



# Connecticut Department of Energy and Environmental Protection



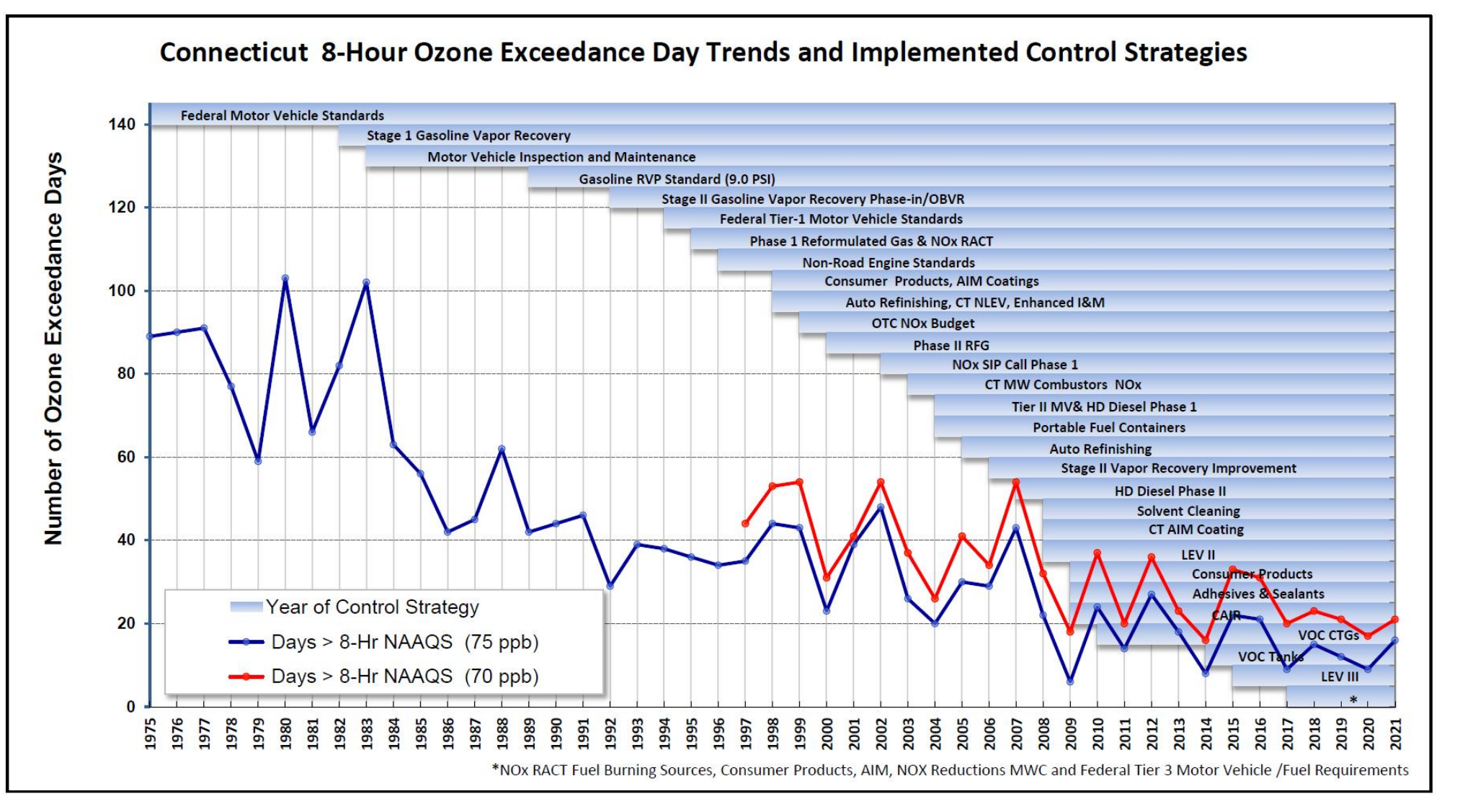
2021 Ozone Season Review and Looking Ahead for 2022

Amanda Fritz

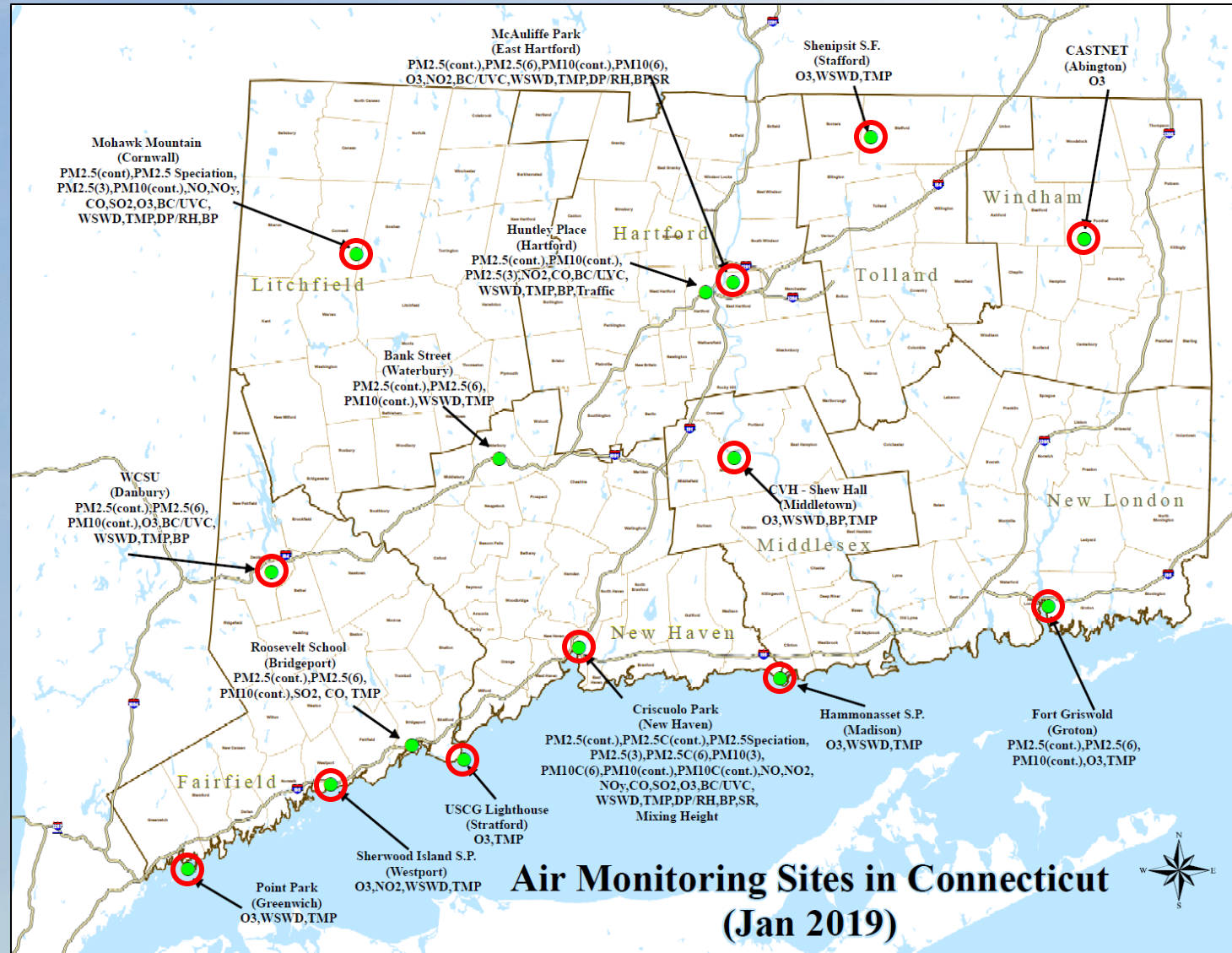
# 2021 Ozone Season: 21 Exceedance Days

Exceedance days  
in recent years  
(70 ppb):

