



# CEEJAC AIR AND TRANSPORTATION SUBCOMMITTEE

**Presented by: Paul Farrell, Jaimeson Sinclair, Pete Babich and Jake Felton**  
**Bureau of Air Management**  
**February 8, 2023**

# INTRODUCTIONS

*Chair, Alex Rodriguez, Environmental Justice Specialist,  
Save the Sound*

*Edith Pestana, Environmental Justice Program Administrator, CT DEEP*

# AGENDA

Welcome and introductions from the CEEJAC subcommittee chairs

Ground Rules- Edith Pestana

Overview of DEEP's Air Management Program - What we do & why we do it - DEEP/Paul Farrell

Overview of DEEP's Air Monitoring Program – What we monitor & why - DEEP/Pete Babich

Community-Based Air Monitoring Opportunities - DEEP/Pete Babich

Overview of DEEP's GMAP Program - DEEP/Jake Felton

DEEP's 2023 Air and Transportation Priorities – DEEP/Paul Farrell

Subcommittee Comments and Opportunities

Q & A

Public Comment

Closing and Next Steps



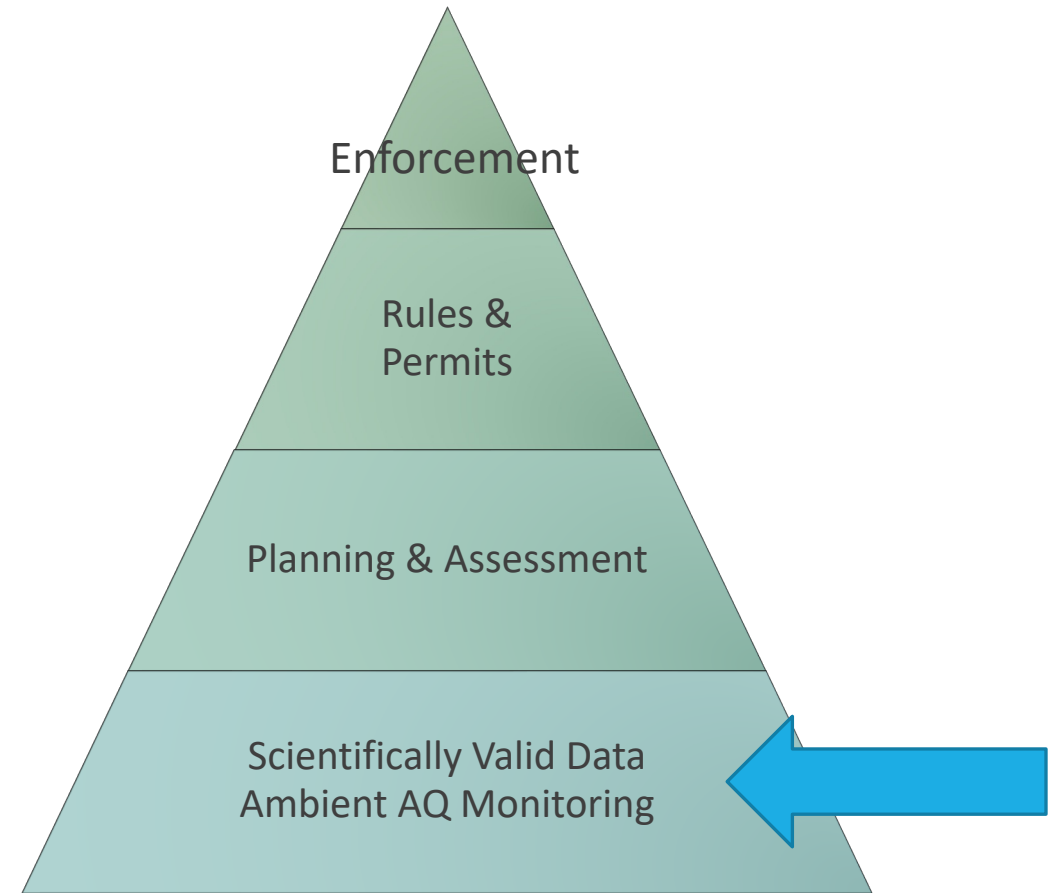
# CEEJAC MEETING GROUND RULES

During the discussion, all members should:

- Listen respectfully, without interrupting.
- Listen actively and with an ear to understanding others' views.
- Only have one conversation at a time.
- Be mindful to give others the opportunity to speak.
- Focus on the task at hand rather than the position.
- Avoid off-topic conversations.
- Criticize ideas, not people.
- Commit to learning, not debating.
- Avoid blame, speculation and inflammatory language.
- Avoid assumptions about any member of the group.

