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Changes to the PM2.5 Air Quality Standard and How it Affects NH

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2024 NH Environmental Regulatory Conference
September 10, 2024

What is PM2.5?

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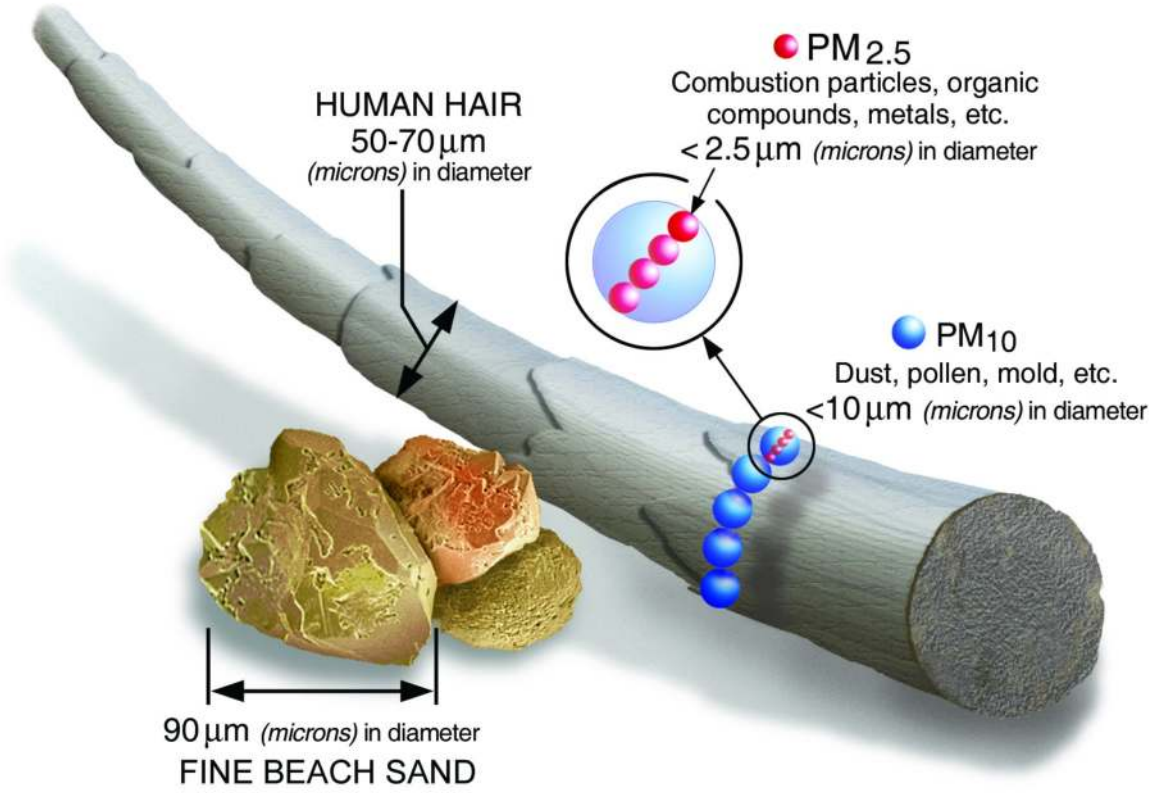
PM = Particulate Matter (Particle Pollution)

- Pollutant that is either directly emitted or formed through complex chemical reactions
- Mixture of solid particles and liquid droplets
- Can be very small and therefore, inhaled → PM2.5

2.5 = 2.5 micrometers or less in diameter

- Fine Inhalable Particles
- Combustion Particles, Organic Compounds, Metals, etc.



Woodsmoke

Wildfires

PM2.5 Health Effects: *General Population*

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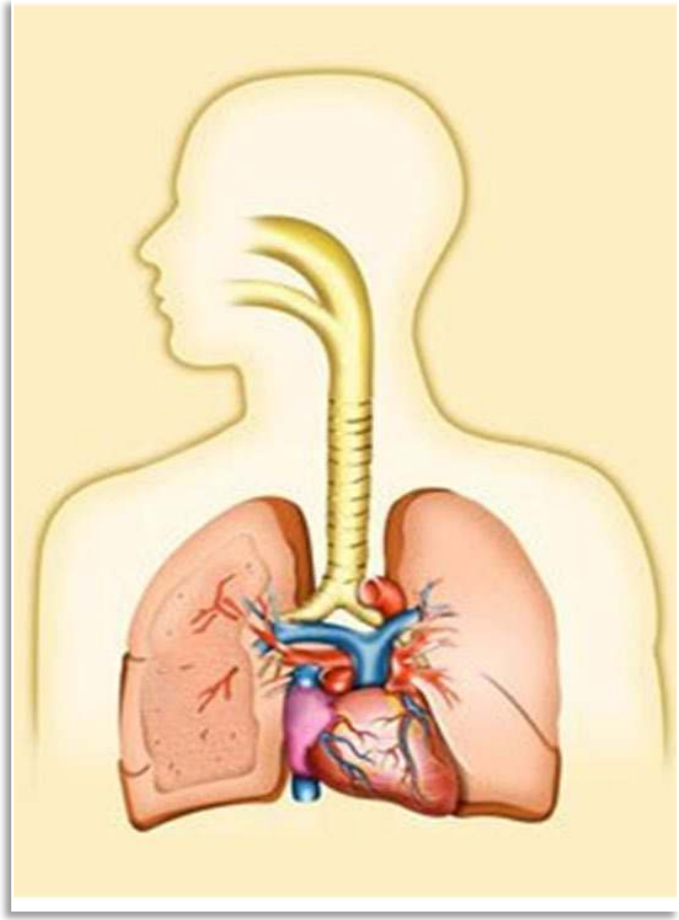
PM2.5