- 2017 – 20 days
- 2018 – 23 days
- 2019 – 21 days
- 2020 – 17 days
- 2021 – 21 days



# Connecticut Ozone Monitoring Sites



# Ozone Exceedance Days in Connecticut 2021

Month	May		June								July				August					Exceedances		
Site	21	26	5	6	7	18	19	28	29	30	6	7	16	27	6	7	11	12	13		26	27
Abington	48	58	82	68	62	70	55	59	67	68	62	49	56	57	54	56	48	57	53	55	47	1
Cornwall	76	70	61	63	57	65	50	46	49	48	54	49	45	53	67	57	51	48	51	69	45	1
Danbury	64	75	63	64	71	67	54	56	66	54	54	60	55	70	72	65	69	52	59	74	45	4
East Hartford	58	66	62	61	74	65	51	56	56	57	55	50	52	59	63	60	69	57	55	68	55	1
Greenwich	49	59	71	82	72	64	64	55	77	78	70	77	76	72	78	63	63	62	76	94	53	11
Groton	38	40	79	74	43	67	72	41	69	68	54	68	57	58	66	75	44	68	76	76	64	6
Madison	43	47	83	77	51	69	81	52	69	79	69	89	70	60	77	83	59	78	73	85	84	11
Middletown	58	60	86	71	68	76	61	72	74	78	77	69	76	65	71	70	66	79	66	79	63	11
New Haven	44	40	76	47	49	50	61	56	62	71	66	81	61	57	67	78	57	60	63	67	52	4
Stafford	67	71	62	31	66	65	55	57	47	54	55	47	54	56	62	58	69	56	59	68	43	1
Stratford	47	50	86	78	57	66	73	57	72	80	71	91	87	58	80	74	64	73	80	87	65	13
Westport	49	56	80	86	66	67	66	62	80	85	78	89	87	64	80	68	71	73	82	99	63	12
Site Exceedances	1	2	8	6	3	1	3	1	4	6	3	5	4	1	6	4	1	4	5	7	1	76
# days > Federal Standard	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

**Good** (0-54 ppb)  
**Moderate** (55-70 ppb)  
**Unhealthy for Sensitive Groups** (71-85 ppb)  
**Unhealthy** (86-105 ppb)  
**Very Unhealthy** (>106 ppb)

There were five ozone exceedance days reaching 'code red' spread throughout June, July, and August.



# Ozone Forecasts for Connecticut 2021

Actual Exceedance Days = 21  
Forecast Exceedance Days = 18

Month	Actual Dates	Forecast Dates
May	21 & 26	26
June	5, 6, 7, 18, 19, 28, 29, & 30	5, 6, 7*, 20, 29, & 30
July	6, 7, 16, & 27	6, 7, 15, 16, & 20*
August	6, 7, 11, 12, 13, 26, & 27	6, 7, 11, 12, 13, & 26
September	None	None
<b>Total</b>	<b>21</b>	<b>18</b>

- Of the 21 exceedance days,
1. Forecasted USG for 15 days that exceeded the standard
  2. Forecasted USG for 3 days that did not exceed the standard
  3. Did not forecast USG for 6 days that exceeded the standard

All of the over-predicted days had at least one site that was very close to exceeding the standard, but only reached high moderates.

\* Means we originally did not forecast a USG event, but we did upgrade the forecast to USG on those mornings.



# CT Ozone 2021 Design Values

Design value triggers for the NAAQS:

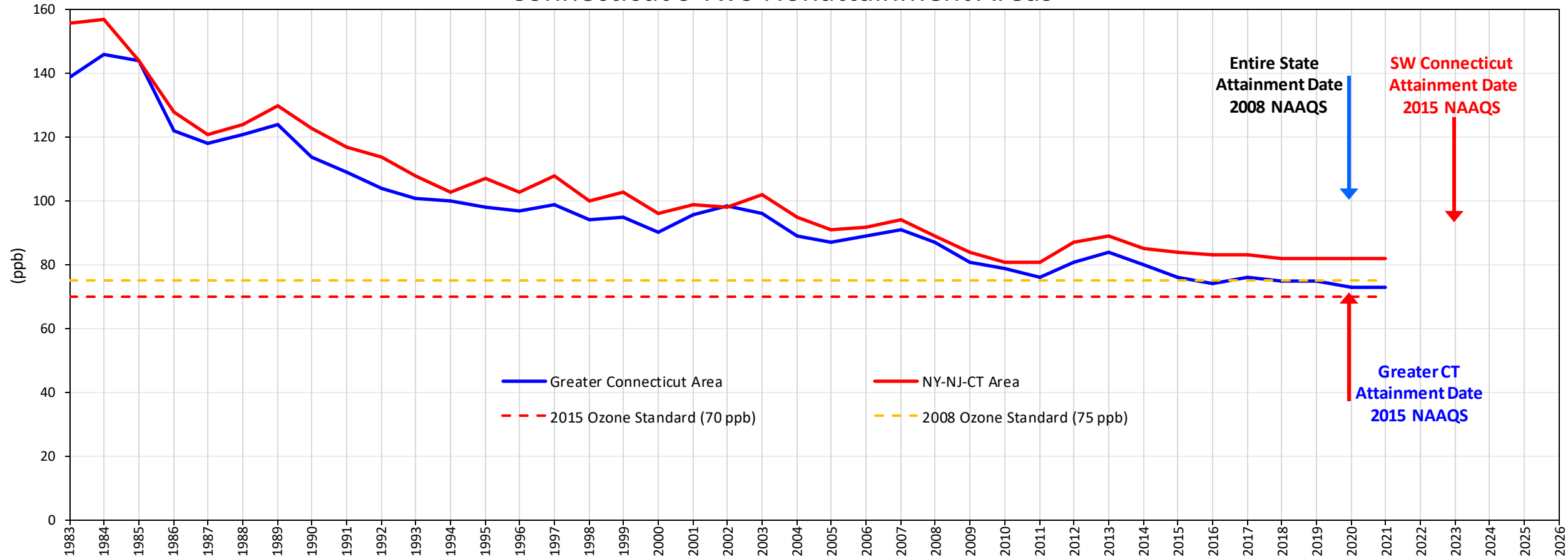
1997 = 85 ppb  
 2008 = 76 ppb  
 2015 = 71 ppb

