants, known as the criteria pollutants. Table 2, reprinted here from EPA’s website (updated on 2/7/2024),¹ summarizes the current NAAQS compliance requirements for the criteria pollutants.

Table 2: National Ambient Air Quality Standards

Pollutant [links to historical tables of NAAQS reviews]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3-month average	0.15 µg/m ³ (a)	Not to be exceeded
Nitrogen Dioxide (NO₂)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (b)	Annual Mean
Ozone (O₃)		primary and secondary	8 hours	0.070 ppm (c)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	PM _{2.5}	primary	1 year	9.0 µg/m ³	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m ³	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO₂)		primary	1 hour	75 ppb (d)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Notes for Table 2:

^a In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m³ as a calendar quarter average) also remain in effect.

^b The level of the annual NO₂ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

^c Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O₃ standards additionally remain in effect in some areas. Revocation of the previous (2008) O₃ standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

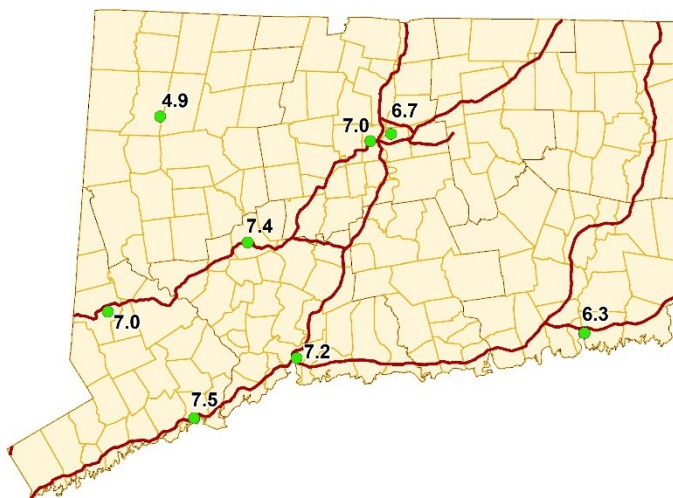
^d The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a SIP call under the previous SO₂ standards (40 CFR 50.4(3)), A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

¹ <https://www.epa.gov/criteria-air-pollutants/naqs-table>

PM_{2.5} Annual Design Values (2023)

The 2023 annual design values for PM_{2.5}, based on 2021 through 2023 data, are presented in the table and figure below. PM_{2.5} annual design values are calculated using the 3-year average of the respective annual weighted averages, based on daily average PM_{2.5} values.² The current annual PM_{2.5} NAAQS is 9.0 µg/m³. All Connecticut monitors demonstrate compliance with the design value for the annual PM_{2.5} NAAQS. The design values presented below will be reconciled with EPA’s reported 2023 design values in the final Plan.³

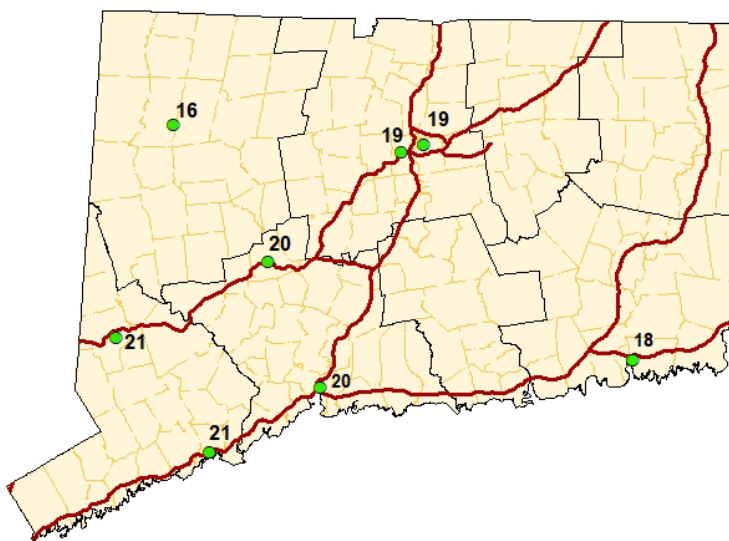
Site	Design Value (µg/m ³)
Bridgeport	7.5
Cornwall	4.9
Danbury	7.0
East Hartford	6.7
Groton	6.3
Hartford	7.0
New Haven	7.2
Waterbury	7.4
NAAQS	9.0



PM_{2.5} Daily Design Values (2023)

Daily design values for PM_{2.5} using 2021 through 2023 data are given below. PM_{2.5} daily design values are calculated using the 3-year average of the annual 98th percentile of daily average values². The daily PM_{2.5} NAAQS is 35 µg/m³. All Connecticut monitors demonstrate compliance with the design value for the 24-hour PM_{2.5} NAAQS. The design values presented below will be reconciled with EPA’s reported design values³.

Site	Design Value (µg/m ³)
Bridgeport	21
Cornwall	16
Danbury	21
East Hartford	19
Groton	18
Hartford	19
New Haven	20
Waterbury	20
NAAQS	35



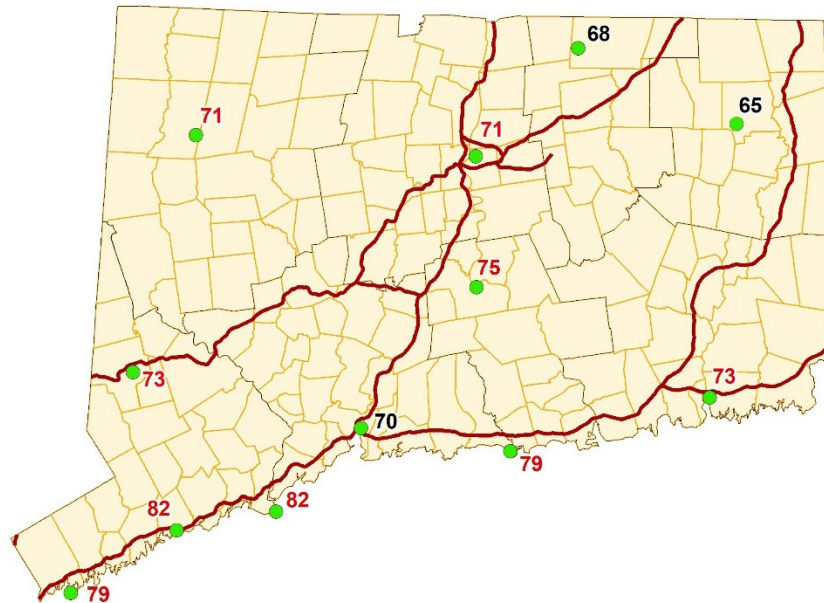
² [40 CFR 50.18 -- National primary ambient air quality standards for PM2.5.](#)

³ [Air Quality Design Values | US EPA](#); PM_{2.5} design values shown are based on data that includes corrected data from DEEP’s continuous federal equivalent method analyzers as discussed in the PM_{2.5} Network Description section below.

Ozone Design Values (2023)

The draft 2023 ozone 8-hour design values for the 2015 NAAQS are given in the table below. Ozone design values are derived by averaging three consecutive annual fourth highest daily maximum 8-hour ozone values.⁴ Based on both the 2008 ozone standard of 0.075 ppm (75 ppb) and the October 2015 revised ozone standard of 0.070 ppm (70 ppb), 9 out of 12 sites indicate nonattainment, shown in red font below. Connecticut’s ozone monitoring season is March 1 through ending September 30. The design values presented below will be reconciled with EPA’s reported design values. DEEP is submitting a request and technical demonstration to EPA for designation of selected ozone exceedance days/sites data as having been impacted by exceptional events, and therefore not to be included in design value computation. If such request is approved, certain design values will be lowered, resulting in values within attainment of the 2015 NAAQS for the Greater Connecticut area.

Site	Design Value (ppb)
Abington	65
Cornwall	71
Danbury	73
East Hartford	71
Greenwich	79
Groton	73
Madison	79
Middletown	75
New Haven	70
Stafford	68
Stratford	82
Westport	82
NAAQS	70



⁴ [40 CFR 50.15 -- National primary and secondary ambient air quality standards for ozone.](#)

CO, SO₂, NO₂, and PM₁₀ NAAQS Comparisons (2023)

Comparisons of ambient levels of CO, SO₂, NO₂, and PM₁₀ to the primary NAAQS are provided in the tables below. The draft design values for each pollutant were derived in accordance with 40 CFR 50. The design values presented will be reconciled with EPA’s reported design values before this plan is finalized.