- Incredibly small and can be inhaled deep into the respiratory tract leading to numerous health effects
- Can get into the bloodstream
- Health effects include:
  - Decreased lung function
  - Irregular heartbeat
  - Nonfatal heart attacks
  - Aggravated asthma



PM2.5 Health Effects: *Sensitive Groups*

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Sensitive Groups Include:

- People with lung or heart diseases
- Older Adults
- Children

Additional Health effects include:

- Narrowing of Airways
- Decreased Airflow
- Excessive Mucus Production
- Increase in Medication Usage
- Increase in Asthma Attacks
- Increase in Hospitalizations and ER visits

National Ambient Air Quality Standards (NAAQS)

PM2.5

24 hour averaging time (midnight to midnight)

- NAAQS: 35 µg/m^3

Annual Average

- NAAQS: 12 µg/m^3

Exceedance vs. Violation

Exceedance

- The 24hr average goes over 35 ug/m3
- The annual average goes over 12ug/m3

Violation

- NAAQS compared to the Design Value:
- The 3-year average of the 98th percentile is >35ug/m3
- The 3-year annual mean average is >12ug/m3

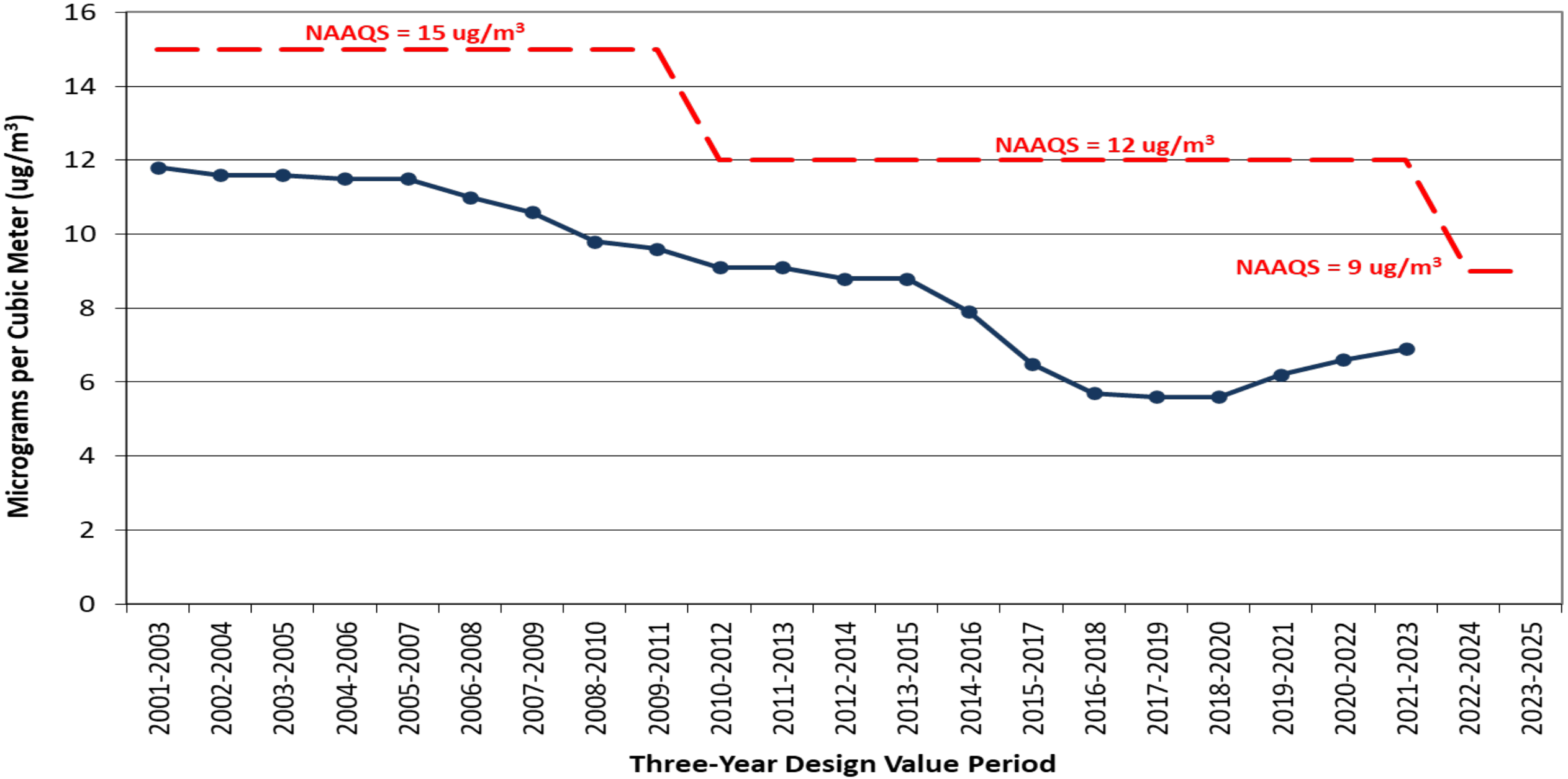
Recent Change to the PM2.5 NAAQS

Went into affect May 6th, 2024

Annual Average

- Dropped from 12ug/m3 to 9 ug/m3

New Hampshire Maximum Annual Fine Particulate Matter Design Values



Recent Change to the PM2.5 NAAQS

Went into affect May 6th, 2024

24 hour averaging time (midnight to midnight)

- No changes