		2021 Compliance Status					
		x = Violating NAAQS					
	Site Name	To Date: Prelim 2021 DV	2015 NAAQS	2008 NAAQS	1997 NAAQS	# Needed to Next NAAQS in Violation (key monitors in each NA are highlighted in RED)	
SWCT Portion of NYC Area	Danbury	70				2	more days > 73 ppb day(s) violate the 2015 NAAQS
	Greenwich	79	X	X		3	more days > 93 ppb day(s) violate the 1997 NAAQS
	Madison	82	X	X		4	more days > 90 ppb day(s) violate the 1997 NAAQS
	Middletown	74	X			3	more days > 82 ppb day(s) violate the 2008 NAAQS
	New Haven	72	X			4	more days > 81 ppb day(s) violate the 2008 NAAQS
	Stratford	81	X	X		4	more days > 96 ppb day(s) violate the 1997 NAAQS
	Westport	80	X	X		4	more days > 100 ppb day(s) violate the 1997 NAAQS
Greater CT	Cornwall	64				4	more days > 87 ppb day(s) violate the 2015 NAAQS
	East Hartford	67				4	more days > 76 ppb day(s) violate the 2015 NAAQS
	Groton	73	X			4	more days > 81 ppb day(s) violate the 2008 NAAQS
	Stafford	67				4	more days > 76 ppb day(s) violate the 2015 NAAQS
	Abington	65				4	more days > 84 ppb day(s) violate the 2015 NAAQS
Number of Exceedance Days to Date			21			The 1997 standard was repealed with the 2008 implementation rule. Effective April 6, 2015	



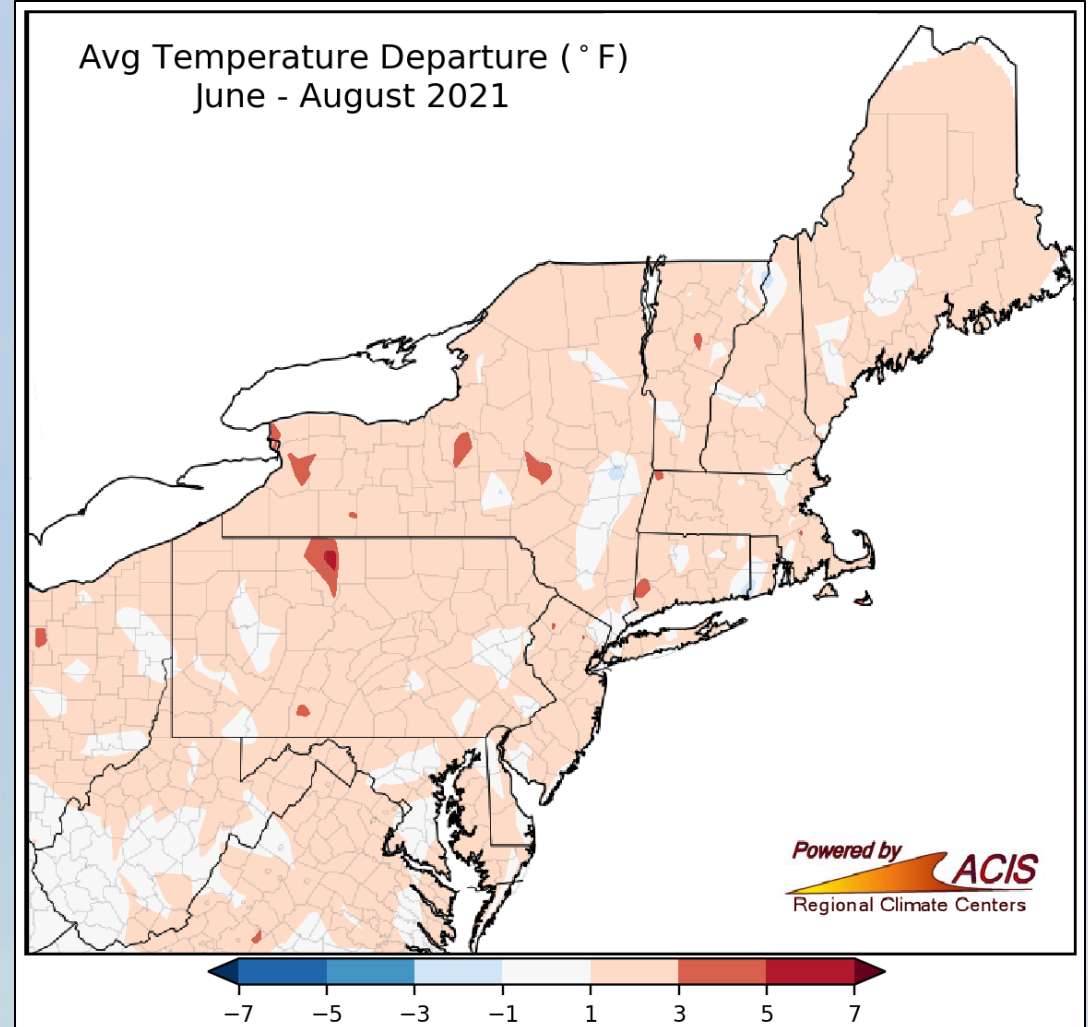
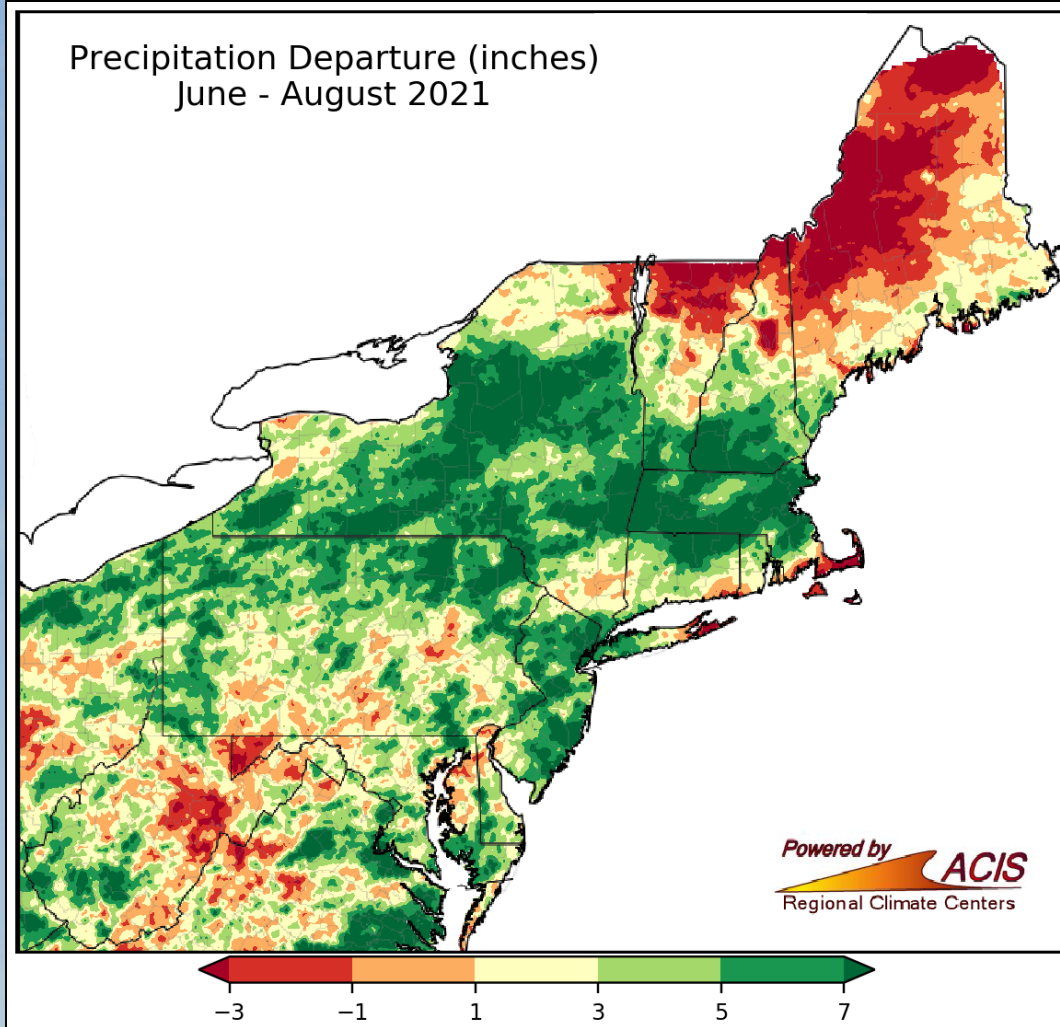
# Ozone NAAQS Attainment Dates