CO NAAQS Comparison*

Site	1-Hr Design Value (ppm)	8-Hr Design Value (ppm)
Cornwall	3.2	0.8
Hartford	2.7	1.1
New Haven	2.2	1.2
NAAQS	35	9

*Design values represent the higher of 2022 and 2023 2nd high values, rounded to the tenths place.

SO₂ NAAQS Comparison

Site	1-Hr Design Value (ppb)
Bridgeport	3
Cornwall	2
New Haven	2
NAAQS	75

NO₂ NAAQS Comparison

Site	1-Hr Design Value (ppb)	Annual Design Value (ppb)
East Hartford	38	7
Hartford	42	13
New Haven	47	11
Westport	42	9
NAAQS	100	53

PM₁₀ NAAQS Comparison

Site	Daily “Design Value”* (µg/m ³ STP)
Bridgeport	91
East Hartford	63
Hartford	65
New Haven	34
NAAQS	150

* Daily “design values” given are the fourth high daily concentrations over three years (2021-2023), presented here for comparison to the standard. The actual PM10 design value form is the expected number of exceedance days per year, averaged over three years, which should be less than or equal to one.

Overview of Network Operation

DEEP operates a network of 14 State and Local Air Monitoring Stations (SLAMS) sites throughout Connecticut used for monitoring air pollutants and meteorological parameters. This section contains information about monitoring methods and sampling frequencies, as well as monitoring network maps for each pollutant parameter. Network changes planned before the end of 2025 are discussed as are any anticipated network changes beyond that period.

PM_{2.5} Monitoring

The DEEP PM_{2.5} network consists of Thermo Partisol®-Plus 2025i sequential FRM air samplers with BGI VSCC (RFPS-0498-118/EQPM-020-145) and Teledyne API T640X continuous air samplers (EQPM-0516-238) for NAAQS compliance at eight air monitoring stations. The distribution of PM_{2.5} monitors in the network and their applicability to NAAQS attainment are shown in Table 3. All valid data from designated primary monitors is used in the derivation of NAAQS design values. Additionally, valid data from collocated and supplemental monitors is used to fill in any missing or invalidated scheduled or nonscheduled days for the primary monitor data used for computing the design values.



The filter-based FRM monitors operate at a 1-in-6 day frequency, except at the two NCore sites, New Haven and Cornwall, which run on 1-in-3 day schedules. As shown in Table 3, there are four primary PM_{2.5} FRM monitors, so the collocated monitor in New Haven meets the collocation requirement of 15 percent of the network.⁵ The FEM monitor in Bridgeport is designated as primary, collocated with FRM monitor, to meet collocation requirements for the FEM network⁶ and provide precision data. The FEM monitors at Bridgeport Roosevelt School, East Hartford McAuliffe Park, Groton Fort Griswold, and Waterbury Bank Street are designated as primary monitors. The two continuous FEM monitors in New Haven are used for unofficial collocated precision assessment of the Teledyne T640X analyzers. There are no changes planned for the PM_{2.5} monitoring network during 2024-2025.

During 2023, Teledyne API made available a firmware update for the T640/T640X analyzers, which was developed in conjunction with EPA to provide data with closer alignment with data from reference grade (FRM) samplers. DEEP installed and enabled the data alignment firmware during July-August, 2023. For T640X data collected prior to the data alignment implementation, EPA applied a data correction algorithm

⁵ 40 CFR 58 Appendix A 3.2.3

⁶ Ibid.

that was developed to give the data similar alignment to FRM data⁷. The corrected data was used to compute the PM_{2.5} design values shown in the tables above.

On March 6, 2024, EPA promulgated a revised NAAQS for particulate matter, in which the annual standard for fine particulate (PM_{2.5}) was lowered from 12.0 to 9.0 µg/m³⁸. As a direct consequence of this lowered standard, the Worcester, MA-CT core-based statistical area (CBSA), which includes Windham County, CT, is required to deploy an additional PM_{2.5} monitor because the PM_{2.5} levels in this area are within 15 percent of the new annual standard. Massachusetts Department of Environmental Protection has agreed to deploy and operate this additional monitor, which will be located at their existing monitoring site in Uxbridge, MA.

Table 3: DEEP PM_{2.5} FRM/FEM Network Summary

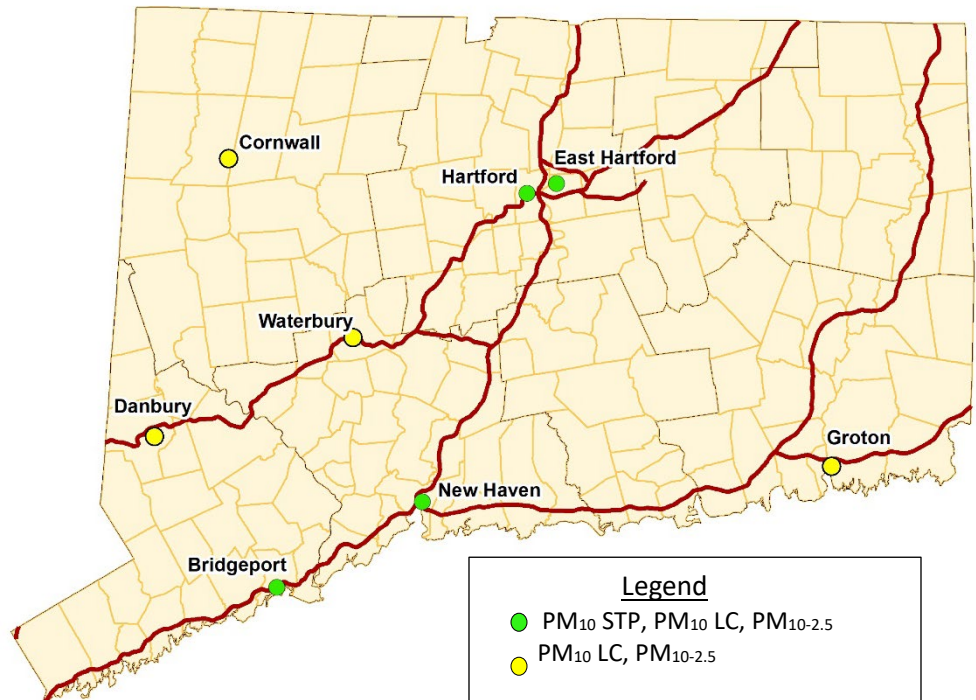
Site	Primary	Collocated	Supplemental
Bridgeport-Roosevelt Sch.	Continuous FEM	1-in-6 FRM	
Cornwall-Mohawk Mt.	1-in-3 FRM		Continuous FEM
Danbury-WCSU	1-in-6 FRM		Continuous FEM
East Hartford-McAuliffe Pk.	Continuous FEM		
Groton-Ft. Griswold	Continuous FEM		
Hartford-Huntley Pl.	1-in-6 FRM		Continuous FEM
New Haven-Criscuolo Pk.	1-in-3 FRM	1-in-6 FRM	2 Continuous FEMs
Waterbury-Bank St.	Continuous FEM		

⁷ [89 FR 42874](#)

⁸ [78 FR 3086](#)

PM₁₀/PM_{10-2.5} Monitoring

DEEP operates PM₁₀ monitors for NAAQS regulatory compliance at four sites in its air monitoring network, which include New Haven, Bridgeport, Hartford and East Hartford. Of these, only the New Haven site uses federal reference method (FRM) Thermo Partisol®-Plus 2025i sequential air samplers (RFPS-1298-127) for its primary (1-in-3 day schedule) and collocated (1-in-6 day schedule) monitors. The paired PM_{2.5} and PM₁₀ FRM collocated monitors provide collocated FRM PM_{10-2.5}, as requested by EPA as part of a national network of FRM PM_{10-2.5} collocated sites for data quality assessment.