  - However, the 24hr AQI breakpoints changed

Air Quality Index (AQI)

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AQI Basics for Ozone and Particle Pollution

Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

AQI Category and Index Value	Previous AQI Category Breakpoints	Updated AQI Category Breakpoints	What changed?
Good (0 – 50)	0.0 to 12.0	0.0 to 9.0	EPA updated the breakpoint between Good and Moderate to reflect the updated annual standard of 9 micrograms per cubic meter
Moderate (51 – 100)	12.1 to 35.4	9.1 to 35.4	
Unhealthy for Sensitive Groups (101 – 150)	35.5 to 55.4	35.5 to 55.4	No change, because EPA retained the 24-hour fine PM standard of 35 micrograms per cubic meter.
Unhealthy (151 – 200)	55.5 to 150.4	55.5 to 125.4	EPA updated the breakpoints at the upper end of the unhealthy, very unhealthy, and hazardous categories based on scientific evidence about particle pollution and health. The Agency also combined two sets of breakpoints for the Hazardous category into one.
Very Unhealthy (201 – 300)	150.5 to 250.4	125.5 to 225.4	
Hazardous (301+)	250.5 to 350.4 and 350.5 to 500	225.5+	

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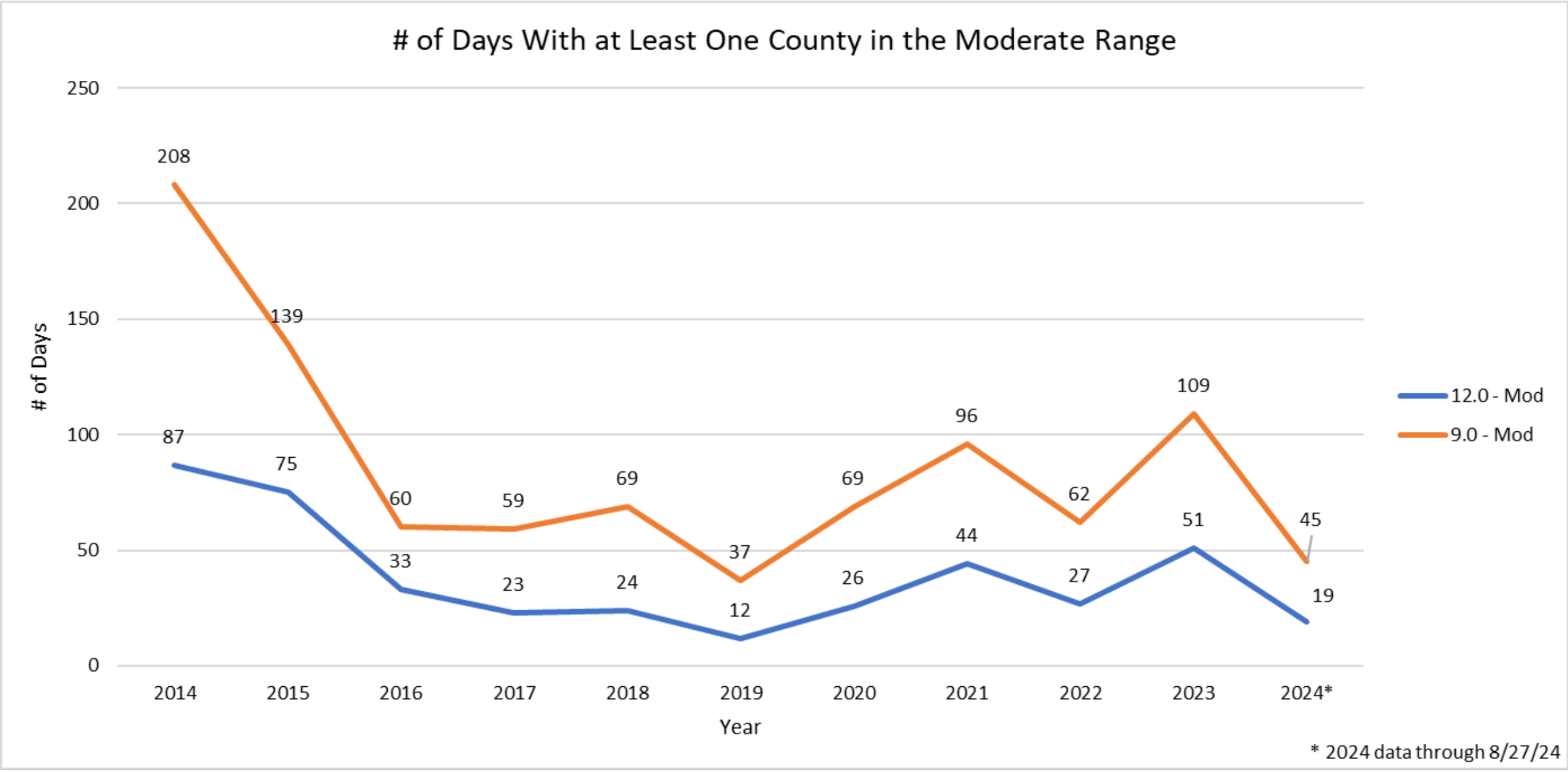
# of Days With at Least One County in the Moderate Range
250
200
150
100
50
0
# of Days
208
139
60
59
69
37
69
96
62
109
45
87
75
33
23
24
12
26
44
27
51
19
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024*
Year
12.0 - Mod
9.0 - Mod
* 2024 data through 8/27/24