## Ozone Design Values Trends Connecticut's Two Nonattainment Areas



# Summer 2021 Precipitation-Temperature Summary

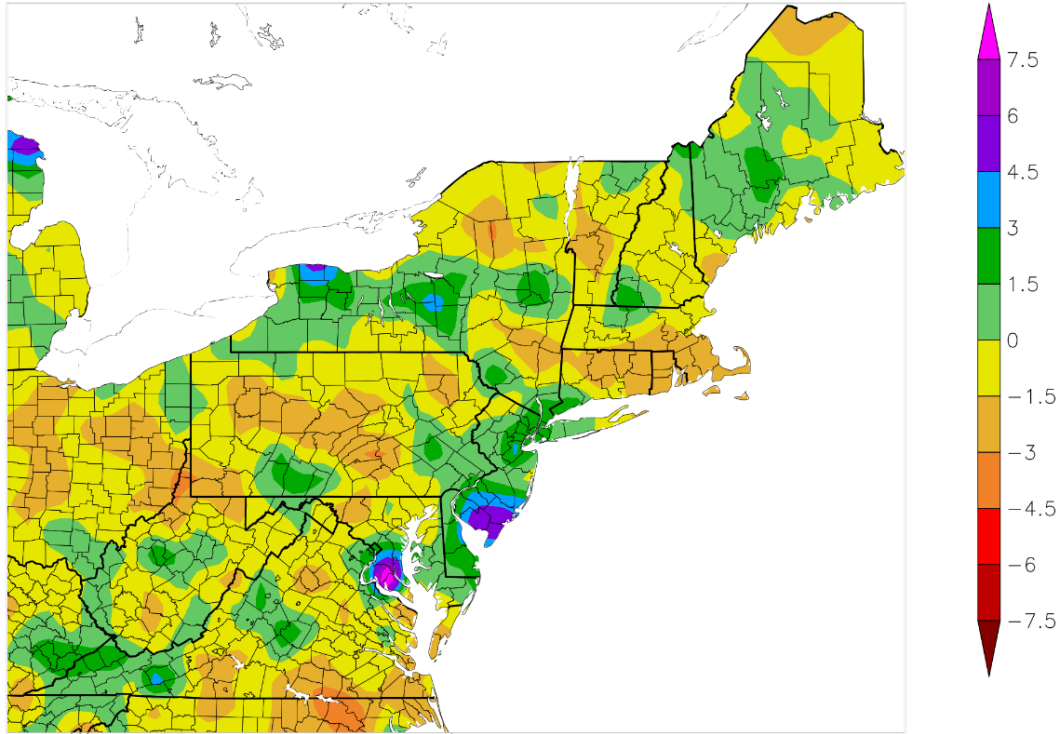
Overall, a slightly wetter and warmer summer for Connecticut.





# July 2020 Versus July 2021 Precipitation

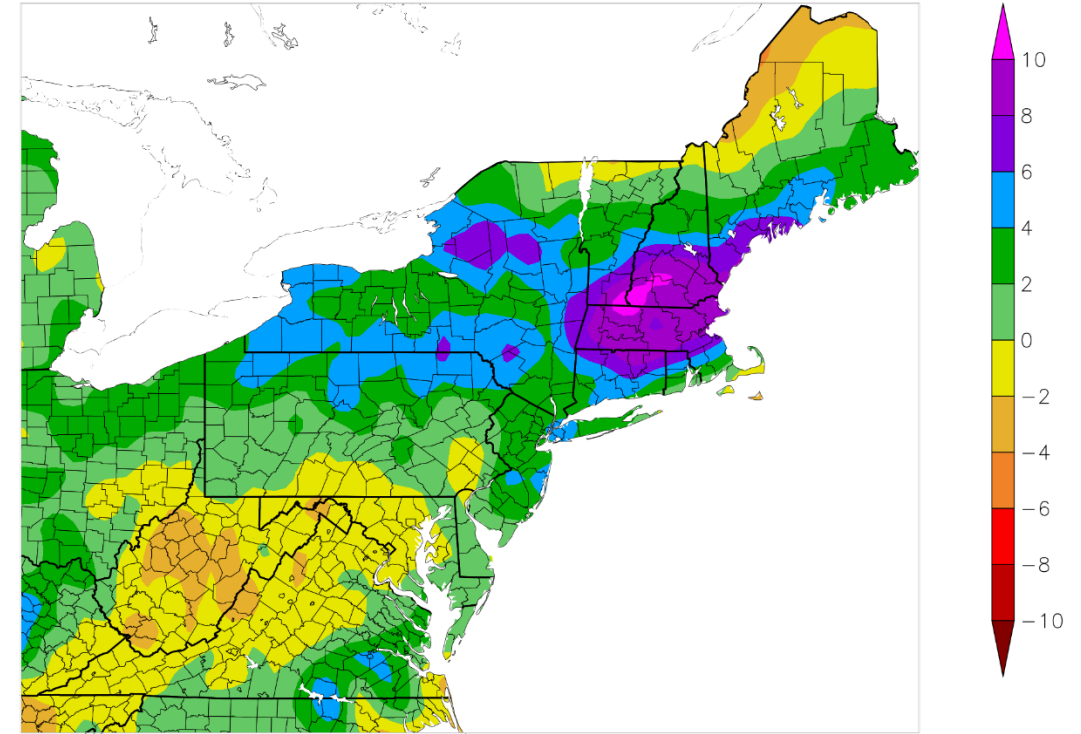
Departure from Normal Precipitation (in)  
7/1/2020 – 7/31/2020



Generated 8/20/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from Normal Precipitation (in)  
7/1/2021 – 7/31/2021



Generated 8/20/2021 at HPRCC using provisional data.