In addition to the FRM PM₁₀ monitors at New Haven, DEEP employs federal equivalent method (FEM) Teledyne API T640X PM₁₀ continuous PM mass monitors (EQPM-0516-239) at the three remaining NAAQS regulatory compliance sites. The T640X analyzers produce 1-minute and 60-minute average PM_{2.5}, PM₁₀ (at local (LC) and standard (STP) conditions of temperature and pressure) and PM_{10-2.5} (coarse PM). Coarse PM is defined as thoracic PM having particle aerodynamic diameters between 2.5 and 10 microns, operationally defined as the difference PM₁₀ minus PM_{2.5}.

DEEP received tentative approval to discontinue reporting of PM₁₀ at standard conditions (STP) (parameter code 81102) for all monitors not utilized to meet minimum network design criteria for PM₁₀ as delineated in 40 CFR 58 Appendix D (§4.6), which sites are indicated by yellow symbols in the above network map. DEEP will continue reporting PM₁₀ at local conditions (LC) (85101) and PM_{10-2.5} (86101) for all current PM₁₀ monitors in the network. The monitors that were discontinued for PM₁₀ STP reporting as of January 1, 2023, are the continuous FEM monitors at the following sites, with associated EPA Air Quality System (AQS) IDs:

Cornwall Mohawk Mountain	09-005-0005
Danbury WCSU	09-001-1123
Groton Fort Griswold St Park	09-011-0124
New Haven Criscuolo Park	09-009-0027
Waterbury Bank Street	09-006-2123

The sites that have retained regulatory PM₁₀ STP (81102) reporting include: New Haven Criscuolo Park (FRM, primary and collocated), Bridgeport Roosevelt School (FEM), Hartford Huntley Place (FEM) and East Hartford McAuliffe Park (FEM). Table 4 summarizes the State and Local Air Monitoring Stations (SLAMS) PM₁₀ network design criteria and Connecticut’s compliance with those requirements. Note that all monitors are classified as having “low concentrations” per Table D-4 of Appendix D to Part 58 (i.e.: levels below 80 percent of NAAQS).

Table 4: Summary of PM₁₀ Monitoring Requirements Criteria for Connecticut

CBSA Code	CBSA Name	Counties included in CBSA	Population (2021 estimates)	Max Value (ug/m ³ STP)	Min No. of Monitors	Proposed No. of Monitors
14860	Bridgeport-Stamford-Norwalk	Fairfield	959,768	68	1-2	1
25540	Hartford- East Hartford-Middletown	Hartford, Middlesex, Tolland	1,211,906	63	2-4	2
35300	New Haven-Milford	New Haven	863,700	75	1-2	1
35980	Norwich-New London	New London	265,206	50	0-1	0
49340	Worcester	Worcester, MA; Windham, CT	978,447	52	1-2	1*
45860	Torrington (micropolitan statistical area)	Litchfield	185,000	71	0	0

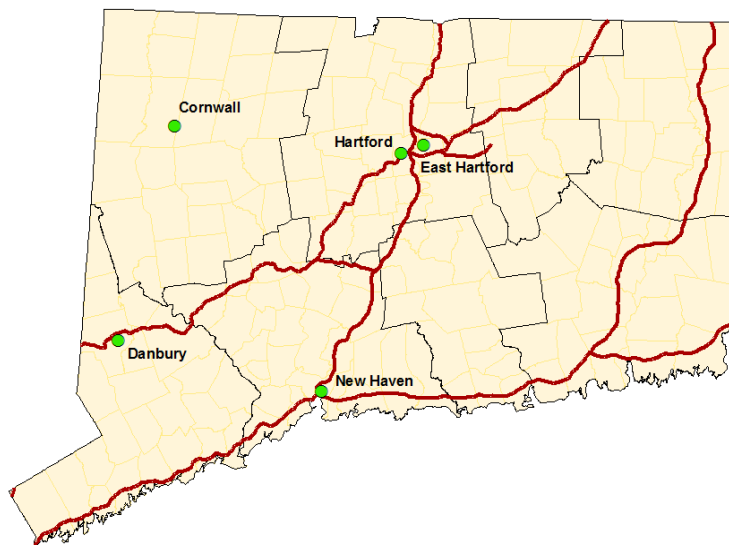
*Current Worcester CBSA monitor operated by Massachusetts DEP

Other than the abovementioned reduction of PM₁₀ STP reporting, no changes are planned for the PM₁₀/PM_{10-2.5} monitoring network during 2024-2025

PM Speciation Monitoring

PM_{2.5} chemical speciation measurements are obtained at five sites in the DEEP air monitoring network. These include filter-based daily composite 1-in-3 day samples at the 2 NCore sites, and continuous hourly black carbon at five sites.

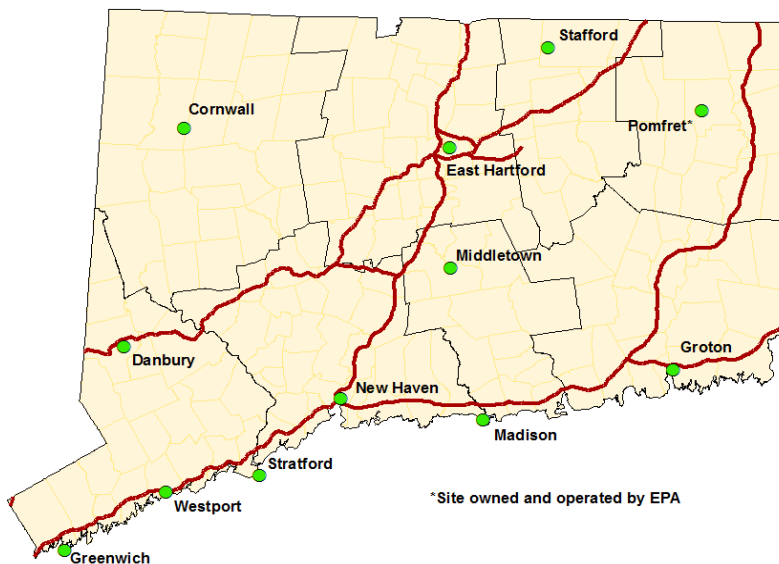
The Interagency Monitoring of Protected Visual Environments (IMPROVE) monitor is located at the Cornwall site and the Chemical Speciation Network (CSN) monitor is at the New Haven Criscuolo Park site. Both sites are operated on the standard EPA 1-in-3 day PM sample schedule and provide 24-hour integrated filter-base measurements.



Black carbon (BC) and ultra-violet channel carbon (UVC), a wood smoke PM surrogate, are monitored at the Criscoolo Park, Cornwall, Hartford, East Hartford McAuliffe Park and Danbury WCSU sites using 7-channel TAPI Model 633 aethalometers. No changes are proposed to the PM speciation network during 2024-2025.

Ozone Monitoring

DEEP operates eleven ozone sites in its air monitoring network for NAAQS compliance. The ozone analyzers at the Cornwall Mohawk Mountain, East Hartford McAuliffe Park and New Haven Criscoolo Park sites are operated year-round, while the remaining sites are operated during the EPA-defined ozone season, which for Connecticut is from March 1 to September 30. In addition to the DEEP's ozone monitoring network, EPA operates an ozone monitor in Abington (Pomfret) during the ozone season as part of its Clean Air Status and Trends (CASTNET) network.



NAAQS compliance ozone monitoring in the DEEP network is conducted using Teledyne-API Model T400 UV photometric ozone analyzers (method EQOA-992-087). Ozone measurements are sent to the EPA AirNow website for AQI purposes on an hourly basis. DEEP is planning to replace the current network of ozone monitors with new monitors within the next year or two, as the current units have been in service for approximately ten years. Additionally, DEEP plans to purchase addition new calibrators to comply with EPA's proposed directive that ozone transfer standards must have internal photometers to improve and/or ensure data quality control.

Ozone Enhanced Monitoring Plan

This section consists of the Enhanced Monitoring Plan (EMP) for Connecticut pursuant to 40 CFR sections 58.10 (a) (11) and 58 App D 5(h). These federal regulations, revised under the 2015 National Ambient Air Quality Standards (NAAQS) for ozone,⁹ require that any state with any area designated moderate nonattainment or above, or any state within the Ozone Transport Region (OTR), submit an Enhanced Monitoring Plan for ozone (EMP) to the regional office of the Environmental Protection Agency (EPA) no later than October 1, 2019.