# AIR QUALITY PLANNING CYCLE & AIR QUALITY MANAGEMENT

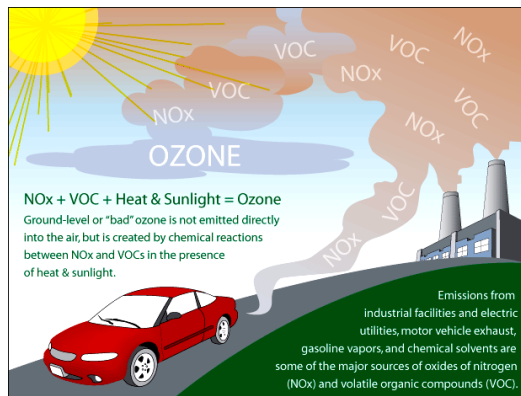
EPA Sets and States Implement  
National Ambient Air Quality Standards  
Six pollutants on a five-year schedule



**Monitor, Plan, Implement & Enforce**

# OZONE POLLUTION – PUBLIC HEALTH AND EQUITY

Ozone forms when precursors (NOx and VOC) react in sunlight during warmer months



**RESPIRATORY EFFECTS**

**Symptoms:**

- Cough
- Phlegm
- Chest tightness
- Wheezing
- Shortness of breath

**Increased sickness and premature death from:**

- Asthma
- Bronchitis (acute or chronic)
- Emphysema
- Pneumonia

**Development of new disease:**

- Chronic bronchitis
- Premature aging of the lungs

**How Pollutants Cause Symptoms**

**Effects on Lung Function**

- Narrowing of airways
- Bronchoconstriction
- Decreased air flow

**Alveoli that are trapped air**

**Airway Inflammation**

- Influx of white blood cells
- Abnormal mucus production
- Mucus accumulation and swelling (edema)
- Death and shedding of cells that line airways

**Increased Susceptibility to Respiratory Infection**

**Normal** vs **Lung with respiratory infection**

**CARDIOVASCULAR EFFECTS**

**Symptoms:**

- Chest tightness
- Chest pain (angina)
- Shortness of breath
- Stroke

**Increased sickness and premature death from:**

- Coronary artery disease
- Abnormal heart rhythms
- Congestive heart failure
- Stroke

**How Pollutants Cause Symptoms**

**Effects on Cardiovascular Function**

- Low oxygenation of red blood cells
- Abnormal heart rhythms
- Altered autonomic nervous system control of the heart

**Vascular Inflammation**

- Increased risk of blood clot formation
- Narrowing of vessels (atherosclerosis)
- Increased risk of atherosclerotic plaque rupture