State Monitoring for PM2.5

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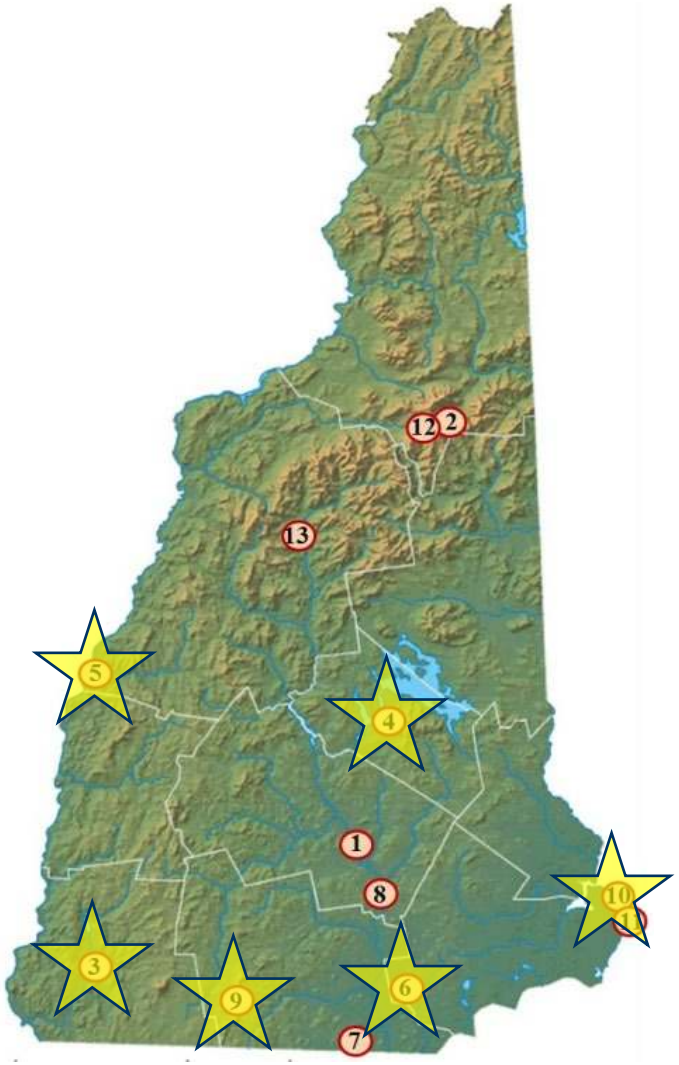