Background

Recent ozone (O₃) levels in Connecticut are generally the highest in the eastern U.S, placing three of Connecticut's eight counties in severe nonattainment for the 2008 ozone National Ambient Air Quality

⁹ FR 80 65292, October 26, 2015

Standards (NAAQS). For the 2015 NAAQS, the entire state is designated as moderate nonattainment. These levels largely result from transport of ozone and ozone precursors into Connecticut from the south-west direction along the northeast urban corridor. Modeling and other analyses have shown significant contributions to ozone levels in Connecticut from sources both inside and outside of the greater New York and greater Connecticut nonattainment areas.¹⁰

DEEP has documented through numerous public comment submissions, communications and even litigation, that EPA¹¹ must fully implement in a timely manner the Clean Air Act “good neighbor” provisions designed to address interstate air pollution transport before Connecticut can reasonably expect to attain either the 2008 or 2015 ozone NAAQS in the Connecticut portion of the Northern New Jersey – New York – Connecticut nonattainment area. DEEP will continue to develop and implement monitoring activities under this EMP to increase the scientific knowledge and understanding of the fate and transport mechanisms of ozone and related ozone precursor pollutants in this region, with specific attention to impacts of the water-land boundary. DEEP expects the data from these enhanced monitoring activities will further clarify the critical role that interstate air pollution transport plays in the Northern New Jersey-New York-Connecticut and Greater Connecticut nonattainment areas and further inform the development and implementation of meaningful national programs that will protect public health and the environment.

In addition to the impacts of interstate air pollution transport, the mobile source sector, including both on-road and non-road sources, combine to contribute most of the air pollution emitted within Connecticut. EPA must also address the impact of these ‘federal sources’ that are beyond Connecticut’s regulatory authority.

The 2015 O₃ NAAQS amended monitoring requirements for the Photochemical Air Monitoring Stations (PAMS) network. Previously, Connecticut operated PAMS volatile organic compounds (VOC) monitors at three sites: East Hartford McAuliffe Park, New Haven Criscuolo Park and Westport Sherwood Island State Park. The revised rule now requires VOC monitoring at all National Core (NCore) monitoring sites in Core-Based Statistical Areas (CBSAs) having populations greater than 1 million. In addition, areas with moderate or higher levels of O₃ nonattainment, as well as all areas within the Ozone Transport Region (OTR), are required to develop Enhanced Monitoring Plans (EMPs). EMPs are required to provide for any additional monitoring beyond the minimum requirements for State and Local Air Monitoring Stations (SLAMS) that would be beneficial in identifying pollutant levels, sources, transport and progress towards attainment. The EMP mandate is intended to provide state and local environmental agencies an opportunity to implement additional monitoring beyond SLAMS that addresses the particular needs of nonattainment areas not explicitly covered under the revised PAMS network.

Strategic Approach and Objectives

State and local environmental agencies have conducted considerable surface monitoring of O₃, O₃ precursors [e.g.: nitrogen oxides (NO, NO₂, NO_x, NO_y), volatile organic compounds (VOCs)] and meteorological parameters for many years as part SLAMS and PAMS networks. Current strategies for analyzing O₃ production and transport are typically based on computer modeling with source emissions and meteorological inputs, where high resolution speciated VOC data have limited usefulness in model development or validation.

¹⁰ FR 82 1733, January 6, 2017

¹¹ [Greater CT Ozone Attainment Demonstration for the 2008 NAAQS](#)

PAMS monitoring programs also include, in addition to VOCs, three carbonyls that are more typically abundant: formaldehyde, acetaldehyde and acetone. The most significant of these, formaldehyde (HCHO), has been used extensively as a proxy for VOC free radical formation in research and analyses on tropospheric ozone.¹² Given the understanding that O₃ formation may be sensitive to changes in either VOCs (VOC limited regime) or NO_x (NO_x limited regime), as demonstrated with photochemical numeric computer models, the ratio of HCHO to NO₂ from ambient air monitoring during high O₃ events can be key in the validation of computer modeling approaches.

In addition to monitoring strategies aimed at understanding aspects of the regional O₃ chemistry, collecting data that clearly show the spatial variability of surface O₃ concentrations is critical to developing approaches to address non-attainment in Connecticut. DEEP maintains an extensive network of O₃ monitoring sites, particularly along its prevailing upwind (south-southwestern) border to effectively track ozone plumes transported into the state, and these sites consistently show the highest ozone concentrations in Connecticut.

Enhanced Monitoring Activities

DEEP plans the following activities and resource commitments to meet the objectives for enhanced monitoring under this Plan. DEEP believes these proposed actions meet the requirements of the EMP and will assist DEEP's ongoing efforts toward assessing and understanding ozone nonattainment issues in Connecticut:

- Continued operation of two additional O₃ monitors beyond those minimally required for the State and Local Air Monitoring Station (SLAMS) in the Bridgeport-Stamford-Norwalk Core-Based Statistical Area (CBSA).
- Continued operation of one additional ozone monitor beyond those minimally required in the Hartford-West Hartford-East Hartford CBSA.
- Continued operation of one additional NO₂ monitor, located at the Westport Sherwood Island State Park site.
- Assessment of continuous HCHO methods. Contingent upon the availability of an instrument that is capable of operation within demonstrable acceptable quality assurance criteria, DEEP would procure and potentially deploy to a coastal ozone site.
- Continued operation of two ceilometers, at Westport and New Haven, for atmospheric mixing height (boundary layer depth).
- Provision of site access and on-site technical support for EPA's Pandora spectrophotometers, which continuously monitor total column NO₂ and HCHO, at four sites (Westport Sherwood Island, New Haven Criscuolo Park, Cornwall Mohawk Mountain and Madison Hammonasset State Park).
- Provision of field and data support for continued studies related to ozone fate and transport in the Long Island Sound/coastal Connecticut region (i.e.: LISTOS, STAQS+, etc.).

Figure 2 shows the proposed DEEP monitoring network with EMP activities included.

SLAMS Ozone Monitoring

The ozone monitoring requirements in 40 CFR 58 for state and local air monitoring stations (SLAMS) set minimum numbers of monitors based on ozone NAAQS design values and population for each core-based

¹² Jin, X et. al, 2017, Evaluating a Space-Based Indicator of Surface Ozone-NO_x-VOC Sensitivity Over Midlatitude Source Regions and Application to Decadal Trends, J. of Geophysical Research, 122 (19) 10,439-10,461

statistical area (CBSA). In addition, the months of the ozone season are determined for each location, which for Connecticut is March through September. Ozone monitors at National Core (NCore) multipollutant sites operate year-round, using Teledyne API 400E analyzers (reference method ID EQOA-0992-087).

Minimum SLAMS ozone monitoring requirements are provided in Table D-2 of Appendix D, 40 CFR 58. An assessment for the Connecticut network, shown in Table 5 below, gives populations and design values for each CBSA. For both the Bridgeport-Stamford-Norwalk and Hartford-West Hartford-East Hartford CBSAs, a minimum of 2 monitors are required, while there are 4 and 3 monitors in each CBSA, respectively. DEEP proposes to consider these 3 additional monitors as part of this EMP.