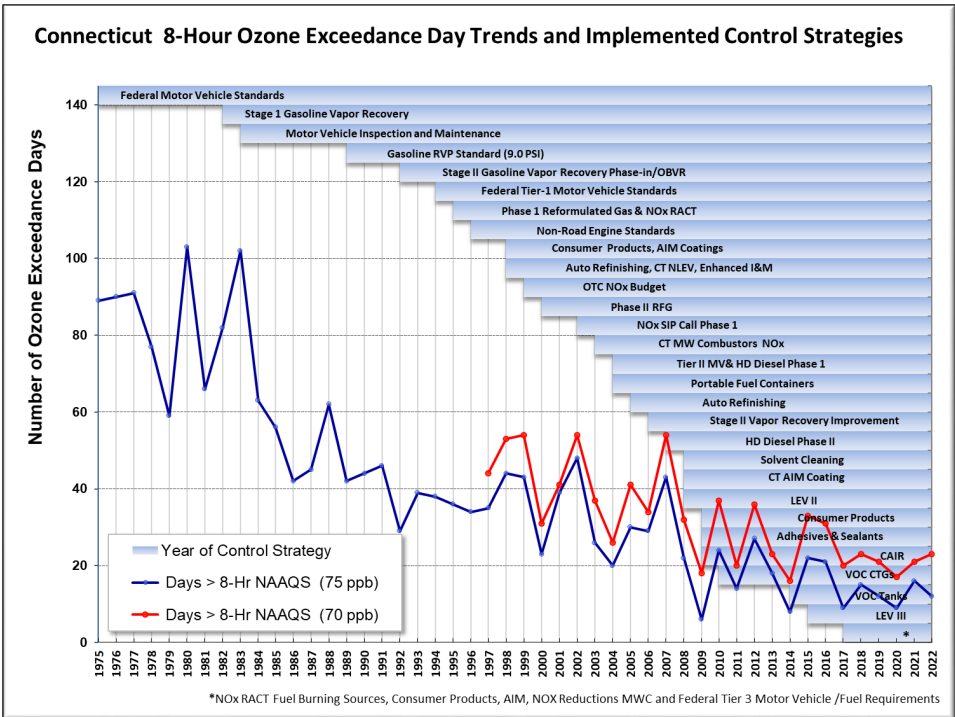
**Normal** vs **Plaque prone (arterial plaque)**

**Reduce your risk by using the Air Quality Index (AQI) to plan outdoor activities – [www.airnow.gov](http://www.airnow.gov)**

AQI Levels of Health Concern	AQI Values	What Action Should People Take?
Good	0-50	Enjoy Activities
Moderate	51-100	People unusually sensitive to air pollution: Plan strenuous outdoor activities when air quality is better
Unhealthy for Sensitive Groups	101-150	<b>Sensitive Groups:</b> Cut back or reschedule strenuous outside activities <small>*Some people with lung disease, asthma and older adults and people with pre-existing conditions. Sensitive groups: People with heart or lung disease, respiratory conditions, older adults and children. Outdoor workers: People with lung disease, asthma and people with pre-existing conditions. Pregnancy: People with lung disease, asthma and older adults.</small>

Breathing ozone triggers health problems; can reduce lung function and harm lung tissue. Ozone worsens bronchitis, emphysema, and asthma, leading to increased medical care costs and other economic impacts.