Summer 2023	Ncore	IMPROVE	CASTNET	NADP	PAMS	Laboratory	Carbon Monoxide (CO)	Nitrogen Dioxide (NO2)	Nitrogen Oxides (Noy)	Ozone (O3)	PM2.5	PM2.5 Co-Location	PM10	PMCoarse	Sulfur Dioxide (SO2)	Wind Direction (WD)	Wind Speed (WS)	External Temperature (ETP)	Barometric Pressure (BP)	Relative Humidity (RH)	Precipitation (RF)	Solar Radiation (SolRad)	UV Radiation (UVRad)
1. Concord						•				•						•	•	•					
2. Greens Grand -Camp Dodge		•								•								•					
3. Keene										•	•	•		•		•	•	•					
4. Laconia										•	•			•		•	•	•			•		
5. Lebanon										•	•			•		•	•	•					
6. Londonderry	•	•			•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
7. Nashua										•						•	•	•					
8. Pembroke															•	•	•	•					
9. Peterborough - Pack Monadnock	•	•					•		•	•	•	•		•	•	•	•	•	•	•	•		
10. Portsmouth										•	•		•	•		•	•	•					
11. Rye										•						•	•	•					
12. Sargents Purchase -Mt. Washington Summit										•													
13. Woodstock -Hubbard Brook				•																			

Supplemental Monitoring

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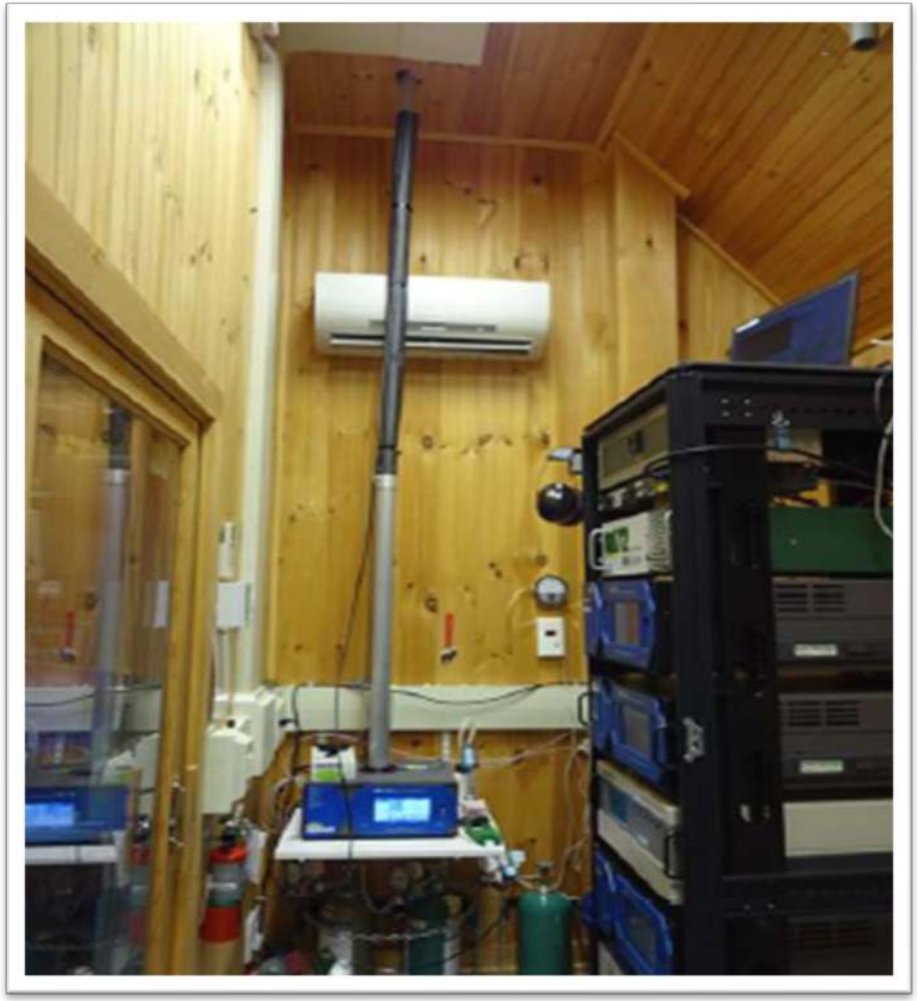

- EPA Compliant
- Testing & Criteria
- Costly

- Easy to Use
- Effective
- Affordable

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Citizen Scientist $PM_{2.5}$ Monitoring