Table 5: Summary of Connecticut Ozone Monitoring Network Design Compliance

CBSA	2019 Population (estimated)	Maximum 2020 design value	No. of required SLAMS monitors	Current no. of SLAMS monitors
Bridgeport-Stamford-Norwalk, CT	943,332	82	2	4
Hartford-West Hartford-East Hartford, CT	1,204,877	74	2	3
New Haven-Milford, CT	854,757	80	2	2
Norwich-New London, CT	265,206	73	1	1
Worcester, MA-CT	947,404	69	2	3
Torrington, CT	180,333	65	1	1

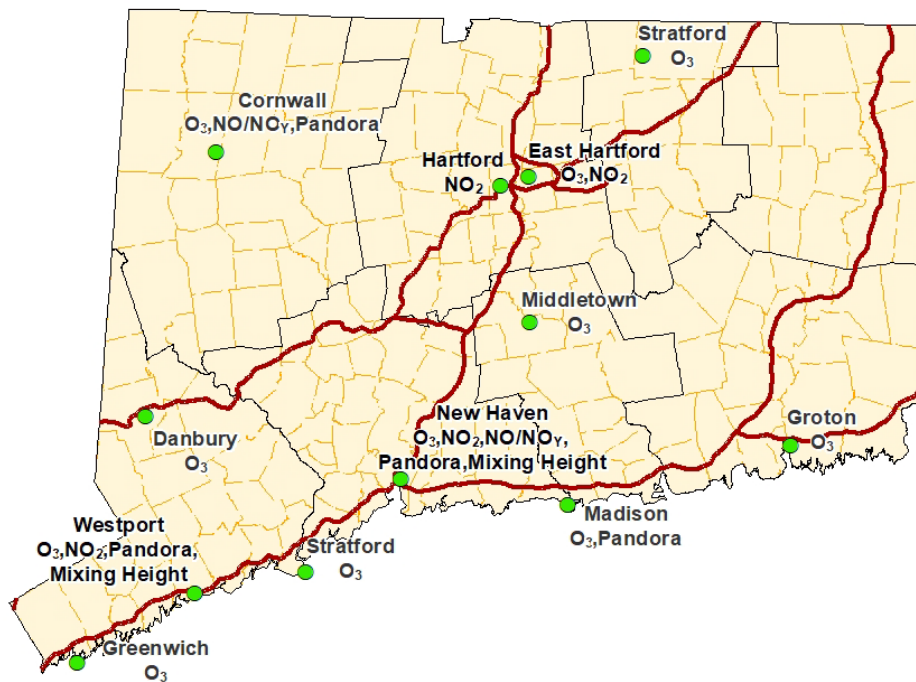


Figure ii: Map of EMP-Related Monitoring Locations

SLAMS NO₂ Monitoring

Connecticut meets its regulatory NO₂ monitoring requirements for near road and area-wide monitors with two monitors in the Hartford CBSA. An additional NO₂ monitor required by the Regional Administrators for the protection of sensitive and vulnerable populations is located at the New Haven NCore site. A fourth monitor, located in Westport as part of the enhanced monitoring plan, is intended to provide further data to assist in understanding ozone precursor transport into Connecticut. All NO₂ monitors are Teledyne API T500U cavity attenuated phase shift spectroscopy (CAPS) (reference method ID EQNA-0514-212).

Formaldehyde Monitoring

DEEP is continuing to assess automated formaldehyde (HCHO) methods for potential procurement and deployment to one or more coastal ozone sites. HCHO measurements would be a complement to NO₂ measurements, as the ratio is an important indicator to assess whether the ozone production regime is VOC or NO_x limited. Acquisition of a continuous HCHO monitor is contingent on the determination of reliable and practical quality assurance and control methodology.

Upper Air Measurements

The planetary boundary layer (PBL) is the near-surface portion of the troposphere that is generally considered to be well mixed, such that pollutants emitted or created are more or less mixed but confined within the PBL. As such, lower boundary layer heights are associated with higher pollutant concentrations. The different radiative and absorptive capacities of land and water can affect the PBL height, also known as the mixing height (MH). Thus, coastal areas downwind of large water bodies may have higher concentrations than inland levels where the mixing heights are increased. DEEP is operating two ceilometers, at New Haven and Westport, for automated mixing height measurements. The ceilometers are model CL51, manufactured by Vaisala, Oyj, that operate based on optical backscattering by fine particulate aerosols that tend to concentrate just below the mixing height. The New Haven ceilometer has been in operation since November 2015, and the Westport ceilometer was installed in May 2021. DEEP has been working to register the two ceilometers with the [Unified Ceilometer Network](#) (UCN), which will have both current and archived data available for download.

NO₂ and NO/NO_y Monitoring

DEEP monitors nitrogen dioxide (NO₂) at four sites in the monitoring network using Teledyne-API Model T500U (EQNA-0514-212), which are capable of directly measuring NO₂ using cavity attenuated phase shift (CAPS) spectroscopy methodology. The NO₂ monitors are maintained at Hartford Huntley Place, East Hartford McAuliffe Park, New Haven Criscuolo Park and Westport Sherwood Island State Park for regulatory compliance.



DEEP also operates two nitrogen oxide/total reactive oxides of nitrogen (NO/NO_y) TAPI model T200U/501 monitors, at Cornwall Mohawk Mountain and New Haven Criscuolo Park, to comply with NCore requirements. NO_y is defined as NO+NO₂+NO_z, where NO_z represents higher oxides of nitrogen. The major components of NO_z include nitrous acids [nitric acid (HNO₃), and nitrous acid (HONO)], organic nitrates [peroxyl acetyl nitrate (PAN), methyl peroxyl acetyl nitrate (MPAN), and peroxyl propionyl nitrate, (PPN)], and particulate nitrates.

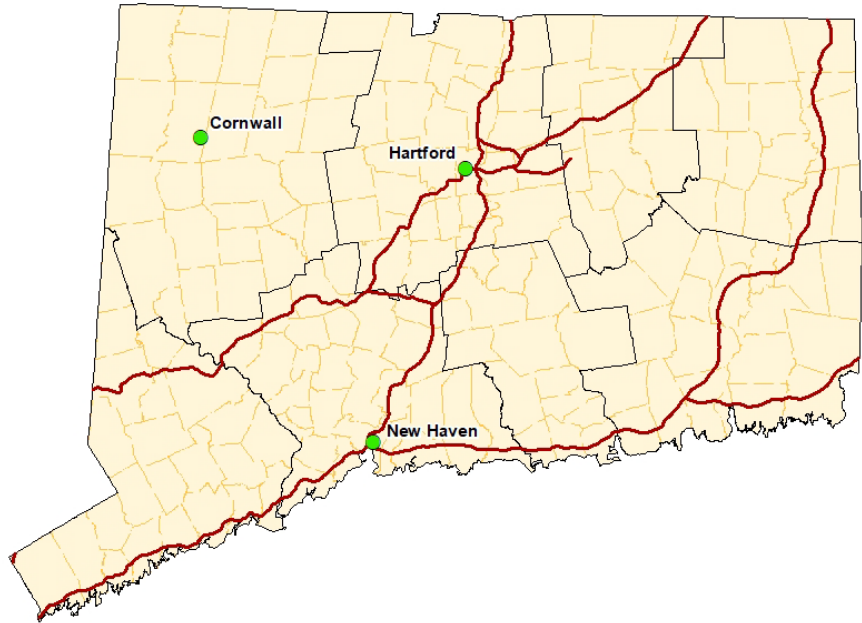
The NO₂ and NO/NO_y networks fulfill network design requirements for NCore and SLAMS monitoring of these parameters. These requirements include: near road and area wide NO₂ monitoring in a core-based statistical area (CBSA) with a population greater than 1,000,000 (Hartford and East Hartford sites, respectively); nationwide NO₂ monitoring for susceptible and vulnerable populations at site selected by EPA (New Haven) and NCore NO/NO_y monitoring (Cornwall and New Haven). The Westport NO₂ monitor is operated in fulfillment of Connecticut's enhanced monitoring plan.

DEEP had been conducting daily quality control (QC) checks, which include points at zero, span and midpoint, for the NO₂ monitors. The span and midpoint checks used gaseous NO₂ (in N₂) cylinder standards, which were designated as non-protocol standards by EPA in February, 2021. As such, all checks since that time are considered by EPA as non-valid for meeting EPA quality assurance data quality objectives¹³. DEEP is working to configure automated checks at all NO₂ sites using NO/NO_x protocol standards with gas-phase titration (GPT) to produce NO₂ target points. DEEP has been conducting bi-weekly manual GPT QC checks since January 1, 2024, and plans to continue these manual checks until the automated GPT checks are implemented.

¹³ [40 CFR Part 58 Appendix A](#)

CO Monitoring

DEEP operates three carbon monoxide (CO) sites in the air monitoring network, as shown on the map at right. All CO samplers are operated year-round and employ TEI 48iQ-TL analyzers (RFCA-0981-054). DEEP plans to replace all CO analyzers with Teledyne API T300 analyzers (RFCA-1093-093) during 2024. Of the 3 sites, New Haven and Cornwall satisfy the requirement for CO monitoring at NCore sites and Hartford fulfills requirements for co-location with an NO₂ near road monitor in a CBSA having a population greater than 1 million.¹⁴ The EPA Regional Administrator has not indicated any locations in the state for additional CO monitoring aimed at susceptible and vulnerable populations.



