

Connecticut 2025 Annual Air Monitoring Network Plan



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

DRAFT

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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	Nitric oxide
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides (NO and NO ₂)
NO _y	Total Reactive oxides of nitrogen
NO _z	Reactive oxides of nitrogen other than NO and NO ₂
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 2025 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 development of this plan has assumed the continuation of federal funding at current levels to implement the commitments in this Plan. Recissions or reductions in federal funding will require DEEP to reassess the monitoring commitments outline herein.

The draft 2025 Plan was posted for review and public comment on DEEP's website between May 19, 2025 and June 18, 2025 at [DEEP: Air Monitoring Network](#). Notification of the draft Plan posting was made via announcement to Connecticut's State Implementation Plan Revision Advisory Committee (SIPRAC), DEEP's Bureau of Air Management's standing advisory committee on the state's implementation of the Clean Air Act (CAA). Comments can be emailed to Randall.Semagin@ct.gov or mailed to:

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Background

EPA is the principal administrative body that enacts 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.

DEEP is in the process of replacing the shelter infrastructure at the New Haven Criscuolo Park NCore site as it has reached the end of its useful life. In anticipation of this infrastructure upgrade, DEEP created a mobile, temporary station outfitted with equivalent air monitoring analyzers and equipment to ensure continuous air sampling during this process. The temporary station will begin operating in 2025 and continue into 2026, or until the permanent replacement shed installation is completed and the associated air monitoring equipment is operational.



Figure 1: Connecticut DEEP Air Monitoring Network Map

Proposed Network Changes

Details of the proposed monitoring network configuration are described in the following site information pages. DEEP is proposing to implement the following changes:

- Transition from NO/NO_y to NO/NO_x measurements at New Haven Criscuolo Park in 2025 based on data evaluations indicating NO₂ constitutes an insignificant portion of total reactive nitrogen species.

- Addition of nitric oxide (NO) data collection to existing nitrogen dioxide (NO₂) monitoring network through the deployment of Teledyne-API Model N500 cavity attenuated phase shift (CAPS) analyzers, which provide concurrent measurement of NO₂-NO_x-NO.
- Addition of wind speed and wind direction monitoring at Bridgeport Roosevelt School and Groton Fort Griswold sites.

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/PM-10-2.5 (continuous FEM)	PM10/PM10-2.5 (cont. FEM, secondary)	PM Speciation (CSN)	PM Speciation (IMPROVE)	PM2.5 Carbon (BC/UVC, continuous)	Ozone	SO ₂	CO	NO ₂	NO/NO _x *	NO/NO _y	Total Column NO ₂ /HCHO (Pandora program)	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								P	P	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	P				X	X	X	X	X		
Greenwich	Point Park											X									X	X	X				
Groton	Fort Griswold			X				X†				X									P	P	X				
Hartford	Huntley Place	1/6		X				X				X		X	X	P				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	P	T	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	P		X		X	X	X		X	X	

X=Existing

P = Planned in 2025/2026

T = Terminated in 2025/2026

* Indicates non-regulatory PM10 (PM10 LC only)

* NO/NO_x data collection using Teledyne-API Model N500 CAPS NO_x analyzer

National Ambient Air Quality Standards (NAAQS)

EPA has set, and periodically updates, NAAQS for six principal pollutants, known as the criteria pollutants. Table 2, reprinted here from EPA's website¹ (updated 12/16/2024), 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	1 year	10 ppb	annual mean, averaged over 3 years

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.

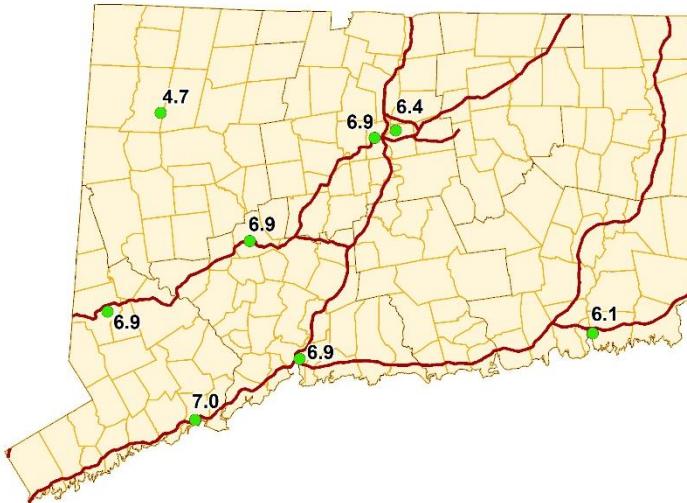
^d The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for 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/naaqs-table>

PM_{2.5} Annual Design Values (2024)

The 2024 annual design values for PM_{2.5}, based on 2022 through 2024 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 2024 design values in the final Plan.³

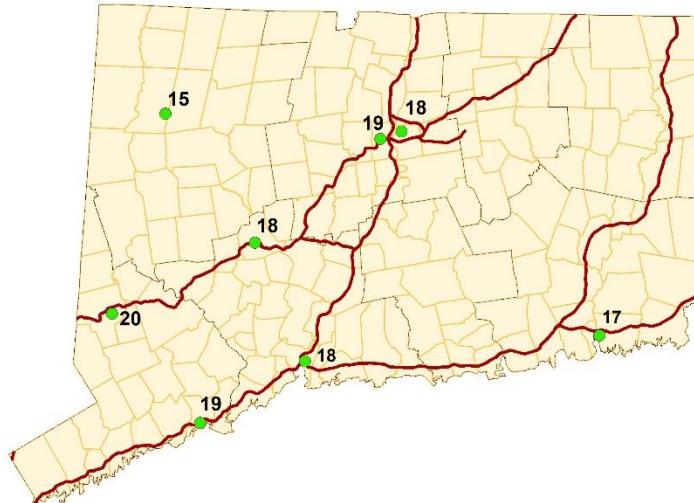
Site	Design Value (µg/m ³)
Bridgeport	7.0
Cornwall	4.7
Danbury	6.9
East Hartford	6.4
Groton	6.1
Hartford	6.9
New Haven	6.9
Waterbury	6.9
NAAQS	9.0



PM_{2.5} Daily Design Values (2024)

Daily design values for PM_{2.5} using 2022 through 2024 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 values.² 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 values in the final Plan.³

Site	Design Value (µg/m ³)
Bridgeport	19
Cornwall	15
Danbury	20
East Hartford	18
Groton	17
Hartford	19
New Haven	18
Waterbury	18
NAAQS	35



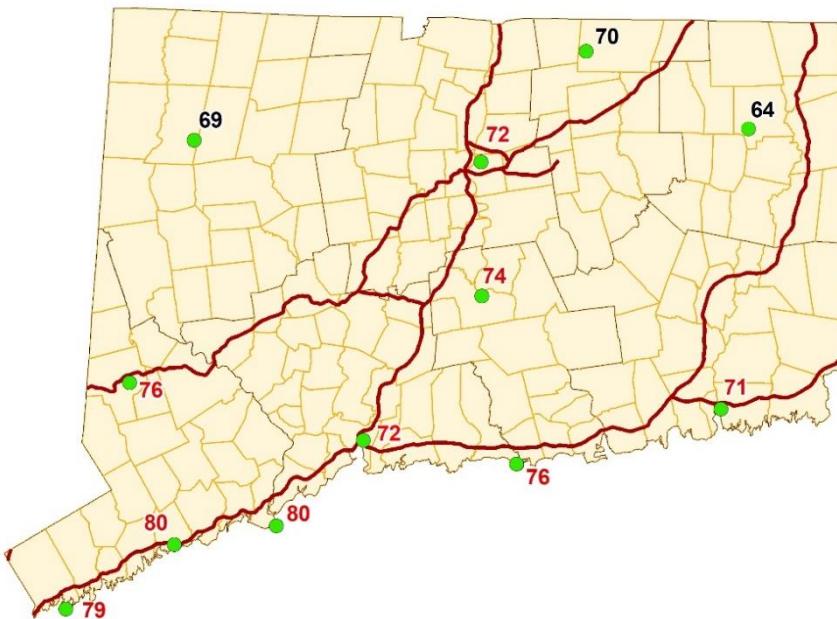
² [40 CFR 50.18 -- National primary ambient air quality standards for PM_{2.5}.](https://www.epa.gov/national-primary-ambient-air-quality-standards-pm25)

³ [Air Quality Design Values | US EPA](https://www.epa.gov/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 (2024)

Preliminary 2024 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 preliminary design values presented below will be reconciled with EPA's reported 2024 design values before this Plan is finalized.