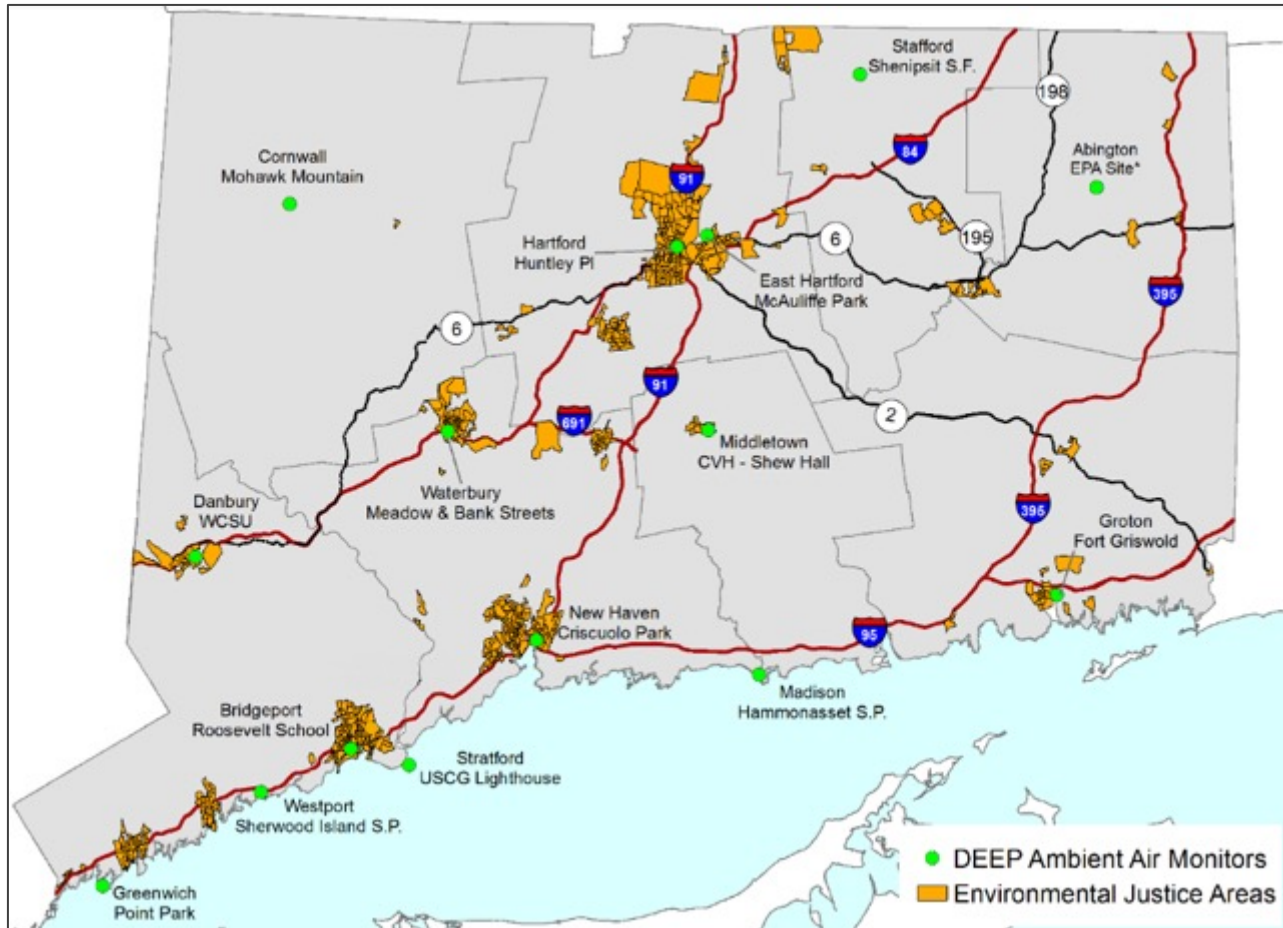
Connecticut - non-attainment for both the 2008 and 2015 8-hr ozone national ambient air quality standards (NAAQS) Fairfield, New Haven & Middlesex Counties now “severe” non-attainment for the 2008 NAAQS



# CONNECTICUT AIR MONITORING NETWORK

14 sites monitoring air pollutants and meteorological parameters

- Air pollutants: Ozone, particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide, black carbon
- Meteorological parameters: Wind speed, wind direction, relative humidity, temperature, dew point, solar radiation