SO₂ Monitoring

DEEP currently operates three sulfur dioxide (SO₂) sites in the air monitoring network

All samplers are TEI 43iQ-TL SO₂ analyzers (EQSA-0486-060) and are operated year-round. Both 1-hour average and 5-minute block average SO₂ data are validated and reported to EPA.

The network requirements for SO₂ monitoring include NCore, population-weighted emissions index



¹⁴ [76 FR 54294; August 31, 2011](#)

(PWEI) and Regional Administrator-required monitoring.¹⁵ The Cornwall and New Haven sites satisfy the NCore SO₂ requirement.

Table 6 shows the PWEI values for CBSAs that are within or intersecting Connecticut, based on the 2017 National Emissions Inventory and US Census Bureau 2019 county population estimates. The SO₂ NAAQS monitoring requirements based on PWEI values state that a monitor is required in areas having PWEI values greater than or equal to 5,000 MMperson-tons/yr. Therefore, no PWEI SO₂ monitors are currently required in the state. In addition, the EPA has not indicated a requirement for any additional SO₂ monitors in areas having the potential to violate the NAAQS, areas where vulnerable or sensitive populations may be impacted, or near large sources not conducive to modeling. We also note that the SO₂ primary design values, as provided in an earlier section of this Network Plan, range from 2 to 4 ppb, and are well below the 1-hour NAAQS of 75 ppb.

Although not covered by PWEI requirements, DEEP intends to continue SO₂ monitoring at Bridgeport Roosevelt School at this time, given that it is located in an area of relatively higher concentrations and vulnerable and sensitive populations.

Table 6: Population Weighted Emissions Index (PWEI) Values for Connecticut CBSAs

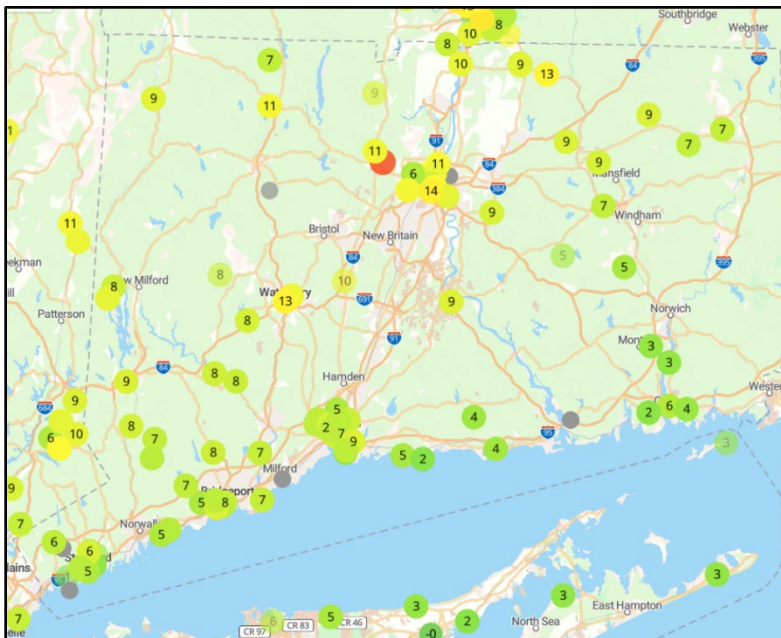
Core-Based Statistical Area (CBSA)	SO ₂ (tons/yr)	Population (2019 estim.)	PWEI (MMperson-tons/yr)
Bridgeport-Stamford-Norwalk	359	943332	339
Hartford-East Hartford-Middletown	284	1204877	342
Torrington	1	180333	0
New Haven-Milford	90	854757	77
Norwich-New London	109	265206	29
Worcester	273	947404	259

¹⁵ [75 FR 35520; June 22, 2010](#)

Community-Based Monitoring and Community Outreach Efforts

DEEP is continuing to develop a program to support community-based air monitoring efforts and create a framework to advise and assist existing and prospective community-led air monitoring projects. This includes providing technical assistance on air quality sensor operation, data management, and interpretation, along with community grant procurement and project development aid. DEEP will also build a greater understanding of air quality information at more spatially refined scales, with a focus on environmental justice and overburdened front-line communities. Additionally, DEEP is evaluating low-cost sensors relative to the performance of reference-grade monitors, conducting workshops, and building materials to benefit continued community air quality education and outreach efforts.

Towards these goals, DEEP is operating an air sensor loan program to provide low-cost air quality sensors and technical assistance to community groups, educators, and individuals to help build community-based air monitoring programs. At this time, approximately 40 DEEP-owned PurpleAir sensors have been loaned to community partners to deploy at schools and neighborhoods in support of their project goals. In addition to loaned sensors, DEEP has deployed PurpleAir sensors at each monitoring station with the goal of advancing knowledge of low-cost sensors and contributing more real-time data to public interfaces, including the AirNow Fire and Smoke Map. Saturating the state network with PurpleAir sensors contextualizes the performance of individual sensors, while also characterizing air quality in many different regions of the state.



Above: PurpleAir Live Map displaying public sensors across Connecticut

In addition to PurpleAir sensors, which only measure fine particulate matter, DEEP has procured low-cost sensors from other emerging manufacturers to explore both gaseous and particulate criteria air pollutant monitoring capabilities. These air sensors are part of a collocation study at the East Hartford McAuliffe Park monitoring station to evaluate sensor performance relative to regulatory monitors. Goals of this effort are to gain technical experience and assess data quality from a range of low-cost sensors for potential utilization in future community-based monitoring projects. DEEP intends to make the findings from these collocation studies available to other state agencies and community members to help contribute to collective understanding of air sensor performance and limitations.

DEEP is a partner on two projects in Connecticut funded by American Rescue Plan (ARP) grants. The Connecticut Department of Public Health received an ARP grant to establish a network of low-cost air sensors to provide real-time measurements of PM_{2.5} in distressed communities in Ansonia and Derby, Connecticut. DEEP is planning on contributing technical guidance and support and making regulatory monitors available for sensor collocation. Project outcomes entail the establishment of a centralized web-based dashboard for real-time air sensor data, actionable health-supportive information, and guidance towards existing community health programs. The project will also produce training modules as part of an education and outreach campaign for community-centered air pollution awareness, and long-term

assistance for community-led air monitoring. This project is in the initial phases, with efforts expected to increase later in 2024.

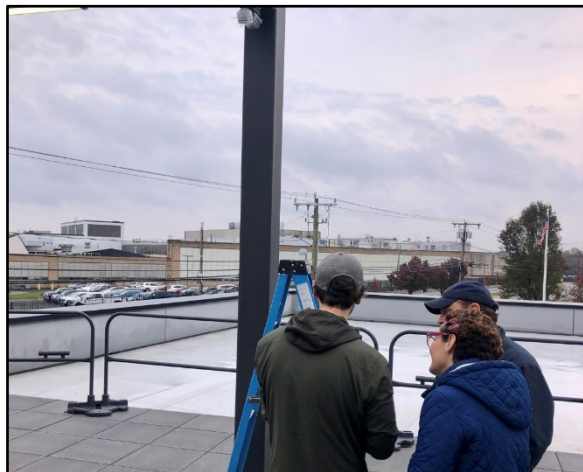


Above: PurpleAir sensor installed at East Hartford monitoring site

Additionally, DEEP is partnered with the City of Stamford Health Department on an ARP-funded project to monitor for criteria air pollutants in the South End and West Side neighborhoods of Stamford, CT. These neighborhoods rank high on the EPA’s EJSCREEN Tool, meet the Justice40 Initiative’s definition of disadvantaged neighborhoods, and are in close proximity to environmental hazards. Project outcomes will include an online data portal, community education, sensor deployment, and data collection with the intent to inform future pollution reduction efforts. Ongoing DEEP contributions to this project include Quality Assurance Project Plan (QAPP) development, technical assistance, and data-related support. Efforts on this project are expected to increase later in 2024.