Site	Design Value (ppb)
Abington	64
Cornwall	69
Danbury	76
East Hartford	72
Greenwich	79
Groton	71
Madison	76
Middletown	74
New Haven	72
Stafford	70
Stratford	80
Westport	80
NAAQS	70



⁴ [40 CFR 50.15 -- National primary and secondary ambient air quality standards for ozone.](https://www.epa.gov/ozone-narrative)

CO, SO₂, NO₂, and PM₁₀ NAAQS Comparisons (2024)

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 2024 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	1.3
NAAQS	35	9

*Design values represent the higher of 2023 and 2024 2nd high values, rounded to the tenths place.

SO₂ NAAQS Comparison

Site	1-Hr Design Value (ppb)
Bridgeport	4
Cornwall	2
New Haven	2
NAAQS	75

NO₂ NAAQS Comparison

Site	1-Hr Design Value (ppb)	Annual Design Value (ppb)
East Hartford	36	8
Hartford	43	13
New Haven	46	12
Westport	42	8
NAAQS	100	53

PM₁₀ NAAQS Comparison

Site	Daily "Design Value"*($\mu\text{g}/\text{m}^3$ STP)	Average Estimated No. of Exceedances
Bridgeport	91	0.3
East Hartford	63	0
Hartford	65	0
New Haven	29	0
NAAQS	150	1.0

* Daily "design values" given are the fourth high daily concentrations over three years (2022-2024), 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 2025-2026.

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 developed and applied a data

⁵ 40 CFR 58 Appendix A 3.2.3

⁶ Ibid.

correction algorithm that was designed to give the data similar alignment to FRM data.⁷ In accordance with EPA policy, and with DEEP concurrence, the corrected data was used to compute the preliminary PM_{2.5} design values shown in this Plan. Unadjusted continuous data from DEEP Teledyne T640x are available in AQS delineated by method code 238.

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 micrograms per cubic meter.⁸ Because the PM_{2.5} levels in the Worcester, MA-CT core-based statistical area (CBSA), which includes Windham County, CT, area are within 15 percent of the new annual standard, this area is required to deploy an additional PM_{2.5} monitor⁹. The Massachusetts Department of Environmental Protection has agreed to deploy and operate the additional PM_{2.5} 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		

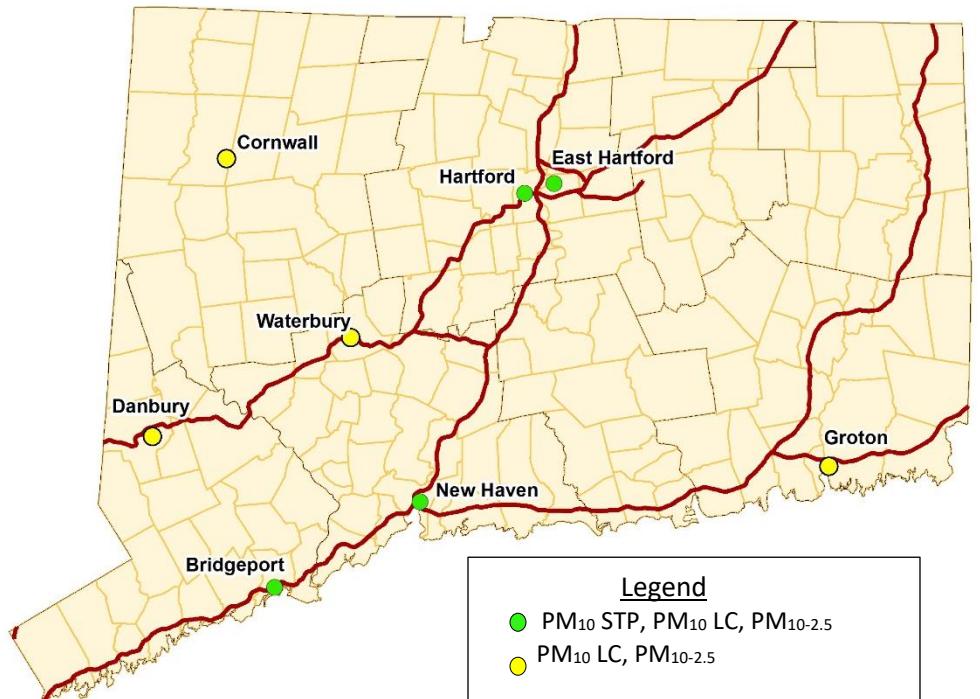
⁷ [89 FR 42874](#)

⁸ [78 FR 3086](#)

⁹ 40 CFR 58 Appendix D 4.7

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 conditions (LC) and standard temperature and pressure (STP) conditions) 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 approval to discontinue reporting of PM₁₀ at STP 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 LC and PM_{10-2.5} for all current PM₁₀ monitors in the network.

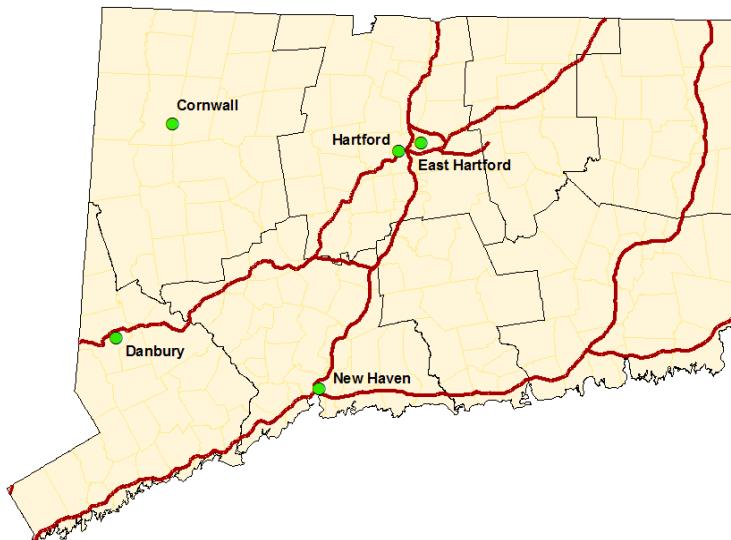
The sites that have retained regulatory PM₁₀ STP reporting include New Haven Criscuolo Park (FRM, primary and collocated), Bridgeport Roosevelt School (FEM), Hartford Huntley Place (FEM) and East Hartford McAuliffe Park (FEM).

No changes are planned for the PM₁₀/PM_{10-2.5} monitoring network during 2025-2026.

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.

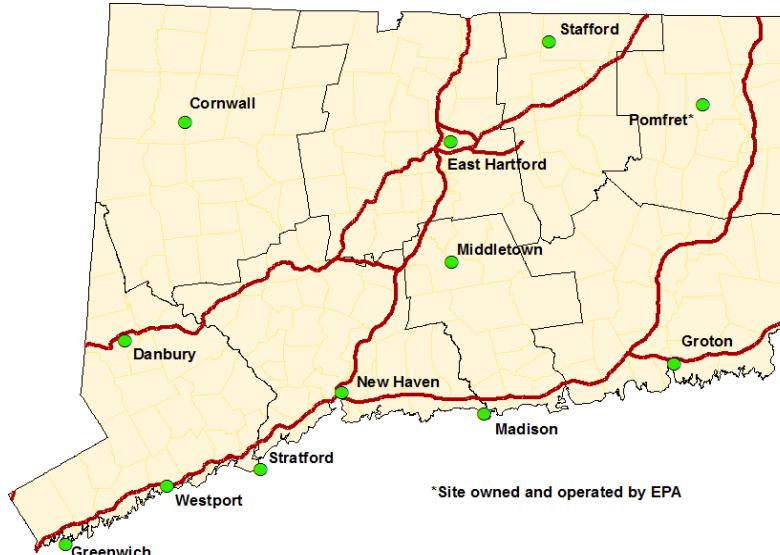
The Interagency Monitoring of Protected Visual Environments (IMPROVE) monitor is located at the Cornwall site and the Chemical Speciation Network (CSN) monitor is at the New Haven Criscuolo Park site. Both sites are operated on the standard EPA 1-in-3 day PM sample schedule and provide 24-hour integrated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



Black carbon (BC) and ultra-violet channel carbon (UVC), a wood smoke PM surrogate, are monitored at the Criscuolo 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 2025-2026.