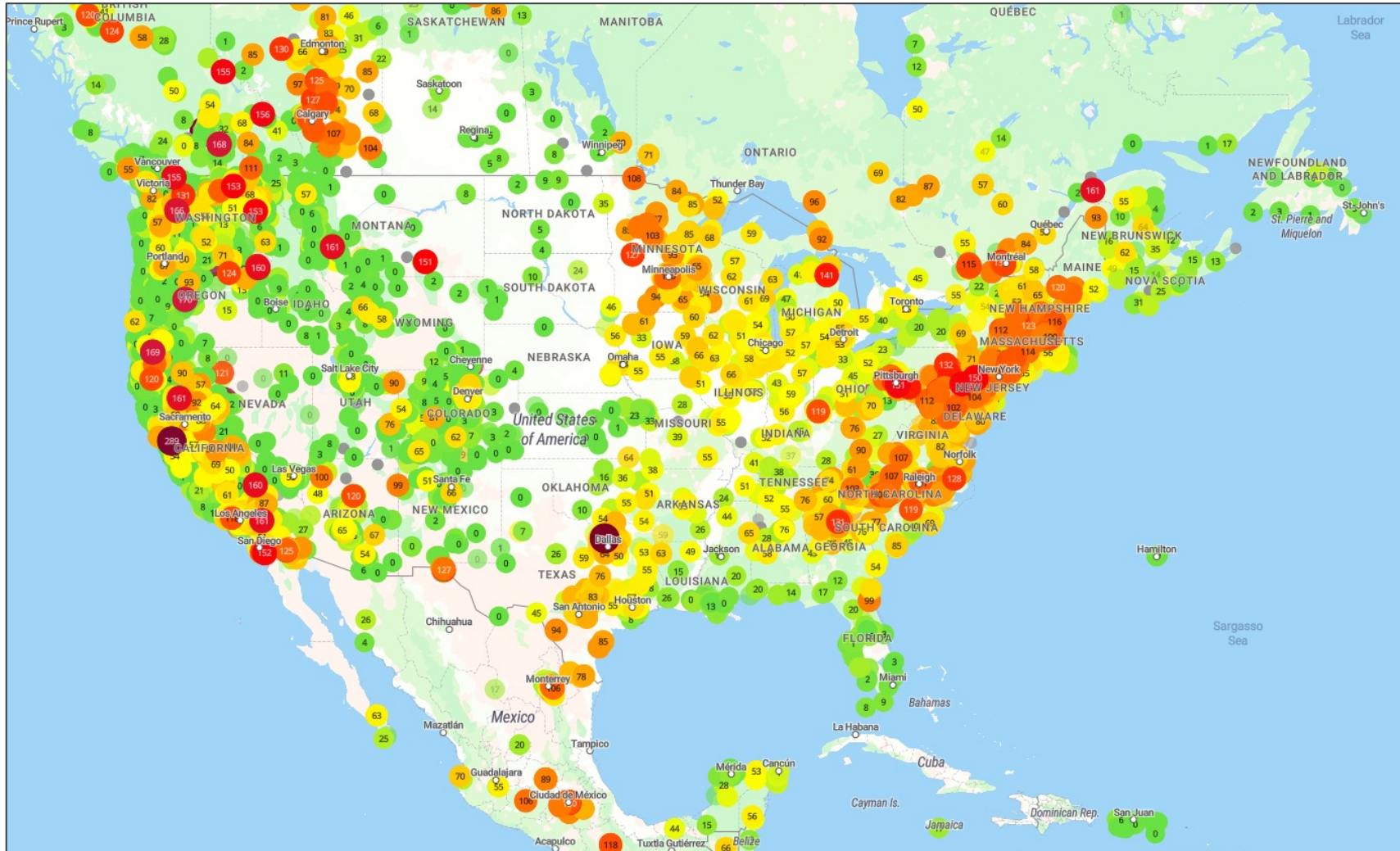


## AIR MONITORING OBJECTIVES

- Compliance Purposes: Determine attainment status for criteria pollutants.
- AQI Reporting: Provide timely and accurate data for Air Quality Index and forecasting.
- Control Strategies: Develop new strategies and assess existing ones.
- Trend Analysis: Assess short-term and long-term pollutant trends.
- SIP Development: Provide data used in modeling to aid in development of State Implementation Plans.
- Characterize Sources: Distinguish between contributions from local sources and the effects of long-range transport.
- Support long-term health assessments and model evaluations.