PurpleAir Particle Sensors

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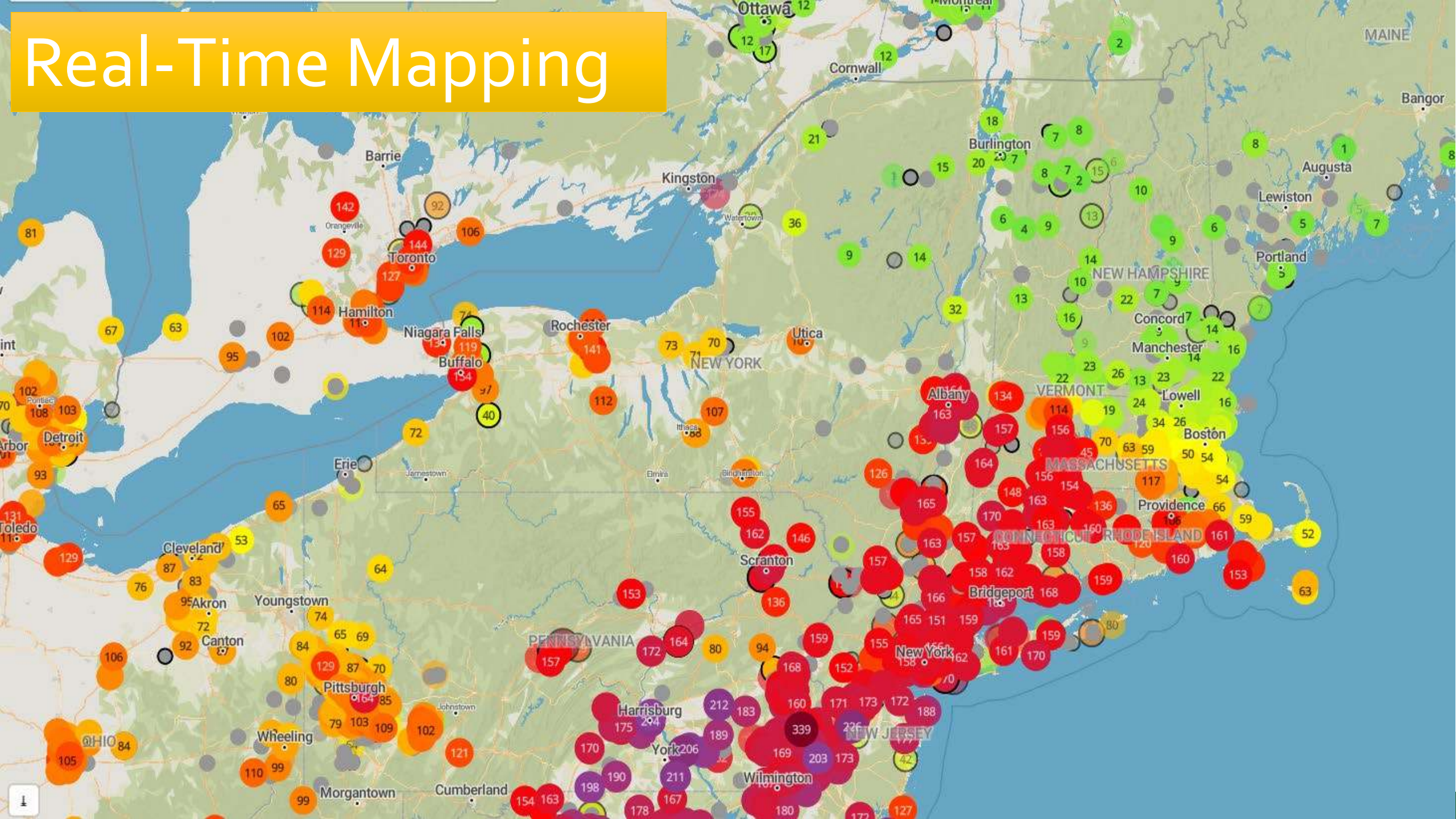
- Laser particle counters
- Dual PM sensors
- Temp & humidity sensor
- 2-minute averaging
- Wi-Fi connectivity