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 Criscuolo 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 N400 UV photometric ozone analyzers (method EQOA-0992-087). In 2024 DEEP replaced the aging network of Teledyne-API Model T400 UV photometric ozone analyzers with Teledyne-API Model N400 UV photometric ozone analyzers. Additionally, all ozone analyzers are paired with Teledyne-API Model T700U trace-level dilution calibrators at multiple gaseous pollutant sites or Teledyne-API Model T703 photometric ozone calibrators at sites where ozone is

the only gas measured. These calibrators utilize internal photometers to ensure data quality control and to comply with the current EPA ozone transfer standard directive¹⁰. Additionally, for 2025 DEEP will commence conducting field calibrations using Teledyne-API Model T753U portable trace-level ozone calibrators with internal photometer feedback in alignment with the technical directive. DEEP has conducted ozone annual performance evaluations with photometer-equipped T753U calibrators since 2023.

Ozone Enhanced Monitoring

This section details Connecticut's Enhanced Monitoring Plan (EMP) for ozone 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,¹¹ required that any state with any area designated moderate nonattainment or above, or any state within the Ozone Transport Region (OTR), submit an EMP for ozone to the regional office of the Environmental Protection Agency (EPA) no later than October 1, 2019. DEEP submitted its plan in July 2018. Subsequently, the EMP has been incorporated into the annual air monitoring network plan.

Background

Recent ozone (O_3) 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 Standards (NAAQS). For the 2015 NAAQS, the entire state is designated as serious 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 outside of the greater New York and greater Connecticut nonattainment areas.¹²

DEEP has documented through numerous public comment submissions, communications and even litigation, that EPA¹³ 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.

¹⁰ [Transfer Standards for Calibration of Air Monitoring Analyzers for Ozone-Technical Assistance Document](#)

¹¹ FR 80 65292, October 26, 2015

¹² FR 82 1733, January 6, 2017

¹³ [Greater CT Ozone Attainment Demonstration for the 2008 NAAQS](#)

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 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.

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.¹⁴ 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

Contingent on the availability of federal funding, DEEP plans the following activities and resource commitments to meet the objectives for this EMP. In addition to meeting the requirements of the 40 CFR

¹⁴ 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

58, DEEP believes these actions will also assist ongoing efforts toward assessing and understanding ozone nonattainment 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).

Figure 2 shows the 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 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.

Minimum SLAMS ozone monitoring requirements are provided in Table D-2 of Appendix D, 40 CFR 58. 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 continue these 3 additional monitors as part of this EMP.



Figure 2: 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.

Formaldehyde Monitoring

DEEP is continuing to assess automated continuous 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.

NO/NO₂ and NO/NO_y Monitoring

DEEP monitors nitrogen dioxide (NO₂) at four sites in the monitoring network using Teledyne-API Model N500 (EQNA-0320-256), which are capable of directly measuring NO₂-NO_x-NO 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. In 2024 DEEP began replacing Teledyne-API Model T500U CAPS monitors (EQNA-0514-212) that had been approaching ten years of service with Teledyne-API Model N500 CAPS instruments measuring NO₂-NO_x-NO. Westport Sherwood Island was updated on 7/20/2024, Hartford Huntley Place was updated 8/1/2024, and New Haven Criscuolo Park on 2/5/2025. East Hartford McAuliffe Park is scheduled for update in Spring 2025. With each N500 installation, DEEP initiated concurrent collection of ambient NO and NO_x data alongside direct NO₂ measurements.



DEEP also operates two nitrogen oxide/total reactive oxides of nitrogen (NO/NO_y) TAPI model T200U/501Y 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 [peroxy acetyl nitrate (PAN), methyl peroxy acetyl nitrate (MPAN), and peroxy propionyl nitrate, (PPN)], and particulate nitrates.

At New Haven Criscuolo Park, DEEP proposes a transition from NO_y to NO_x monitoring beginning in 2025, coinciding with the replacement of the existing monitoring shed and use of a temporary monitoring station. Long-term data evaluations indicate a minimal contribution of NO_z at the location, which suggests a large majority of measured NO_y is comprised of NO and NO₂ with limited formation or transport of secondary nitrogen compounds. However, monitoring NO_y to account for this small fraction of reactive nitrogen oxides involves significant additional resources (equipment/parts, labor) as compared to NO_x monitoring, which does not involve operating a remote, tower-mounted converter with interconnected conditioned sample and calibration lines. With these considerations and given that the trace levels of NO_z detected at this urban site are not expected to be a considerable factor in Connecticut's ozone implementation planning, DEEP proposes transitioning to NO_x monitoring from NO_y during summer 2025 when the New Haven Criscuolo Park shed is being replaced. DEEP plans to continue monitor NO₂ directly during this time

to continue to meet regulatory requirements for NO₂ under the NAAQS. This proposed change would begin in the summer of 2025 when the NO_Y tower will be dismantled during a planned site upgrade that includes monitoring shelter replacement. See Appendix A for a review and analysis of the NO_Y data.

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 was previously 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 objectives.¹⁵ DEEP has been conducting bi-weekly manual gas-phase titration (GPT) QC checks since January 1, 2024, while 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. For 2025-2026 DEEP plans to continue to test and implement daily, automated GPT QC checks all NO₂ sites. DEEP will continue overlapping bi-weekly manual GPT QC checks until we can demonstrate significant and repeatable confidence in automated GPT QC procedures.

¹⁵ [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 Teledyne-API Model T300U analyzers (RFCA-1093-093). DEEP was previously utilizing TEI 48iQ-TL analyzers (RFCA-0981-054), which were replaced at Hartford and Cornwall sites in 2024, and in New Haven early in 2025 due to issues in performance. 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.¹⁶ 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 (EQA-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 (PWEI) and Regional Administrator-



¹⁶ [76 FR 54294; August 31, 2011](https://www.federalregister.gov/documents/2021/08/31/2021-19333/2021-19333)

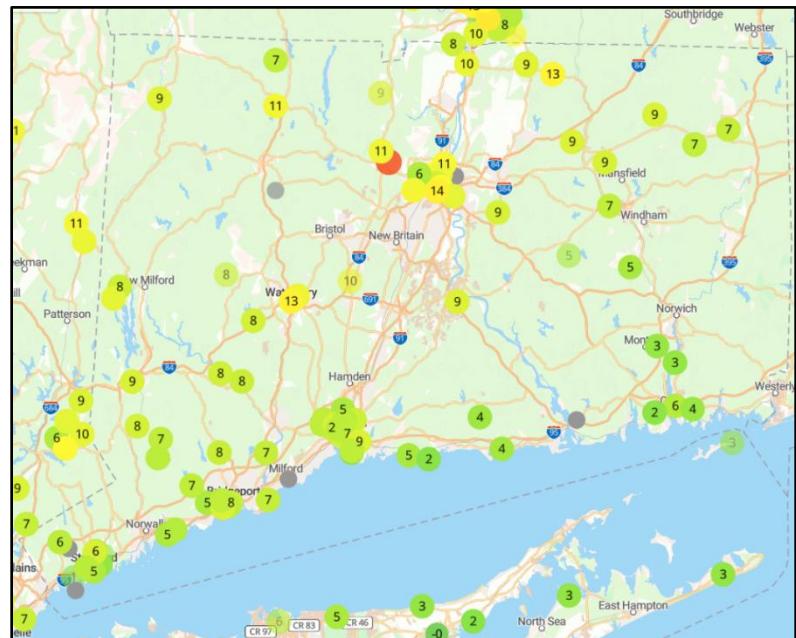
required monitoring.¹⁷ The Cornwall and New Haven sites satisfy the NCore SO₂ requirement. Although not covered by PWEI requirements, DEEP intends to continue SO₂ monitoring at Bridgeport Roosevelt School at this time, given that it is located in an area of relatively higher concentrations with vulnerable and sensitive populations.