# PURPLEAIR NETWORK

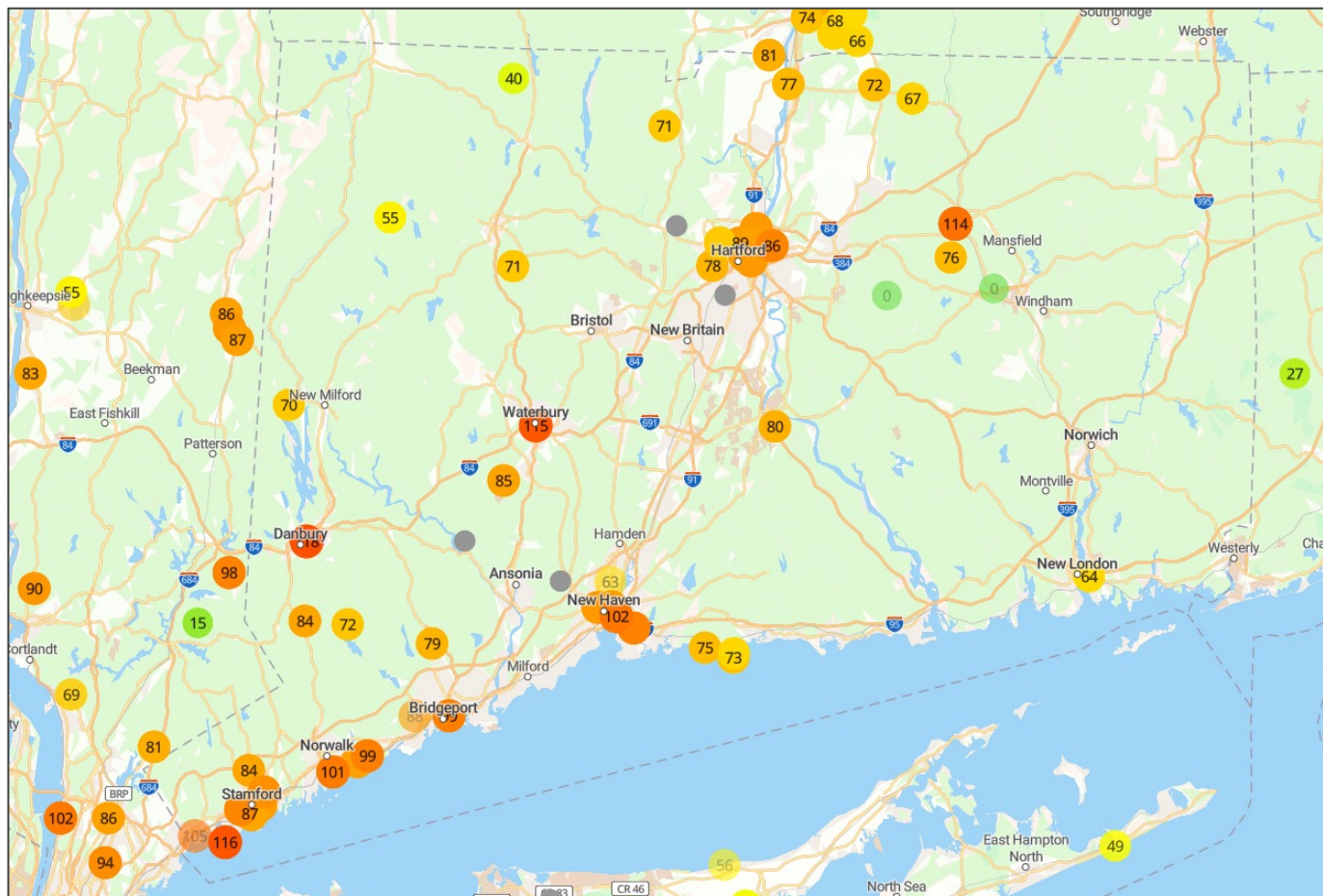


- PurpleAir PM Sensor < \$300
- Measure PM<sub>1.0</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>
- Transmits data to:  
[www.purpleair.com](http://www.purpleair.com)





# SENSOR LOAN PROGRAM CONNECTICUT PURPLEAIR NETWORK



## DEEP-owned PurpleAir sensors:

Total of 39 (27 internal; 12 external/loaned)

- 14 DEEP Air Monitoring Sites
- Science Center (Hartford)
- Kellogg Environmental Center (Derby)
- Talcott Mountain Science Center & Academy (Avon)
- CREC Academy of Aerospace & Engineering Elementary School (Rocky Hill)\*
- CT Technical Education & Career System (CTECS; Stamford)
- Waterford High School
- PT Partners (Bridgeport)
- Groundwork Bridgeport

\* 1 of 14 CT schools enrolled in [AQ Flag Program](#)

## Non-DEEP PurpleAir sensors:

- City of Stamford (10 sites)
  - [Stamford Air Quality link](#)
  - Patch article: [Stamford's New Air Monitoring System is Up and Running](#)
- Greater Dwight Developmental Center (New Haven; 3 sites)
  - [EPA EJ Small Grants Program recipient](#)
  - Partner with Yale University Urban Design Workshop

# AIR QUALITY MONITORING WORKGROUP OF NORTHEAST AND MID-ATLANTIC STATES & DC

## GEORGETOWN CLIMATE CENTER

### **Goals / Objectives:**

- Build a new “community of practice” for state agencies on the topic of community-based air quality monitoring, outreach, education and potential policy actions to support local air quality management efforts.
- Support participating states and community partners in establishing hyperlocal air quality monitoring projects, including by leveraging federal funding.
- Use data from air monitoring projects in ways that inform state and local policy actions to reduce emissions.
- Establish, build and strengthen relationships with groups in communities overburdened by air pollution.