Real-Time Mapping



Data Trustworthiness

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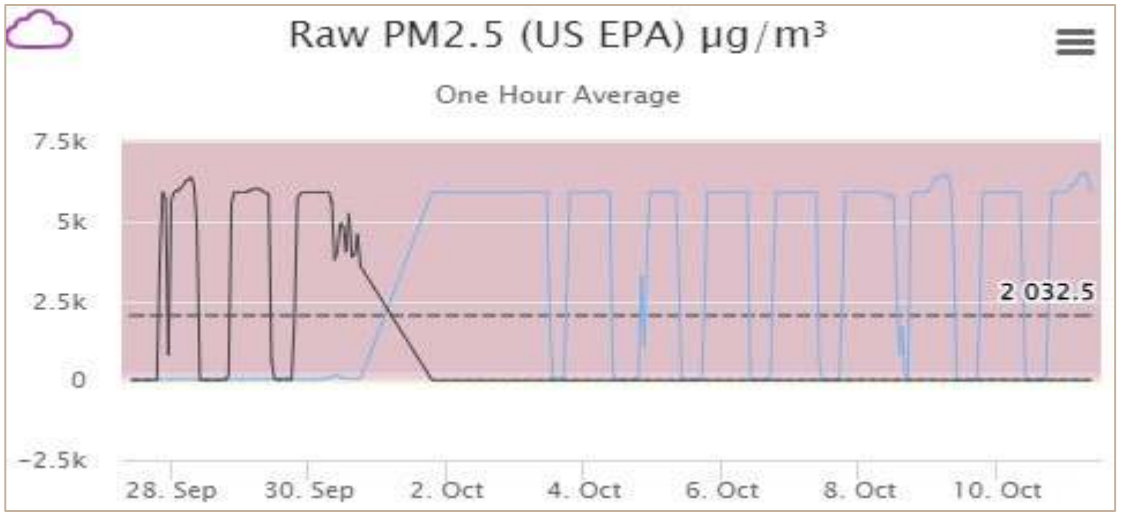
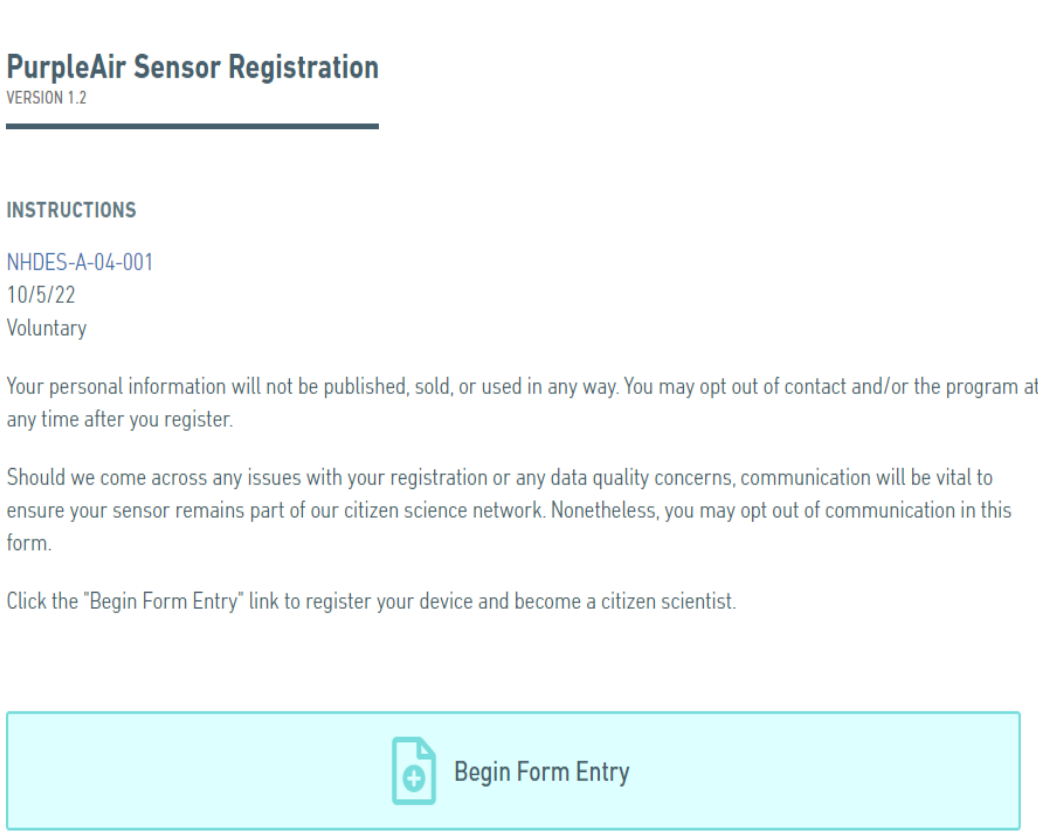
- Minimal quality assurance
- Many unknowns
  - Setup
  - Location, location, location



NHDES Citizen Air Monitoring Program



https://www.des.nh.gov/home-and-recreation/air-quality/citizen-air-monitoring-program