¹⁷ [75 FR 35520; June 22, 2010](https://www.gpo.gov/fdsys/pkg/FR-2010-06-22/pdf/2010-14525.pdf)

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 support and project development aid. DEEP also seeks to build a greater understanding of air quality information at more spatially refined scales, with a focus on capacity building in local 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 public entities to aid community-based air monitoring initiatives. At this time, approximately 60 DEEP-owned PurpleAir sensors have been loaned to program 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. Additionally, DEEP deployed PurpleAir sensors in the proximity of the Hawthorne fire located in Berlin, CT, in Fall of 2024 to provide real-time air quality information to firefighters, emergency responders and nearby residents.



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. Preliminary sensor reports are available for use and for comment by air monitoring agencies and the public on the DEEP Air Monitoring GitHub Page ([CT-DEEP-Air-Monitoring repositories · GitHub](#)). DEEP hopes the findings from these collocation studies help contribute to collective understanding of air sensor performance and limitations and will continue engagement with other state air agencies and community groups for project feedback.

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 will continue to offer technical guidance and support and make 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 2025.



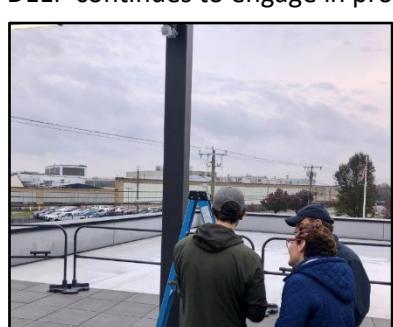
Above: PurpleAir sensor installed at East Hartford monitoring site

R sensors were received by the City of Stamford, with plans to install the sensors and continue public outreach into 2025.

DEEP continues participation 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 goals 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 2025 and onward.



Above Left: PurpleAir loan program community partner touchpoint and sensor installation

Above 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

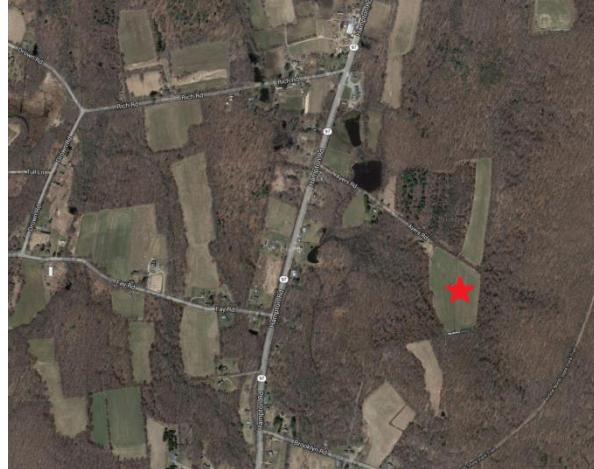
Year Established:

1993

Combined Statistical Area:

Boston-Worcester-

<https://goo.gl/maps/u9FJejp64t855AbAA>



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
											x												

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 2025-2026: This site is not under the operational control or purview of DEEP and is included in this Network Plan for informational purposes only.

Town – Site:
County:
Address:
AQS Site ID:
Spatial Scale:
Combined Statistical Area:

Bridgeport – Roosevelt School
Fairfield
680 Park Avenue
09-001-0010
Neighborhood
New York-Newark

Latitude: 41.170875°
Longitude: -73.194759°
Elevation: 7 m (23 ft)
Year Established: 1982
<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 (FEM, Continuous)	Lead-PM10	Lead-PM10 (Collocated)	PM Speciation (CSN)	PM Speciation (IMPROVE)	PM2.5 Carbon (BC/UVIC, Continuous)	Ozone	SO2	CO	Direct NO ₂	NO/NO ₂ /NOx	NO/NO _y	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation
1/6	X				X						X	X	CO		NO/NO ₂ /NOx			P	P	X			

X=Existing

P

= Planned in 2025/2026

T

= Proposed to terminate in 2025/2026

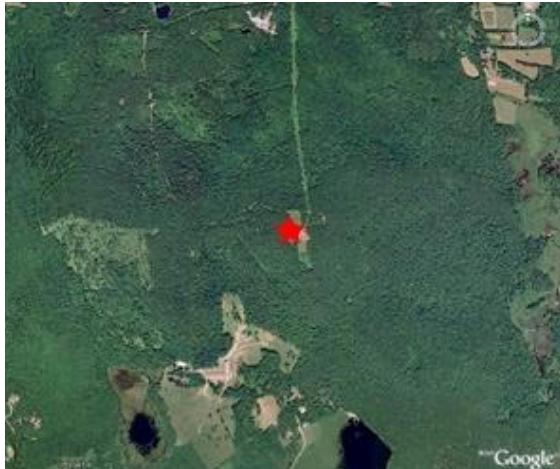
Site Description: The Roosevelt School site is a neighborhood-scale site located in southwestern Connecticut in the city of Bridgeport. This site is located 50 m to the north of I-95 and 200 m to the west of the I-95 and Route 8 interchange. This coastal site is located in a schoolyard and residential neighborhoods are present in every direction 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 Bridgeport Roosevelt School monitoring site objectives include collecting continuous FEM PM_{2.5} measurements for compliance purposes and for AQI and forecasting purposes. The PM_{2.5} FEM is designated as the primary sampler for NAAQS. Monitoring of SO₂ continues following decommissioning of a previous significant source, the nearby Bridgeport Harbors Station coal-burning power plant, to assess the potential impacts of the shutdown.

Planned changes for 2025-2026: Addition of wind speed and wind direction monitoring at Bridgeport Roosevelt School if feasible

Town – Site: **Cornwall – Mo**
County: **Litchfield**
Address: **Mohawk Mountai**
AQS Site ID: **09-005-0005**
Spatial Scale: **Regional**
Combined Statistical Area: **New York-Newark**

Mountain
Latitude: 41.821417°
Longitude: -73.297333°
Elevation: 505 m (1656 ft)
Year Established: 1988
<https://goo.gl/maps/pWXdPsYZTvUt9kjQ8>

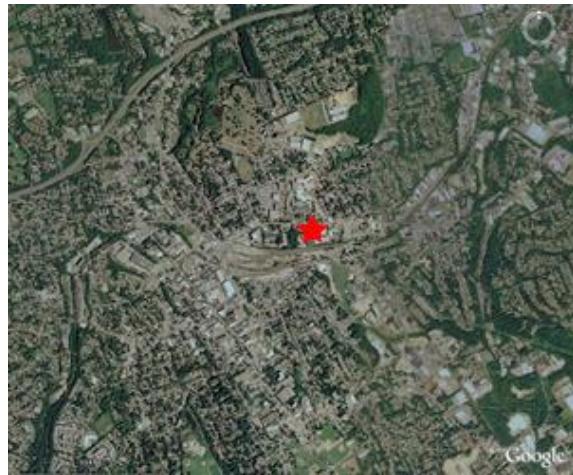


Site Description: The Mohawk Mountain site is a rural regional-scale site located in northwestern Connecticut in the town of Cornwall. The site is located at the summit of Mohawk Mountain with an elevation of 505 m (1656 ft), and is approximately 17 km to the east of the New York border and 25 km to the south of the Massachusetts border. This site meets all siting requirements and criteria and has been approved by EPA as an NCore site.

Monitoring Objectives: The primary monitoring objectives are to meet NCore requirements for O₃, CO, SO₂, NO, NO_y, PM_{2.5} FRM, PM₁₀ FRM, PM_{10-2.5} FRM, PM_{2.5} speciation, continuous PM_{2.5} and surface meteorology. PM_{2.5} chemical speciation measurements are collected through the IMPROVE network as 1-in-3 day 24-hour samples and by continuous analyzers for fine particulate carbon parameters (BC/UVC). EPA operates a Pandora analyzer for total column NO₂ and HCHO.