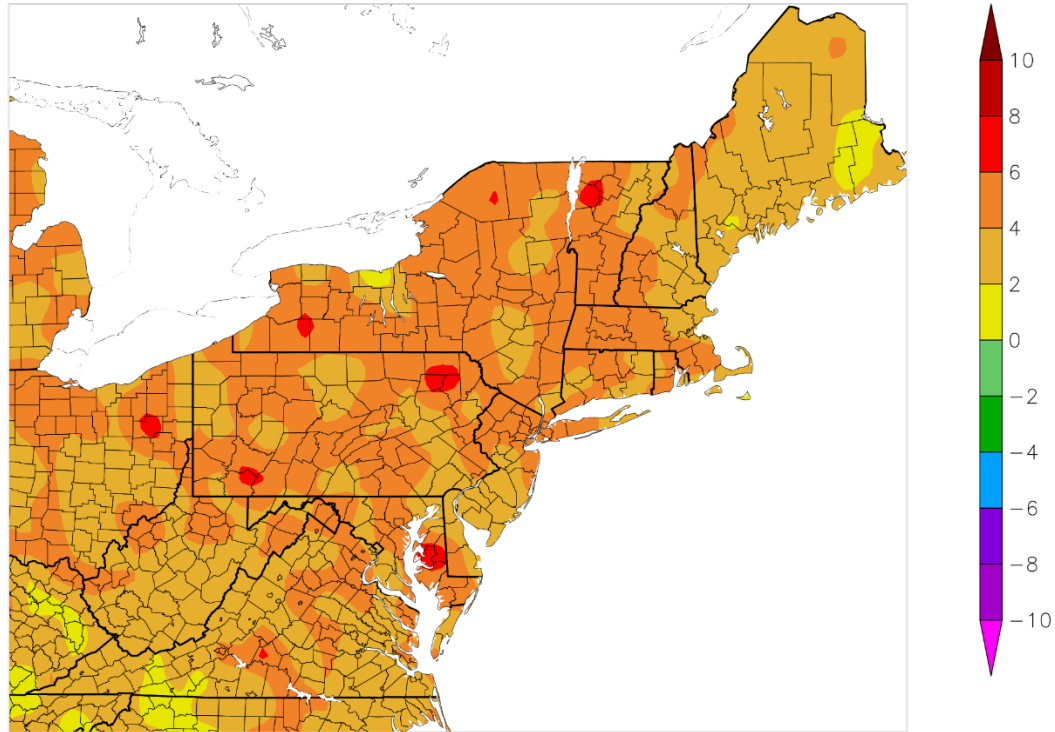
NOAA Regional Climate Centers

Below average 2020 July precipitation, compared with above average 2021 July precipitation for most of New England.



# July 2020 Versus July 2021 Temperatures

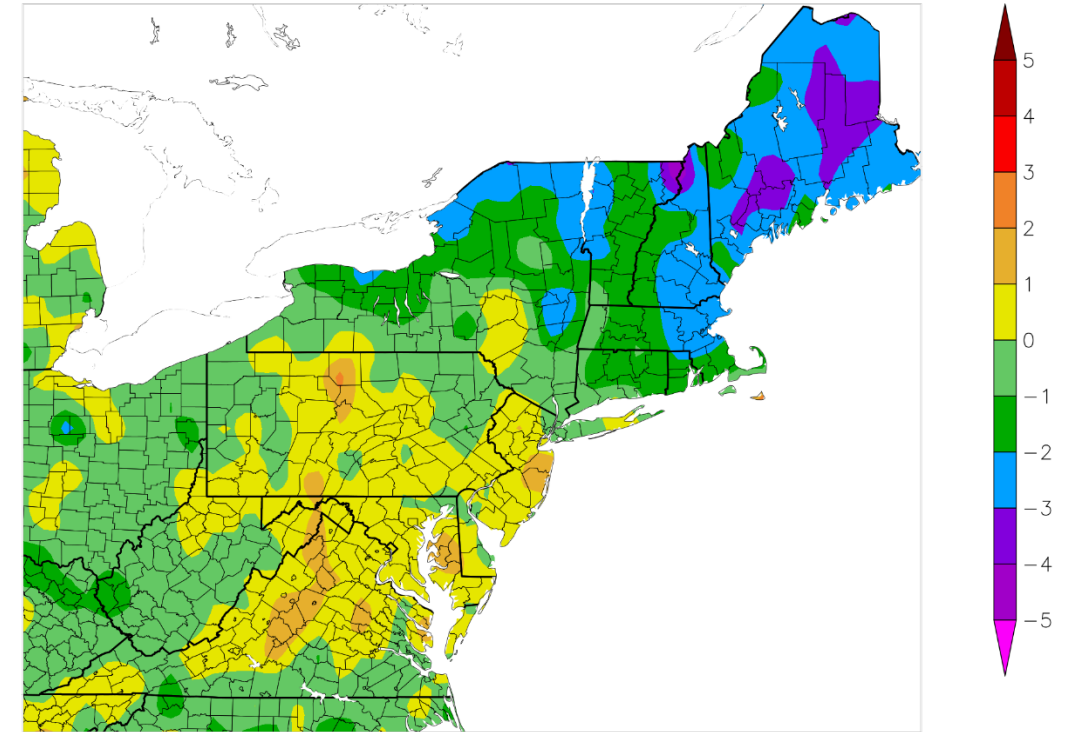
Departure from Normal Temperature (F)  
7/1/2020 – 7/31/2020



Generated 8/20/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from Normal Temperature (F)  
7/1/2021 – 7/31/2021