Benefits of Joining CAMP

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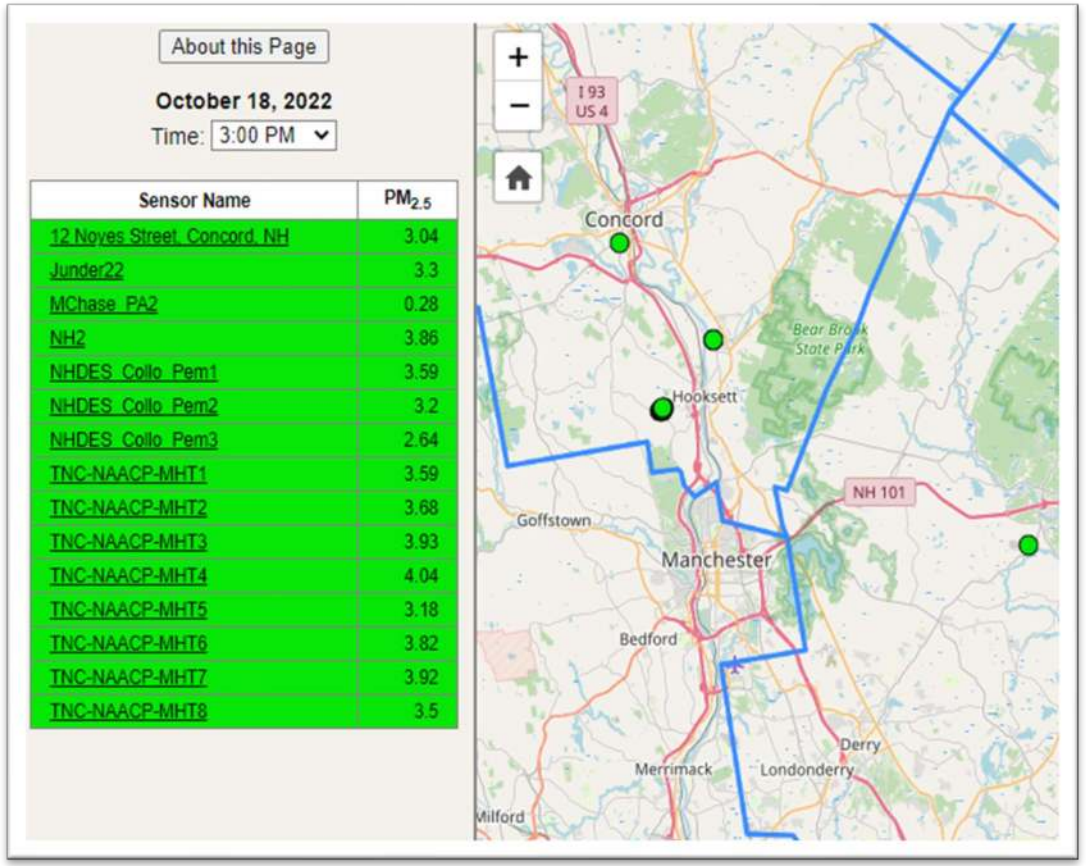
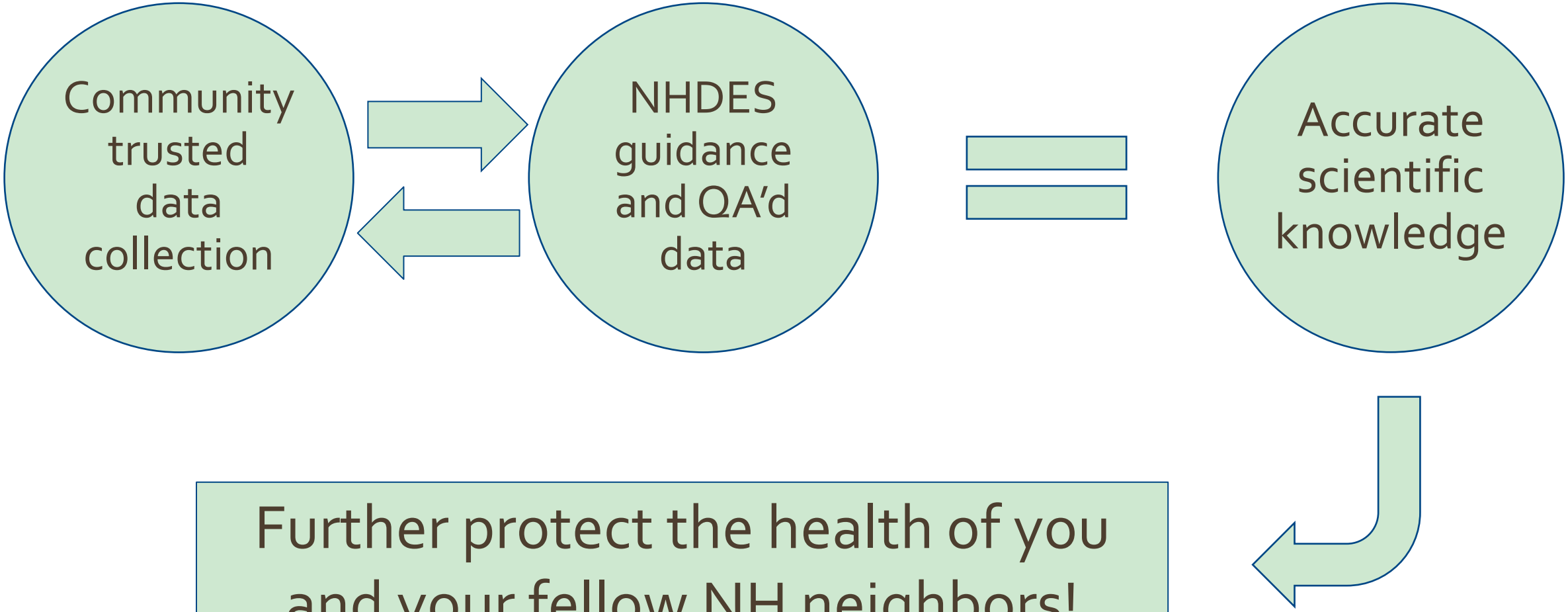
- Installation Guidance
- Quality Assured Data
- Data-Correction
- NHDES Live Map
- Access to Archived Data
- Troubleshooting Assistance

Voluntary and Free!



Collaboration is a Win-Win!



Further protect the health of you and your fellow NH neighbors!

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Thank you

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