Planned changes for 2025-2026: None.

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 _x /NO	NO/NO _y	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 2025/2026

T

= Proposed to terminate in 2025/2026

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 2025-2026: None

Town – Site:

East Hartford – McAuliffe Park

County:

Hartford

Latitude:

41.784705°

Address:

McAuliffe Park

Longitude:

-72.631518°

AQS Site ID:

09-003-1003

Elevation:

15 m (50 ft)

Spatial Scale:

Neighborhood

Year Established:

1981

Combined Statistical Area:

Hartford-East Hartford

<https://goo.gl/maps/1JZNXcdmVkrMDy2cA>



PM2.5 (FRM)	PM2.5 (FRM, Collocated)	PM2.5 (Continuous - FEM)	PM10 (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/UVIC, Continuous)	Ozone	SO2	CO	Direct NO ₂	NO/NO _x	NO/NO _y	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation	
X				X					X	X				X	P				X	X	X	X	X	

X=Existing

P

= Planned in 2025/2026

T

= Proposed to terminate in 2025/2026

Site Description: The McAuliffe Park site is neighborhood-scale site located in central Connecticut in the town of East Hartford. The site is located approximately 120 m to the east of Route 5, 2.0 km to the east of I-91 and 2.5 km to the south of I-291. This site is located 3.7 km to the northeast of the city of Hartford. Residential neighborhoods are located in all directions of this 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 East Hartford McAuliffe Park monitoring site objectives include collecting PM_{2.5} and PM₁₀/PM_{10-2.5} measurements for NAAQS compliance and AQI forecasting purposes using continuous FEM samplers. Ozone is measured at the McAuliffe Park site for compliance assessment and AQI and forecast reporting. The NO₂ monitor meets the requirement for area-wide monitoring in the Hartford-West Hartford-East Hartford CBSA.

Planned changes for 2025-2026: None.

Greenwich – Point Park			
Town – Site:			
County:	Fairfield	Latitude:	41.004673°
Address:	Tod's Driftway	Longitude:	-73.585136°
AQS Site ID:	09-001-0017	Elevation:	3 m (10 ft)
Spatial Scale:	Urban	Year Established:	1978
Combined Statistical Area:	New York-Newark	https://goo.gl/maps/i8UZ5dMPad6Ao9wm6	



PM2.5 (FRM)	PM2.5 (FRM, Collocated)	PM2.5 (Continuous - FEM)	PM10/PM-Coarse (FRM)	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 /NOx	NO/NO _y	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation
									X								X	X	X			

X=Existing

P

= Planned in 2025/2026

T

= Proposed to terminate in 2025/2026

Site Description: The Greenwich Point Park site is an urban-scale site located in southwestern Connecticut on the Long Island Sound in the town of Greenwich. This is a coastal site located approximately 3.0 km to the southeast and 5.0 km to the northeast of the New York 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 Greenwich Point Park monitoring site objectives include collecting ozone measurements for compliance assessment and AQI and forecast reporting.

Planned changes for 2025-2026: None.

Connecticut 2025 Annual Air Monitoring Network Plan

Town – Site:

Groton – Fort Griswold

County:

New London

Latitude:

41.35348°

Address:

141 Smith Street

Longitude:

-72.07886°

AQS Site ID:

09-011-0124

Elevation:

37 m (120 ft)

Spatial Scale:

Neighborhood

Year Established:

2007

Combined Statistical Area:

Hartford-East Hartford

<https://goo.gl/maps/6JqNN2troZpz8pQS7>



PM2.5 (FRM)	PM2.5 (FRM, Collocated)	PM2.5 (Continuous - FEM)	PM10/PM-Coarse (FRM)	PM10/PM-Coarse (FEM, Collocated)	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 _x	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation
		X		X						X							P	P	X			

X=Existing P = Planned in 2025/2026 T = Proposed to terminate in 2025/2026

Site Description: The Fort Griswold site is a neighborhood-scale site located in southeastern Connecticut in the town of Groton. This site is located approximately 1.1 km to the south of I-95 and 0.5 km to the east of the New London Harbor. Residential neighborhoods are located in all directions of this 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 Groton Fort Griswold monitoring site objectives include monitoring of the two key pollutants, ozone and PM_{2.5}, for the southeastern part of Connecticut. Ozone and PM_{2.5} are measured at the Fort Griswold site for compliance assessment and AQI and forecast reporting.

Planned changes for 2025-2026: Addition of wind speed and wind direction if feasible.

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 NO ₂	NO/NO _x	NO/NO _y	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation
1/6		X		X					X			X	X	P			X	X	X	X	X	X	

X=Existing

P = Planned in 2025/2026

T = Proposed to terminate in 2025/2026

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.

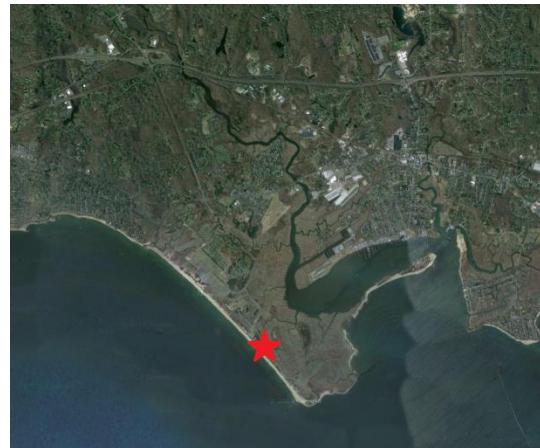
Monitoring Objectives: The primary monitoring objectives for the site are to capture NO₂ concentrations near heavily trafficked roads, to assess area-wide NO₂ concentrations, and to assess NO₂ concentrations for vulnerable and susceptible populations in adjacent neighborhoods. The data will also be used 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 2025-2026: Addition of NO/NO_x.

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	SO2	CO	Direct NO ₂	NO/NO _y	Total Column NO ₂ /HCHO	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation
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X=Existing

P

= Planned in 2025/2026

T

= Proposed to terminate in 2025/2026

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.

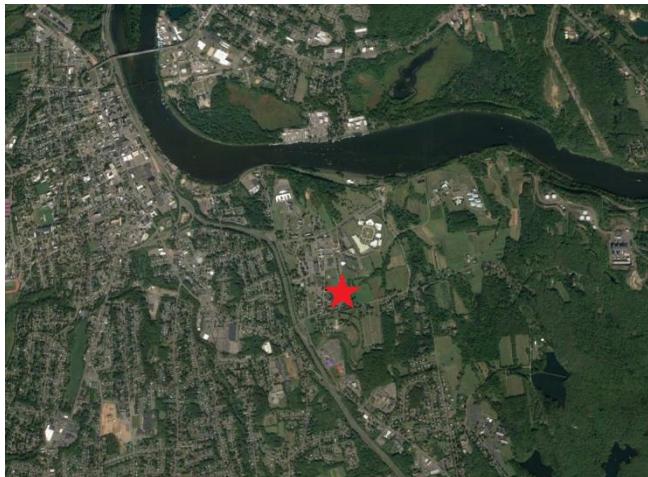
Monitoring Objectives: The Madison Hammonasset State Park monitoring site objective is to collect ozone measurements for compliance assessment and AQI forecast reporting. A second objective is to collect data in support of the Enhanced Monitoring Plan (page 12 of this Plan) for research on regional ozone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

Planned changes for 2025-2026: None.

Town – Site:
County:
Address:
AQS Site ID:
Spatial Scale:
Combined Statistical Area:

Middletown – Connecticut Valley Hospital

Middlesex	Latitude:	41.549863°
CVH-near Battell Hall	Longitude:	-72.625971°
09-007-9007	Elevation:	58 m (190 ft)
Neighborhood	Year Established:	1980
Hartford-East Hartford	https://goo.gl/maps/FCeLNH5T51dnU4jb6	



Site Description: The Middletown Connecticut Valley Hospital (CVH) site is an urban-scale ozone site located in central Connecticut. This site is located approximately 0.2 km to the east of Route 9. Residential neighborhoods are located to the west, north and south of this site. This site meets all siting requirements. DEEP relocated the site within the CVH campus to a shed near Battelle Hall in 2017.