# AIR QUALITY MONITORING WORKGROUP OF NORTHEAST AND MID-ATLANTIC STATES & DC

## GEORGETOWN CLIMATE CENTER

### **Workgroup activities:**

- Regional inventory of community-based air quality monitoring activities.
- Build capacity for state agencies and communities.
- Expand and improve outreach and engagement with EJ stakeholders and those living in overburdened communities.
- Conduct meetings, webinars, workshops and other dialogue with stakeholders and communities to collect public input, share case studies, and discuss examples and lessons.
- Develop an air monitoring Action Toolkit featuring best practices and case studies.
- Prepare for federal funding opportunities to expand community-based air quality monitoring.



# AIR QUALITY MONITORING WORKGROUP OF NORTHEAST AND MID-ATLANTIC STATES & DC

## GEORGETOWN CLIMATE CENTER

### Training:

- **Air Quality Foundations** (Nov 2022)
  - General concepts, with tools and resources to help agencies build their own versions of the presentations – with placeholders to localize
- **Environmental Justice and Equity 101 Workshop** (Jan 2023)
  - Help develop a shared understanding of the history of environmental injustice in the U.S. and opportunities to implement achievable changes that advance EJ via AQ monitoring projects
- **Designing an Air Monitoring Study** (Spring 2023)
  - Basics of planning an air monitoring program with communities, from start to finish.
  - KEY: establish the purpose of a project; budgeting for processes (not just hardware)
- **Equitable Community Engagement Workshop** (Spring 2023)
  - Explore tips and tools for building – and investing in -- authentic relationships with impacted communities and conducting equitable community engagement.
  - Analyze case studies in AQ monitoring context

# INVITATION FOR ENGAGEMENT & PARTICIPATION

## **How would you like to participate?**

### **Would you like to offer feedback on proposed WG activities?**

Influence priorities

Identify new/ additional areas of work

### **Would you like [monthly/ quarterly] updates?**

WG activities

State-specific projects

### **Would you like to be involved with future activities?**

Meetings on federal programs, details and timing for funding opportunities

Technical trainings - how to design community-based AQM project to achieve community goals?

# GEOSPATIAL MEASUREMENT OF AIR POLLUTION (GMAP)





# WHAT IS GMAP?

The use of fast-response instruments and precise GPS on a mobile platform to spatiotemporally resolve air pollution patterns in a variety of use scenarios

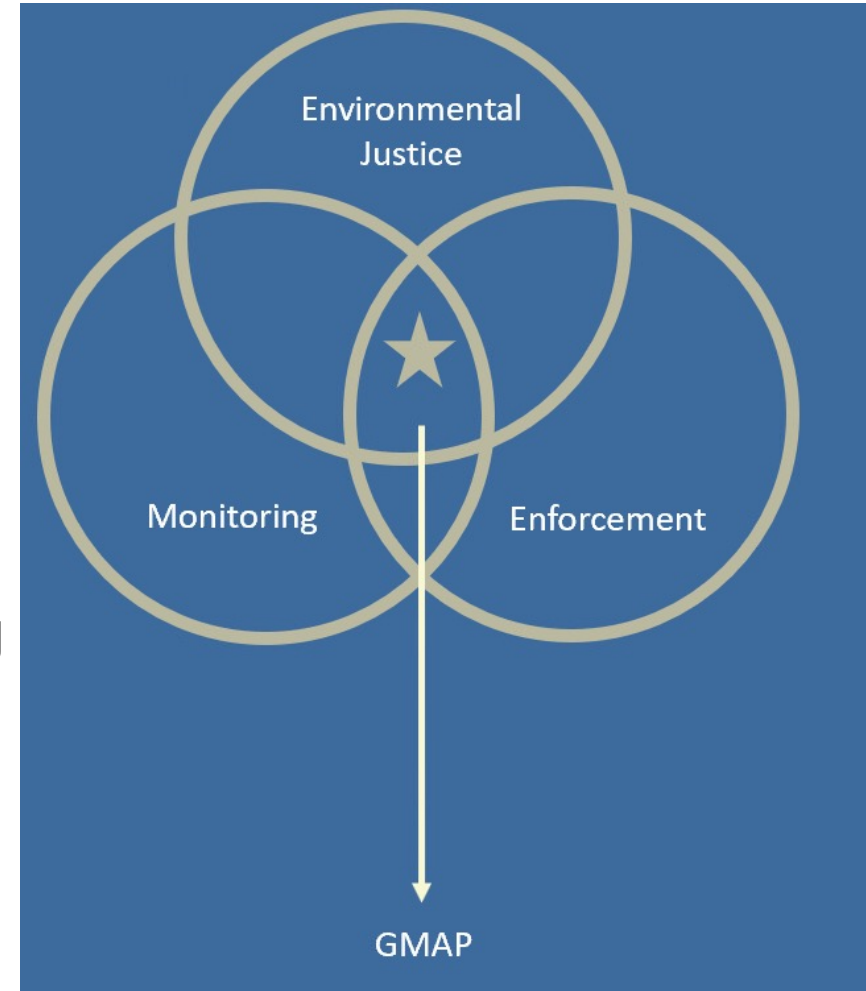
GMAP is capable of measuring concentrations of 16 air pollutants and taking ambient air samples