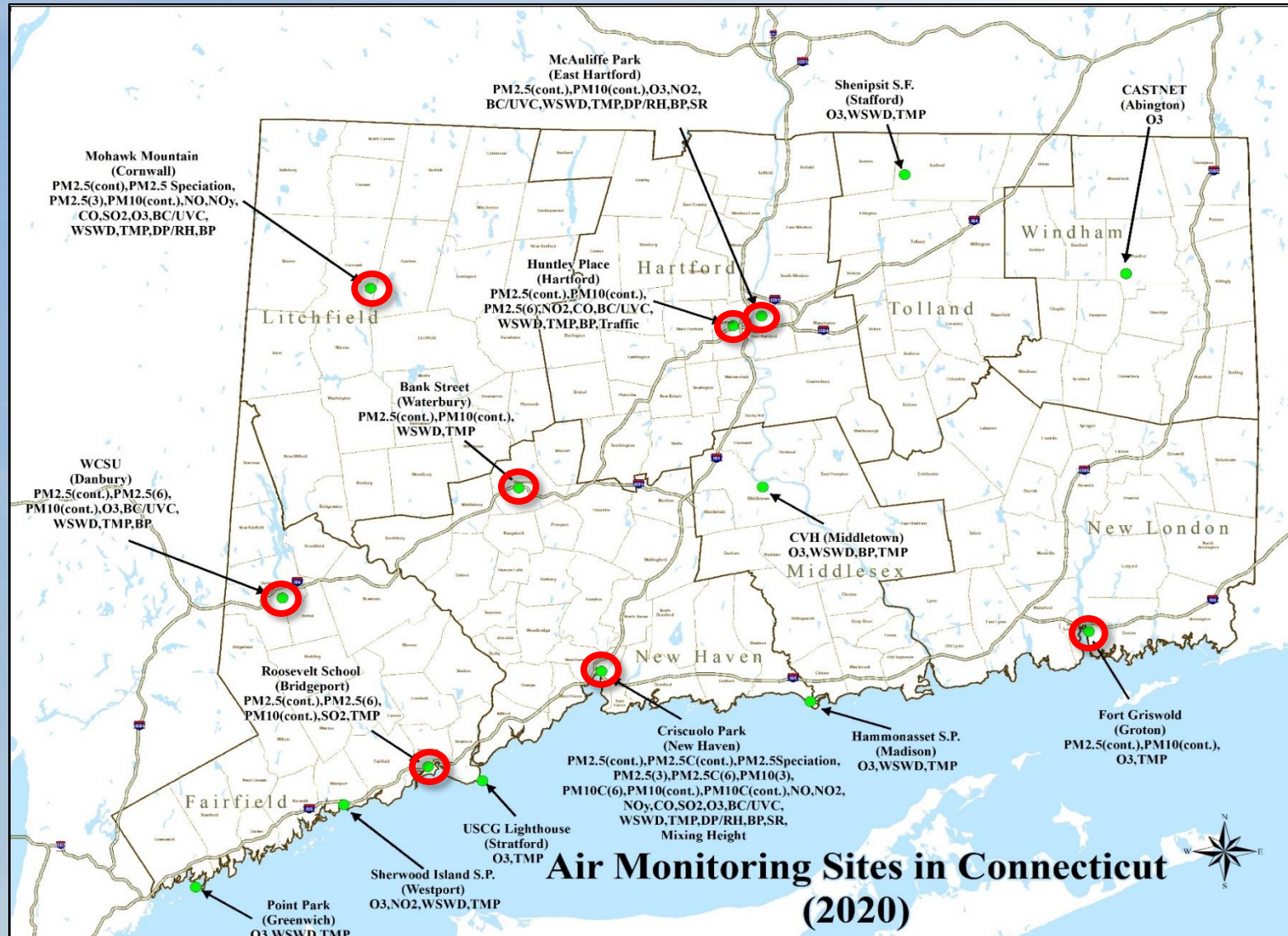
Generated 8/20/2021 at HPRCC using provisional data.

NOAA Regional Climate Centers

Well above average 2020 July temperatures, compared with cooler 2021 July temperatures across most of the Northeast.



# Connecticut PM2.5 Monitoring Sites



# PM2.5 Exceedance Days

July 20, 2021

Regional Sites

Connecticut Sites

Site	7/20	Site	7/20
Washington	72.2	Waterbury	52.6
Bronx - IS52	62.1	Cornwall	50.3
Rockland Cty	61.7	Danbury	49.5
Manhattan	61.5	Hartford-Huntle	43.9
Allentown	60.2	East Hartford	42
Bklyn - PS274	59.9	Bridgeport	40.8
NEW	57.8	New Haven - Cri	37.7
CCNY	56.4	Groton Fort Gri	31.5
Norristown	55.4		
Fresh Kills	55.0		
Newburgh	55.0		
Port Richmond	54.8		
Freemansburg	54.7		
York	54.5		
Queens Near-roa	53.9		
Maspeth	53.7		
MLK	52.8		
TOR	52.7		
<b>Waterbury</b>	<b>52.6</b>		
Bklyn - PS 314	52.1		
Chester	52.0		
White Plains	51.4		

The highest PM2.5 levels occurred in New York and Pennsylvania. However, Connecticut still had 7 sites exceed the NAAQS.

July 26, 2021

Regional Sites

Connecticut Sites

Site	7/26	Site	7/26
ChelmsfordNR	59.0	Cornwall	52.2
Londonderry - M	54.1	Waterbury	50.9
BOSTON-KENMORE	53.4	East Hartford	49.8
Miller State Pa	53.0	Hartford-Huntle	49.6
<b>Cornwall</b>	<b>52.2</b>	New Haven - Cri	37
<b>Waterbury</b>	<b>50.9</b>	Danbury	36.4
WeymouthFR	50.0	Bridgeport	35.8
<b>East Hartford</b>	<b>49.8</b>	Groton Fort Gri	25.1
<b>Hartford-Huntle</b>	<b>49.6</b>		
Portsmouth	47.7		
Burlington	47.0		
Underhill	46.2		
Keene	45.9		
Worcester	45.2		
LYNN	44.3		
Boston-Von Hill	44.1		
E Providence	42.5		
W Greenwich	42.3		
CHICOPEE	41.4		
Near Road	41.4		
Bennington	41.2		
Boston - Roxbur	41.1		

Four Connecticut sites are among the top 10 sites with the highest PM2.5 levels for July 26<sup>th</sup>. Again, there was 7 monitor sites that exceeded the NAAQS.

July 27, 2021

Regional Sites

Connecticut Sites

Site	7/27	Site	7/27
<b>New Haven - Cri</b>	<b>40</b>	New Haven - Cri	40.0
<b>Waterbury</b>	<b>38.3</b>	Waterbury	38.3
<b>Groton Fort Gri</b>	<b>37.5</b>	Groton Fort Gri	37.5
<b>Bridgeport</b>	<b>34.9</b>	Bridgeport	34.9
<b>East Hartford</b>	<b>33.8</b>	East Hartford	33.8
<b>Danbury</b>	<b>33.6</b>	Danbury	33.6
Bklyn - PS 314	33.3	Hartford-Huntle	33.2
<b>Hartford-Huntle</b>	<b>33.2</b>	Fall River	31.6
Fall River	31.6	Bklyn - PS274	31.5
Bklyn - PS274	31.5	Londonderry - M	31.4
Londonderry - M	31.4	RIT	30.4
RIT	30.4	Bronx - IS52	30.3
Bronx - IS52	30.3	Portsmouth	30.2
Portsmouth	30.2	Queens Near-roa	29.7
Queens Near-roa	29.7	Brockton	29.5
Brockton	29.5	Chelsea HP	29.5
Chelsea HP	29.5	Haverhill	29.1
Haverhill	29.1	Portland - Deer	29.1
Portland - Deer	29.1	Liberty (SAHS)	28.7
Liberty (SAHS)	28.7	ChelmsfordNR	28.5
ChelmsfordNR	28.5	WeymouthFR	27.8
WeymouthFR	27.8		

Connecticut sites observed the highest PM2.5 values for July 27<sup>th</sup>. Only three sites exceeded the NAAQS.