Monitoring Objectives: The CVH monitoring site objective is to collect ozone measurements for compliance assessment and AQI forecast reporting.

Planned changes for 2025-2026: None.

Town – Site:

New Haven – Criscuolo Park

County:

New Haven

Latitude:

41.30117°

Address:

1 James Street

Longitude:

-72.902880°

AQS Site ID:

09-009-0027

Elevation:

3 m (10 ft)

Spatial Scale:

Neighborhood

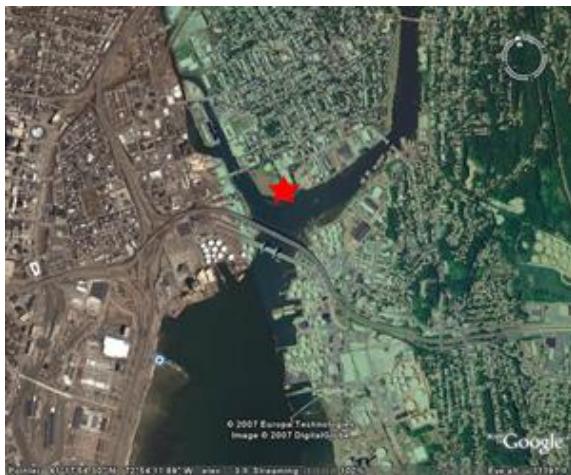
Year Established:

2004

Combined Statistical Area:

New York-Newark

<https://goo.gl/maps/T2MUegoVrqC9Virj7>



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/UVIC, Continuous)	Ozone	SO2	CO	Direct NO ₂	NO/NO _x	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	P	T	X	X	X	X	X	X	X	

X=Existing P = Planned in 2025/2026 T = Proposed to terminate in 2025/2026

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/UVIC).

Planned changes for 2025-2026: The existing station monitoring shed will be replaced 2025 into 2026. A temporary monitoring station will be deployed early in 2025 to ensure continuous sampling. DEEP proposes a change from NO_y to NO_x monitoring coinciding with station upgrades.

Connecticut 2025 Annual Air Monitoring Network Plan

Town – Site:

Stafford – Shenipsit State Forest

County:

Tolland

Latitude:

41.97569°

Address:

172 Chestnut Hill

Longitude:

-72.386741°

AQS Site ID:

09-013-1001

Elevation:

265 m (869 ft)

Spatial Scale:

Regional

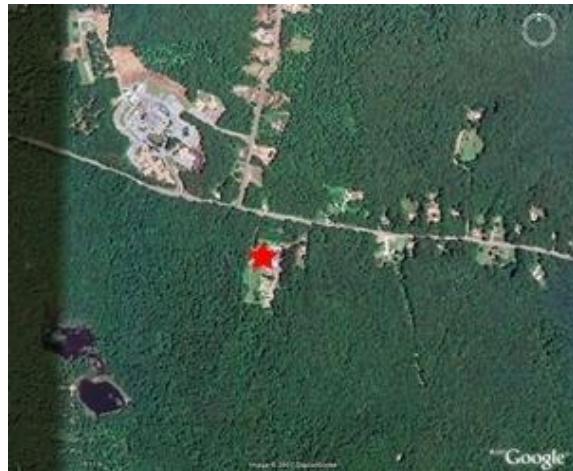
Year Established:

1980

Combined Statistical Area:

Hartford-East Hartford

<https://goo.gl/maps/Nq6NJThexh3N54FJ8>



PM2.5 (FRM)	PM2.5 (FRM, Collocated)	PM2.5 (Continuous - FEM)	PM10/PM-Coarse (FRM)	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 /NOx	NO/NO _y	Traffic Count	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation
									X								X	X	X			

X=Existing

P

= Planned in 2025/2026

T

= Proposed to terminate in 2025/2026

Site Description: The Shenipsit State Forest site is a regional-scale site that is located in northern Connecticut in the town of Stafford. The site is approximately 100 m to the south of Route 190, 17 km to the east of I-91 and 12 km to the northwest of I-84. This site is located 34 km to the northeast of the city of Hartford. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

Monitoring Objectives: The Stafford Shenipsit State Forest monitoring site objective is to collect ozone measurements for compliance assessment and AQI forecasting purposes.

Planned changes for 2025-2026: None.

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

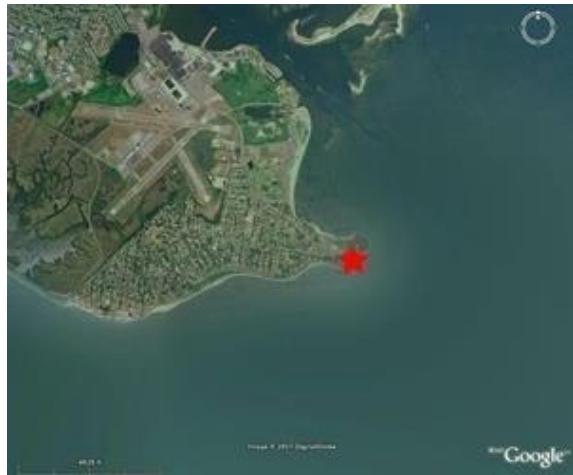
Year Established:

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 /NOx	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 2025/2026

T

= Proposed to terminate in 2025/2026

Site Description: The Stratford Lighthouse site is a regional-scale site located in southwestern Connecticut in the town of Stratford and is owned by the federal government. 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 2025-2026: No planned changes; however, this property is currently for sale, therefore DEEP is monitoring the situation and pending the sale, will assess whether the monitoring site can remain at this location or potentially explore establishing a new monitoring site at an alternative location.

Connecticut 2025 Annual Air Monitoring Network Plan

Town – Site:
County:
Address:
AQS Site ID:
Spatial Scale:
Combined Statistical Area:

Waterbury – Bank Street

New Haven Latitude: 41.550465°
440 Bank Street Longitude: -73.043650°
09-009-2123 Elevation: 80 m (269 ft)
Neighborhood Year Established: 1975
<https://goo.gl/maps/GVEjvCjQBviEVBA88>



PM2.5 (FRM)	PM2.5 (FRM, collocated)	PM2.5 (Continuous - FEM)	PM10 (FRM)	PM10/PM-Coarse (FRM, Collocated)	PM10/PM-Coarse (FEM, Collocated)	PM10/PM10 (Collocated)	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
X				X															X	X	X			

X=Existing

P

= Planned in 2025/2026

T

= Proposed to terminate in 2025/2026

<p>Site Description: The Waterbury site is a neighborhood-scale site located in western Connecticut at Meadow Street and Bank Street in the Naugatuck River Valley. This site is approximately 170 m to the south of I-84, 300 m to the east of Route 8 and 0.75 km to the east of the I-84 and Route 8 interchange. Residential neighborhoods are located in all directions of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region 1.</p>
<p>Monitoring Objectives: The Waterbury Bank Street site monitoring objectives include collecting PM_{2.5}/PM₁₀ FEM measurements for compliance purposes and AQI forecast reporting.</p>
<p>Planned changes for 2025-2026: None</p>

Town – Site:

County:

Address:

AQS Site ID:

Spatial Scale:

Combined Statistical Area:

Westport – Sherwood Island State Park

Fairfield

Sherwood Island Lane

09-001-9003

Regional

New York-Newark

Latitude:

41.118240°

Longitude:

-73.336751°

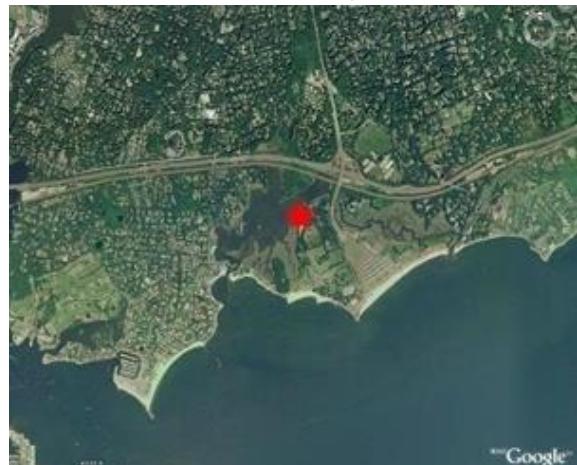
Elevation:

3 m (10 ft)

Year Established:

1996

<https://goo.gl/maps/9Ux2WXExzNssLSJT9>



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	NO ₂	NO/NO _x	Total Column NO ₂ /HCOC	Wind Speed	Wind Direction	Temperature	Dew Point / Rel. Humidity	Barometric Pressure	Solar Radiation	Mixing Height
										X			X	P	NO/NO _x	X	X	X	X				X

X=Existing

P

= Planned in 2025/2026

T

= Proposed to terminate in 2025/2026

Site Description: The Westport Sherwood Island State Park site is a regional-scale site located in southwestern Connecticut. This is a coastal site that is approximately 0.5 km to the south of I-95 on the Long Island Sound. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region 1.