In alignment with these goals, DEEP participates in the Air Quality Monitoring Workgroup of Northeast and Mid-Atlantic states & DC. This workgroup is facilitated by the Georgetown Climate Center and includes TD Environmental and The Metropolitan Group as primary consultants. This workgroup’s goal is to support participating states and community partners in establishing hyperlocal air quality monitoring projects. Workgroup outcomes will include strategies on how to obtain federal funding, utilize data from air monitoring projects to enable actionable change to reduce emissions, and build relationships with community groups overburdened by air pollution. DEEP views this work as a critical component of meeting commitments to environmental equity and environmental justice.

DEEP continues to engage in professional development efforts to help meet these goals, including participation in EPA-hosted conferences and workshops facilitated by the Georgetown Climate Center. Additionally, DEEP staff have expanded community-focused education and outreach, relationship building, and technical support efforts. Staff have led several workshops on the topic of understanding air quality for teachers and community members plus opportunities to enroll in the EPA Air Quality Flag Program and the DEEP air sensor loan program. In alignment with continued and expanding commitment to Environmental Justice, and the ultimate goal of clean air for all, the above Community Monitoring initiatives are planned to broaden in 2024 and onward.



Left: PurpleAir loan program community partner touchpoint and sensor installation

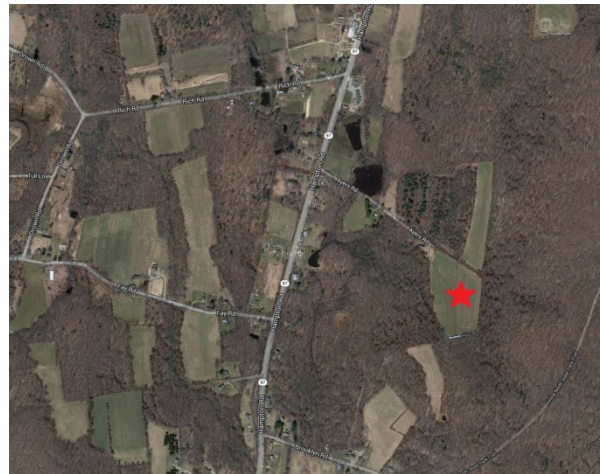


Right: Installation of low-cost air sensor used in collocation studies at East Hartford monitoring site

Detailed Site Information

The following section presents detailed information for each monitoring site, such as: identification code, location, history, monitored parameters, monitoring objectives, history and descriptive information.

Town – Site: **Pomfret – Abington**
 County: **Windham** Latitude: **41.840501°**
 Address: **80 Ayers Road** Longitude: **-72.010404°**
 AQS Site ID: **09-015-9991** Elevation: **209 m (686 ft)**
 Spatial Scale: **Regional** Year Established: **1993**
 Combined Statistical Area: **Boston-Worcester-Providence** <https://goo.gl/maps/u9FJezp64t855AbAA>



PM2.5 (FRM)	
PM2.5 (FRM, Collocated)	
PM2.5 (Continuous - FEM)	
PM10/PM-Coarse (FRM)	
PM10/PM-Coarse (FRM, Collocated)	
PM10/PM-Coarse (Continuous)	
Lead-PM10	
Lead-PM10 (Collocated)	
PM Speciation (CSN)	
PM Speciation (IMPROVE)	
PM2.5 Carbon (BC/UVC, Continuous)	
Ozone	X
SO2	
CO	
Direct NO ₂	
NO/NO ₂ /NOx	
NO/NOy	
Traffic Count	
Wind Speed	
Wind Direction	
Temperature	
Dew Point / Rel. Humidity	
Barometric Pressure	
Solar Radiation	

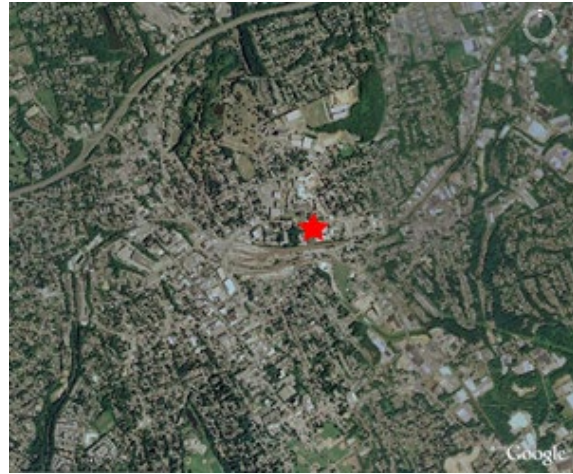
Site Description: The Abington site is a regional-scale site located in a rural/agricultural area in northeast Connecticut in the town of Pomfret. This site is operated by the National Park Service under the direction of EPA as part of their Clean Air Status and Trends Network (CASTNET). It is located on a hilltop approximately 2.3 km south of State Route (SR) 44 and 0.6 km east of SR 97.

Monitoring Objectives: The Abington monitoring site objective is to collect ozone measurements to assess long-term trends as part of the national CASTNET network. The site will also be used to determine compliance with the ozone NAAQS in Windham County.

Planned changes for 2024-2025: This site is not under the operational control or purview of DEEP and is included in this Network Plan for informational purposes only.

Connecticut 2024 Annual Air Monitoring Network Plan

Town – Site: **Danbury – Western Connecticut State University**
 County: **Fairfield** Latitude: **41.39914°**
 Address: **White Street** Longitude: **-73.44306°**
 AQS Site ID: **09-001-1123** Elevation: **116 m (380 ft)**
 Spatial Scale: **Neighborhood** Year Established: **1974**
 Combined Statistical Area: **New York-Newark** <https://goo.gl/maps/Db7KMS3nDs1tBBV58>



PM2.5 (FRM)	PM2.5 (FRM, Collocated)	PM2.5 (Continuous - FEM)	PM10/PM-Coarse (FRM)	PM10/PM-Coarse (FRM, Collocated)	PM10/PM-Coarse (FEM, Continuous)	Lead-PM10	Lead-PM10 (Collocated)	PM Speciation (CSN)	PM Speciation (IMPROVE)	PM2.5 Carbon (BC/UVC, Continuous)	Ozone	SO2	CO	Direct NO ₂	NO/NO ₂ /NOx	NO/NOy	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation
1/6		X			X					X	X							X	X	X		X	

X=Existing

P

= Planned in 2024/25

T

= Proposed to terminate in 2024/2025

Site Description: The Western Connecticut State University (WCSU) site is a neighborhood-scale site for PM_{2.5} and an urban-scale site for O₃, located in western Connecticut in the city of Danbury. This site is located on the top level of a parking garage on the WCSU campus. This site is located approximately 140 m to the southeast of I-84 on White Street. Residential neighborhoods are located in all directions of the site. This site meets all siting requirements and criteria and has been approved by EPA Region I. The downtown area of Danbury has a generally bowl-shaped topography, and therefore is subject to occasional high PM_{2.5} events during the winter.

Monitoring Objectives: The Danbury WCSU monitoring site objectives include collecting PM_{2.5} and PM₁₀/PM_{10-2.5} measurements for NAAQS compliance and for AQI forecasting purposes. Ozone is measured at the Danbury site for compliance assessment and AQI forecast reporting. Black carbon (BC/UVC) aethalometer monitoring is included to track the wood smoke contribution to PM pollution.