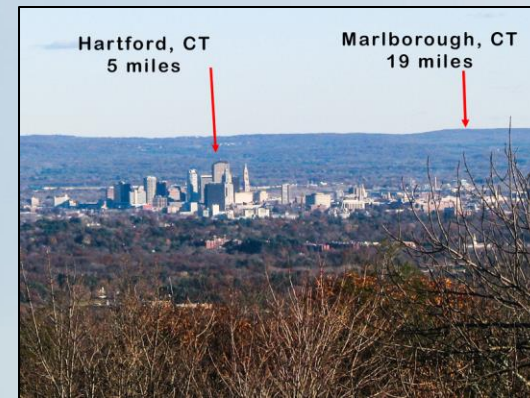
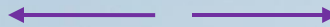
All PM2.5 values are 24-Hr Daily Averages ( $\mu\text{g}/\text{m}^3$ ).



# HazeCams on July 26, 2021



More typical visibility

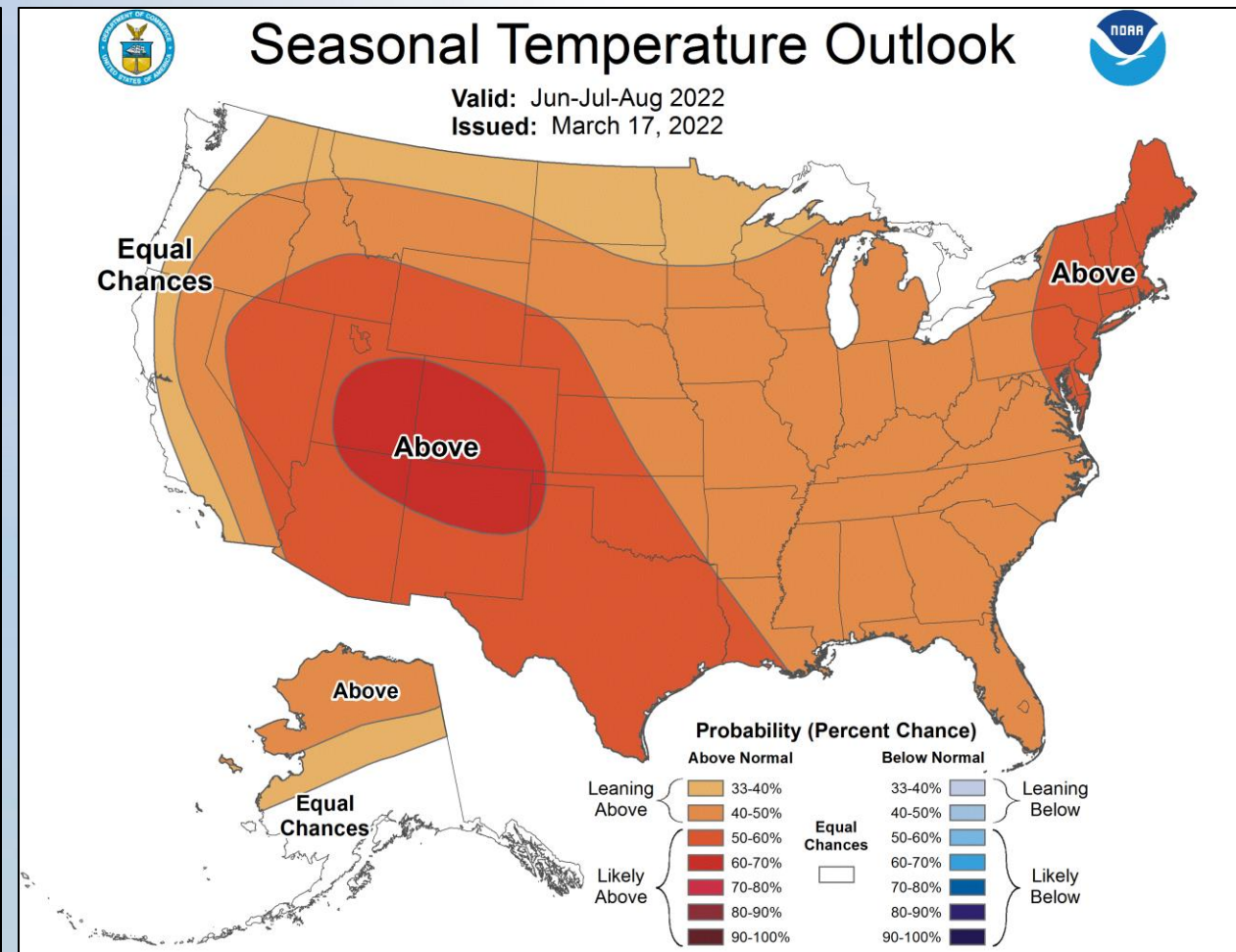
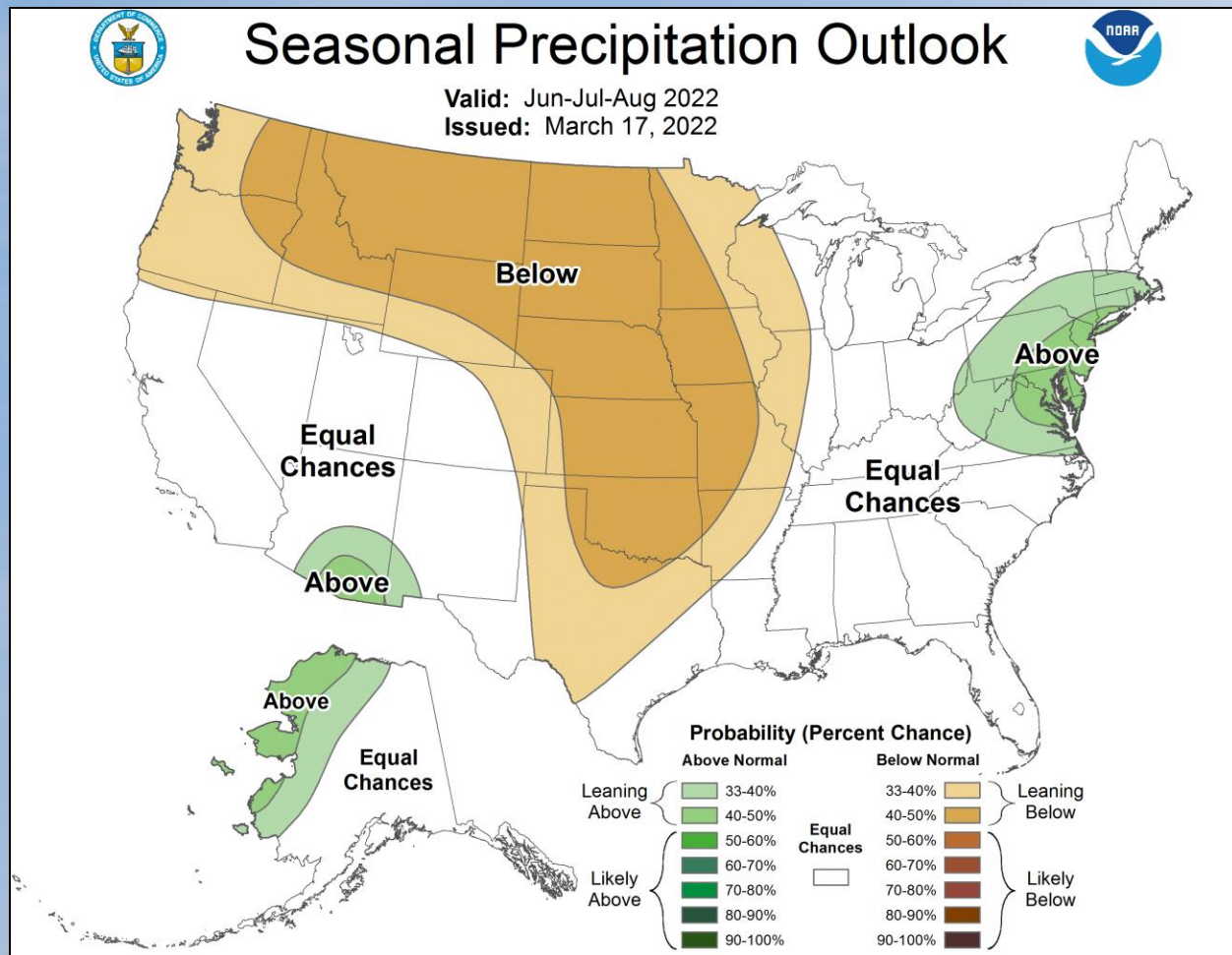