Monitoring Objectives: Ozone is measured at the Westport site for compliance assessment and AQI forecast reporting. Surface level NO₂ will be monitored as part of the Enhanced Monitoring Plan. A total column NO₂ (and potentially other trace gas) Pandora analyzer, operated by EPA, was installed in May 2018 to support studies of ozone fate and transport in the Long Island Sound/Coastal Connecticut region.

Planned changes for 2025-2026: Addition of NO/NO_x.

Appendix A: Analysis of Total Reactive Oxides of Nitrogen (NO_Y) at New Haven Criscuolo Park

Review and Analysis of NO_Z Component of NO_Y at Criscuolo Park, New Haven

DEEP reviewed and analyzed data collected from DEEP's NO/NO_Y monitor located at the Criscuolo Park, New Haven, monitoring site (AQS ID 09-009-0027). The objective was to characterize and evaluate the significance of the NO_Z data relative to the major components of NO_Y, which are NO and NO₂. DEEP is proposing replacing the NO_Y monitor at the site with an NO/NO₂/NO_X monitor and is therefore requesting a waiver to allow this replacement.

Background

CFR monitoring requirements for National Core multipollutant (NCore) sites include nitric oxide (NO) and total reactive oxides of nitrogen (NO_Y)¹⁸. Additionally, 40 CFR 58 Appendix D 3.(b)(1) provides for the possibility of a waiver granted by the EPA regional administrator for substitution of monitoring of NO/NO_Y with NO/NO_X. NO_X is defined as NO + NO₂, while NO_Y is defined as NO + NO₂ + NO_Z, where NO_Z represents oxides of nitrogen other than NO and NO₂. These may include nitrous acids, organic nitrates, and particulate nitrates. These NO_Z compounds are generally highly reactive and short-lived.

For NO/NO_Y monitoring, DEEP employs Teledyne API (TAPI) T200U/501Y NO/NO_Y analyzers, which operate on the analytical principle of chemiluminescence to determine concentrations of NO gas. The analyzers utilize a thermal converter to reduce NO₂ and NO_Z species to NO so that the NO_Y concentration can be determined. A switching valve alternates the sample path between passing through the converter and bypassing the converter to assess concentrations of both NO and NO_Y simultaneously. As the NO_Z species of NO_Y are known to readily react with or be adsorbed by surfaces, the converter is mounted on a 10 meter tower, with a short inlet probe to minimize loss of NO_Z.

Approach

In addition to the NO/NO_Y monitor at New Haven, DEEP operates a direct NO₂ monitor, which has been a TAPI model T500U, recently replaced by a TAPI N500. Both of these models employ the cavity attenuated phase shift (CAPS) method that can measure NO₂ without interference of other oxides of nitrogen. The N500 model is also able to determine NO_X, in addition to NO₂, and therefore NO as well, by oxidizing NO to NO₂ using an internal ozone source. Given the availability of the NO/NO_Y and true NO₂ data, NO_Z concentrations were determined by subtracting NO_X from NO_Y. A 3-year period of relatively complete data, 2022 – 2024, was analyzed to characterize monitored concentration levels and potential correlations with other monitored parameters.

Results

Summary statistics of the estimated NO values for the period 1/1/2022 through 12/31/2024, based on NO_Y – (NO₂ + NO), is given in Table 1. Concentrations of NO_Z ranged between -10 ppb to 43 ppb, with an average value of 0.77 ppb and a median value of 0.4 ppb. The standard deviation is 1.84 ppb, showing that the NO_Z values are generally fairly tightly distributed slightly above zero, although there are a small number of high positive and negative outliers. Given that a significant fraction of the values (30 percent) is negative, it seems likely that the combined error of the two methods (T500U for NO₂, N200U/501Y for NO/NO_Y) is considerable relative to the magnitude of the NO_Z values.

¹⁸ [EPA: Fact Sheet for NO_Y Monitoring](#)

Table 4: Summary Statistics for NO_Z, 2022-2024

Count	18,197
Data Completeness	69%
Average (ppb)	0.78
Median (ppb)	0.4
Maximum (ppb)	43.4
Minimum (ppb)	-10.6
Standard Deviation (ppb)	1.84
5 th Percentile (ppb)	-1.2
95 th Percentile (ppb)	4

A frequency histogram of NO_Z concentrations over this period is shown in Figure 3. As indicated by the 5th and 95th percentiles, 90 percent of the NO_Z values are between -1.2 ppb and 4 ppb.

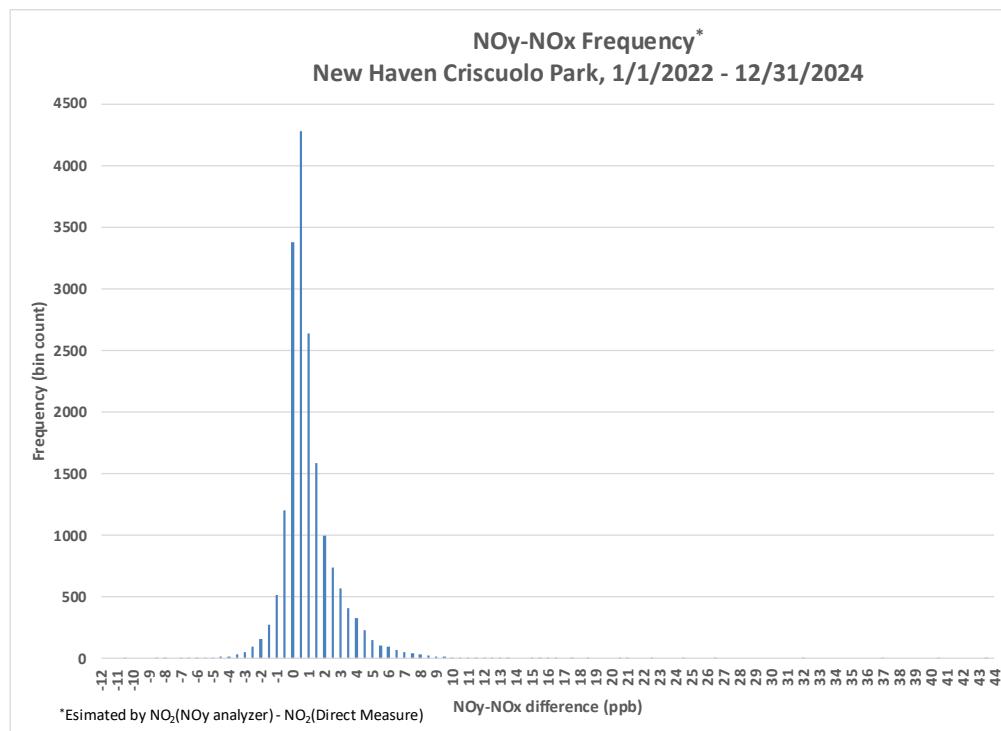


Figure 3: Frequency Histogram of NO_Z Data, 2022 – 2024

An analysis of binned NO_Z concentration value frequencies over 8-point wind direction sectors does not show a consistent pattern over the range of values (Figure 4). Values between 0 and 5 ppb were favored for the north and south directions, while values in the 5 to 10 ppb range had higher frequencies in the south, northeast and southwest directions. For the 10 to 20 ppb range, wind directions to the southeast, south and southwest had the highest frequency, which is the general direction of bulk petroleum storage, commercial marine activity at New Haven harbor, and Interstate 95.