Planned changes for 2024-2025: None

Connecticut 2024 Annual Air Monitoring Network Plan

Town – Site: **Hartford – Huntley Place**
 County: **Hartford** Latitude: **41.771475°**
 Address: **10 Huntley Place** Longitude: **-72.679914°**
 AQS Site ID: **09-003-0025** Elevation: **14 m (46 ft)**
 Spatial Scale: **Near Road** Year Established: **2013**
 Combined Statistical Area: **Hartford-East Hartford** <https://goo.gl/maps/MS2HTok92Bx2Y8xV6>



PM2.5 (FRM)	PM2.5 (FRM, Collocated)	PM2.5 (Continuous - FEM)	PM10/PM-Coarse (FRM)	PM10/PM-Coarse (FRM, Collocated)	PM10/PM-Coarse (Continuous)	Lead-PM10	Lead-PM10 (Collocated)	PM Speciation (CSN)	PM Speciation (IMPROVE)	PM2.5 Carbon (BC/UVC, Continuous)	Ozone	SO2	CO	Direct NO2	NO/NO2/NOx	NO/NOy	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation
1/6		X			X					X			X	X			X	X	X			X	

X=Existing

P

= Planned in 2024/25

T

= Proposed to terminate in 2024/2025

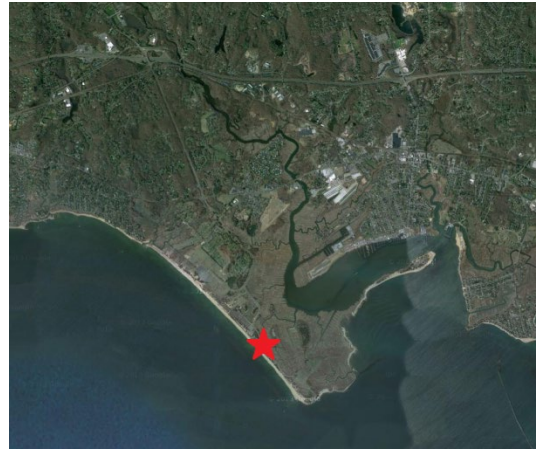
Site Description: The Huntley Place site is a near-road site located in north central Hartford. The site, located on the northwest side of US I-84, is approximately 0.25 km to the west of the US I-91 corridor and the Founders and Bulkeley Bridges over the Connecticut River. Residential neighborhoods are located to the north, east and west of the site. This site meets siting requirements for a near-road NO₂ site, and has been approved by EPA.

Monitoring Objectives: The primary monitoring objectives for the site are to capture NO₂ concentrations near heavily trafficked roads, to assess area-wide NO₂ concentrations, and to assess NO₂ concentrations for vulnerable and susceptible populations in adjacent neighborhoods. The data will also be used to help determine compliance with the 1-hour NO₂ NAAQS as established by EPA in 2010. This site also collects CO, FRM PM_{2.5}, continuous FEM PM_{2.5} & PM₁₀, BC/UVC and traffic counts.

Planned changes for 2024-2025: None.

Connecticut 2024 Annual Air Monitoring Network Plan

Town – Site: **Madison – Hammonasset State Park**
 County: **New Haven** Latitude: **41.256803°**
 Address: **Water Way, Hammonasset SP** Longitude: **-72.553266°**
 AQS Site ID: **09-009-9002** Elevation: **3 m (10 ft)**
 Spatial Scale: **Regional** Year Established: **1981**
 Combined Statistical Area: **New York-Newark** <https://goo.gl/maps/FCeLNH5T51dnU4jb6>



PM2.5 (FRM)		PM2.5 (FRM, Collocated)		PM2.5 (Continuous - FEM)		PM10/PM-Coarse (FRM)		PM10/PM-Coarse (FRM, Collocated)		PM10/PM-Coarse (Continuous)		Lead-PM10		Lead-PM10 (Collocated)		PM Speciation (CSN)		PM Speciation (IMPROVE)		PM2.5 Carbon (BC/UVC, Continuous)		Ozone	X	SO2		CO		Direct NO2		NO/NOY		Total Column NO2/HCHO	X	Wind Speed	X	Wind Direction	X	Temperature	X	Dew Point / Rel. Humidity		Barometric Pressure		Solar Radiation	
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X=Existing **P** = Planned in 2024/25 **T** = Proposed to terminate in 2024/2025

Site Description: The Hammonasset State Park site is a regional-scale site located in central coastal Connecticut in the town of Madison. This site is located approximately 1.5 km to the south of Route 1 and 3.0 km to the south of I-95 on the Long Island Sound. Residential neighborhoods are located primarily to the northeast, north and northwest of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Madison Hammonasset State Park monitoring site objective is to collect ozone measurements for compliance assessment and AQI forecast reporting. A second objective is to collect data in support of the Enhanced Monitoring Plan (page 12 of this Plan) for research on regional ozone transport.

Planned changes for 2024-2025: None.

Connecticut 2024 Annual Air Monitoring Network Plan

Town – Site: **New Haven – Criscuolo Park**
 County: **New Haven** Latitude: **41.30171°**
 Address: **1 James Street** Longitude: **-72.902880°**
 AQS Site ID: **09-009-0027** Elevation: **3 m (10 ft)**
 Spatial Scale: **Neighborhood** Year Established: **2004**
 Combined Statistical Area: **New York-Newark** <https://goo.gl/maps/T2MUeqoVrqC9Virj7>



PM2.5 (FRM)	PM2.5 (FRM, Collocated)	PM2.5 (Continuous - FEM)	PM10/PM-Coarse (FRM)	PM10/PM-Coarse (FRM, Collocated)	PM10/PM-Coarse (FEM, Continuous)†	PM2.5 (Cont. FEM, secondary)	PM10/PM-Coarse (Cont. FEM, secondary)	PM Speciation (CSN)	PM Speciation (IMPROVE)	PM2.5 Carbon (BC/UVC, Continuous)	Ozone	SO2	CO	Direct NO ₂	NO/NO _y	Total Column NO ₂ /HCOC	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation	Mixing Height
1/3	1/6	X	1/3	1/6	X	X	X	1/3		X	X	X	X	X	X	X	X	X	X	X	X	X	X

X=Existing **P** = Planned in 2024/25 **T** = Proposed to terminate in 2024/2025

Site Description: The Criscuolo Park site is a neighborhood-scale site located on the western side of the city of New Haven. The site is approximately 0.25 km to the north of the I-95 Quinnipiac River Bridge. The site is approximately 1.0 km to the east of the I-91 and I-95 interchange. Bulk petroleum transfer stations are located 0.3 to 2.0 km to the south of the site. Residential neighborhoods are located to the west, north and east of the site.

Monitoring Objectives: The primary monitoring objectives are to meet NCore requirements for O₃, CO, SO₂, PM_{2.5}, PM₁₀, PM_{10-2.5}, PM_{2.5} speciation, NO/NO_y and surface meteorology. NO₂ monitoring is conducted in fulfillment of the requirement for NO₂ monitoring of vulnerable and sensitive populations at 40 nationwide sites selected by the Regional Administrators. PM_{2.5} chemical speciation measurements are collected through the Chemical Speciation Network (CSN) as 1-in-3 day 24-hour samples and by continuous analyzers for fine particulate carbon parameters (BC/UVC).

Planned changes for 2024-2025:None.

Connecticut 2024 Annual Air Monitoring Network Plan

Town – Site: **Stratford – Lighthouse**
 County: **Fairfield** Latitude: **41.151906°**
 Address: **End of Prospect Drive** Longitude: **-73.103375°**
 AQS Site ID: **09-001-3007** Elevation: **3 m (10 ft)**
 Spatial Scale: **Regional** Year Established: **1980**
 Combined Statistical Area: **New York-Newark** <https://goo.gl/maps/vsTck3vFZm7GmV457>



PM2.5 (FRM)	PM2.5 (FRM, Collocated)	PM2.5 (Continuous - FEM)	PM10/PM-Coarse (FRM)	PM10/PM-Coarse (FRM, Collocated)	PM10/PM-Coarse (Continuous)	Lead-PM10	Lead-PM10 (Collocated)	PM Speciation (CSN)	PM Speciation (IMPROVE)	PM2.5 Carbon (BC/UVC, Continuous)	Ozone	SO2	CO	Direct NO ₂	NO/NO ₂ /NO _x	NO/NO _y	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation
											X										X		

X=Existing **P** = Planned in 2024/25 **T** = Proposed to terminate in 2024/2025

Site Description: The Stratford Lighthouse site is a regional-scale site located in southwestern Connecticut in the town of Stratford. This is a coastal site that is located 4.5 km to the southeast of I-95 and is directly on the Long Island Sound. This site is approximately 45 km to the northeast of the New York State border. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Stratford Lighthouse monitoring site objective is to collect ozone measurements for compliance assessment and AQI forecasting purposes.

Planned changes for 2024-2025: None.

Appendix A: Network Plan Public Comments and Responses

Public comments and DEEP's responses will be provided in this section.