# 2021 Ozone Season Summary

- Connecticut had 17 ozone exceedance days in 2020, compared to 21 ozone exceedance days in 2021.
  - Also, Connecticut had three PM2.5 exceedance days due to smoke for 2021.
- There was a slightly wetter and warmer June through August, despite a wetter and cooler July.
  - This led to fewer ozone exceedance days during July, compared to June and August.
- Smoke was present aloft for most of the summer, but the smoke significantly impaired visibility and increased ozone and particulate on occasion.



# 2022 Forecast Precipitation and Temperatures



Forecasted above normal temperatures may counteract the full effects of reduced emissions.



# 2022 Ozone Forecasting Season

Ozone Forecasting Season is May 1- Sept 30.

CTDEEP forecasters have complete capability to make forecasts and notify the public and regulated community while working remotely:

1. List-server emails
2. Phone messaging
3. [CTDEEP AQI web page](#)
4. EPA Airnow forecasts

## Receive notices of Daily AQI:

- [EnviroFlash](#) - Subscribe to receive air quality information by e-mail.
- [Twitter](#) - Follow the air quality forecasts.
- Subscribe to the [DEEP Air Quality Information listserv](#) to receive a daily ozone forecast between May 1 through September 30, and a daily PM2.5 forecast year round.
- Subscribe to the [DEEP Ozone Forecast listserv](#) to receive a daily 8-hour ozone forecast that is disseminated to Connecticut's Industrial and Electric Generating Units' combustion sources from May 1 through September 30.

**CT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION**

**Ozone Forecast  
For the Regulated Community**

The Ozone Forecast for **Friday, March 27, 2020** is:

**GOOD**

**No Forecast Dependent Restrictions**

Under regulations, permits and orders administered by the Bureau of Air Management, the regulated community uses the ozone forecast to determine whether certain operating restrictions apply for the forecasted day. These restrictions are imposed to limit unnecessary emissions of nitrogen oxides (NOx), which contribute to the development of ozone on high ozone days.

Owners of most emergency engines (usually diesel powered generators) use the ozone forecast to determine whether they can operate for routine, scheduled testing or maintenance. Such operations are restricted on days forecasted to have ozone air quality index (AQI) levels classified as unhealthy for sensitive groups (USG, or worse) anywhere in Connecticut.

A limited number of sources operate under an exemption in RCSA section 22a-174-22e that prohibit operation on days forecasted to reach the USG (or greater) AQI level for ozone.

The current ozone forecast for the regulated community is provided through a pre-recorded telephone message (860-424-4152), and an electronic message provided to the affected sources on request and on DEEP's primary AQI webpage. The web page provides the forecast as a traffic light indicator, with red meaning restrictions are in place for the forecasted day and green meaning that restrictions are not in place for the forecasted day.

For more information, visit the DEEP AQI Web Site:  
<http://www.ct.gov/deep/AQI>

DEEP's Air Quality Index: (860) 424-4152  
or (800) 249-1234  
ALA's air pollution or lung health information: (800) LUNG-USA  
State clean air programs: (800) 249-1234  
Connecticut Department of Energy and Environmental Protection  
79 Elm Street, Hartford, CT 06106-5127





# Reminders for an Ozone Action Day

## Drive Less

- Walk or ride a bicycle
- Use public transportation
- Combine errands
- Join a carpool or vanpool
- Telecommute



## Be a Smart Driver

- Refuel your vehicle after dusk
- Stop refueling when the nozzle clicks off
- Drive at fuel saving, moderate speeds
- Tune your car regularly
- Avoid idling your vehicle unnecessarily
- Test vehicle emissions on time

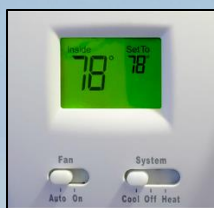
## In the Yard

- Use electric or hand powered equipment
- Reduce use of garden chemicals
- Delay mowing your lawn or using gas powered equipment until evening
- Refrain from recreational wood burning



## Around the House

- Set air conditioners to 78°
- Select water based paint
- Wait until 8 to use energy intensive appliances
- Use energy efficient products
- Buy environmentally friendly cleaners



## Drive Clean

- Consider purchasing or leasing a plug in electric vehicle



# Air Quality Awareness Week 2022

## When:

May 2<sup>nd</sup> – 6<sup>th</sup>, 2022

## Where:

<https://www.airnow.gov/aqaw>

## Theme:

Be Air Aware & Prepared



*Monday*

Wildfires & Smoke



*Tuesday*

Asthma & Your Health



## Daily Topics:

*Wednesday*

Citizen Science & Sensors



*Thursday*

Environmental Justice & Air Quality



*Friday*

Air Quality Around the World