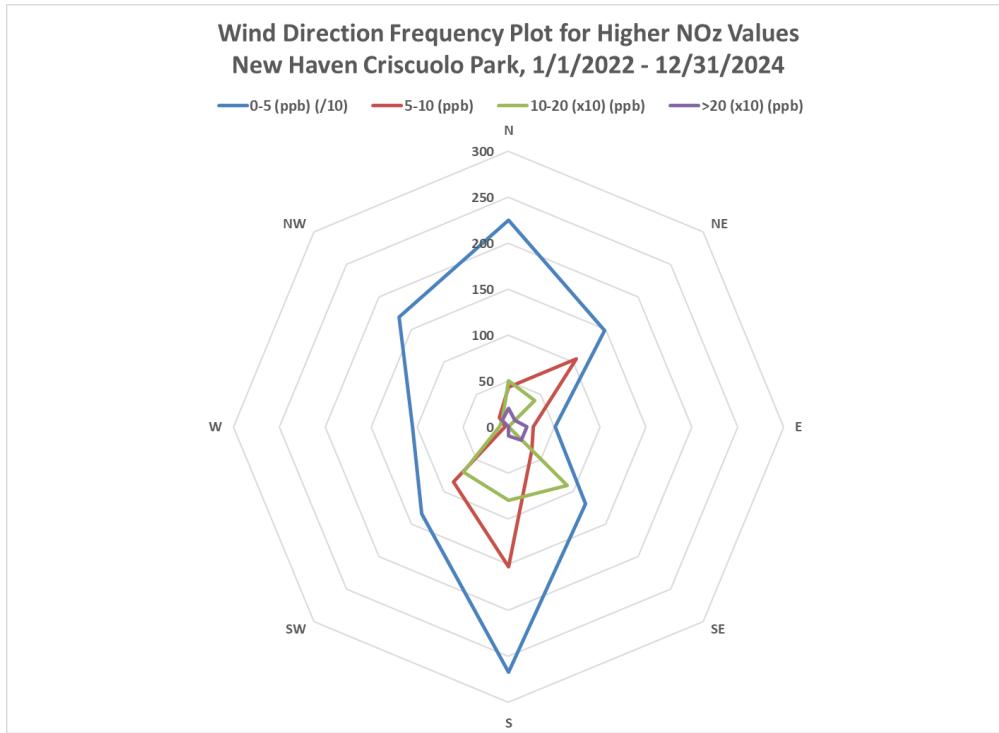


Figure 4: NO_z Wind Rose Plot, 2022-2024

Hourly NO_z data was used to evaluate correlations with several other parameters also monitored at Criscuolo Park (temperature, ozone, carbon monoxide, sulfur dioxide, fine particulate, aethalometer UVC). None of the comparisons showed significant correlations, the highest being UVC, with a Pearson correlation coefficient (R^2) of 0.12. A summary of the correlation data is given in Table 2.

In addition to the correlations of hourly data described above, a comparison of daily maximum 8-hour ozone with daily maximum 1-hour NO_z was done to investigate the possible connection of higher levels of NO_z with potential O₃ production. To focus on higher ozone event days, data for days where the temperature did not exceed 27 °C (about 80 °F) were not included. The results indicated a slightly positive, but weak correlation (Table A-2 and Figure 5).

Table 5: Summary of Linear Regression Correlation Equations

Parameters (units)	Slope	Intercept	R ²
CO (ppm) vs. NO _z (ppb)	3.7468	-0.3085	0.0914
Temp (deg. C) vs. NO _z (ppb)	0.0159	0.5738	0.0052
O ₃ (ppb) vs. NO _z (ppb)	0.0058	0.9311	0.002
SO ₂ (ppb) vs. NO _z (ppb)	-0.1028	0.7841	0.0002
PM _{2.5} (ug/m ³) vs. NO _z (ppb)	0.0675	0.2652	0.0826
Aethalometer UVC (ug/m ³) vs. NO _z (ppb)	0.6601	0.2138	0.1214
Daily max 8-hr O ₃ (ppb) vs. daily max 1-hr NO _z (ppb)	0.1937	14.976	0.0452

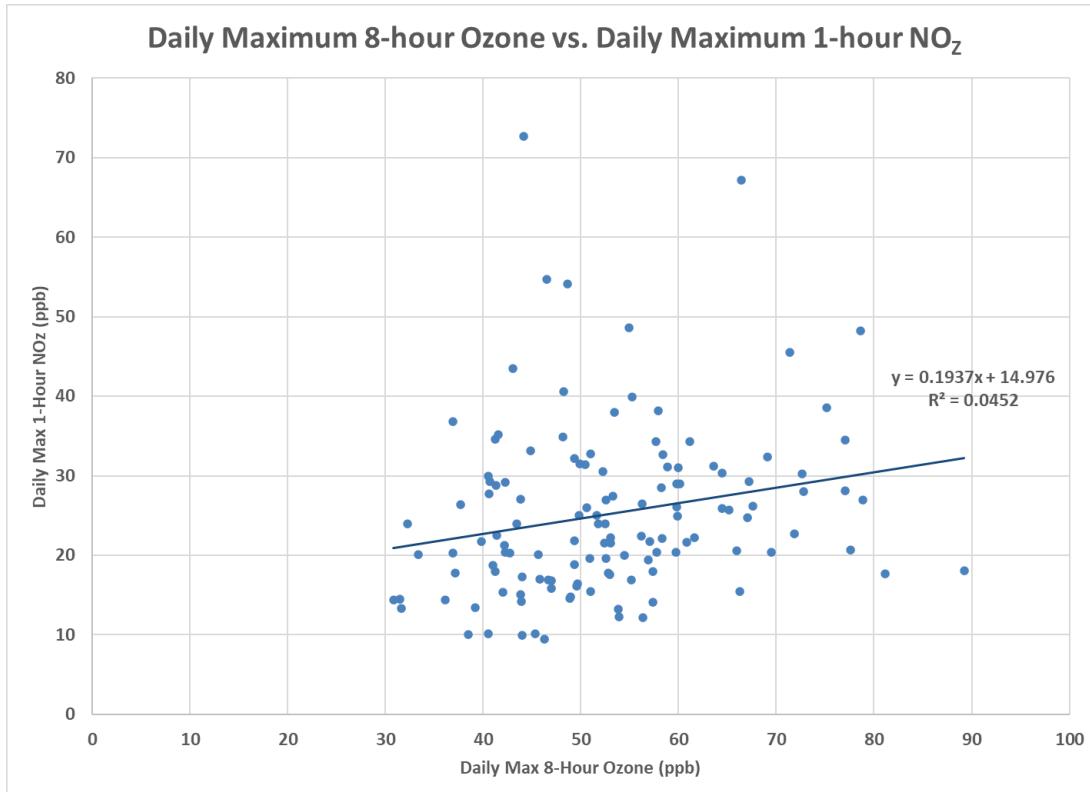


Figure 5: Correlation Plot of Daily Maximum 8-Hour O₃ vs Daily Maximum 1-hour NO_z

*Data filtered to include only days where the 1-hour maximum temperature exceeded 27 °C.

Summary

A review of New Haven, Criscuolo Park monitoring station NO_z data for the period January 1, 2022, through December 31, 2024, indicates that values are generally low, with an average 0.78 ppb, and with 95 percent of values below 4 ppb. No significant relationships with other monitored pollutants were identified, nor were the presence of any large sources in the vicinity indicated. Higher values of NO_z were observed on warmer days (>27 °C) when ozone tended to be higher. Given that: (1) minimal useful information is collected beyond what is obtained by NO/NO₂/NO_x monitoring (2) NO/NO_y monitoring is more complicated and labor intensive and has substantial maintenance costs (requiring frequent converter replacements); and that (3) NO/NO_y monitoring has lower data quality and completeness compared to more conventional analyzers, DEEP is requesting that NO/NO₂/NO_x monitoring be utilized going forward to replace NO/NO_y monitoring at the New Haven Criscuolo Park site.

B Appendix B: Network Plan Public Comments and Responses

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