- Criteria, toxics, GHGs

GMAP will fill the gap between DEEP's ambient air monitoring network and source emission testing program (i.e., stack testing)

# WHY GMAP?

- Identify sources of air pollution that have gone undetected using traditional source identification techniques
- Target/prioritize inspections and investigations using fenceline and intra-facility GMAP “screening” data
- Better understand permitted sources’ fenceline impacts and fugitive emissions
- Obtain data to better understand air pollution levels in EJ and overburdened communities
- Investigate other air quality questions/concerns



# POLLUTANTS MONITORED

## Duvas DV3000

- Benzene
- Toluene
- Ethylbenzene
- m-, o-, and p-Xylene
- Nitrogen oxide
- Nitrogen dioxide
- Sulfur dioxide
- Ozone
- Formaldehyde
- Styrene
- Ammonia
- 1,3-butadiene

## Picarro G2301

- Carbon dioxide
- Methane
- Water vapor

## Magee Scientific AE33

- Black carbon

## Teledyne T640 PM Mass Monitor

- PM10
- PM2.5

## ION Science PID

- Total VOC, as isobutylene\*

## AIRMAR Ultrasonic Weatherstation 200WX

- Wind speed
- Wind direction
- Barometric pressure
- Air temperature
- Relative humidity
- Dew point (calc.)
- Heat index (calc.)
- Wind chill temperature (calc.)

\*On an as-needed basis, will be able to draw Summa canister samples and analyze for individual constituents via GC/MS



# POTENTIAL SECTORS FOR SURVEILLANCE

- Schools near highways/industry
- Landfills
- Hazardous waste treatment, storage, and disposal facilities
- Waste-to-energy plants
- Scrapyards
- Gasoline stations
- Fuel storage tank farms
- Commercial refrigeration units
- Chemical manufacturing facilities
- Printing, coating, solvent operations
- High truck idling areas
- Hospitals/sterilization facilities
- Sewage sludge incinerators
- Municipal solid waste, commercial/industrial waste, other waste incinerators
- Power plants (gas-, oil-, biomass-fired)
- Asphalt and concrete batch plants
- Natural gas compressors and pipelines
- Rubber and latex operations

# COMMUNITY ENGAGEMENT

DEEP is committed to integrating community engagement into its GMAP program

DEEP intends to:

- Learn from residents and community leaders about any specific air pollution concerns in your respective neighborhoods prior to conducting community emission surveillance
- Leverage information gleaned via public engagement process to tailor emission surveillance efforts to the specific environmental needs of the community at hand
- Follow up with residents and community leaders to discuss data and findings from DEEP's emission surveillance and discuss any needed follow-up or next steps
- Include other outside agencies and local public officials to review the GMAP results and discuss next steps



Connecticut Department of Energy & Environmental Protection







# 2023 PRIORITIES: AIR MANAGEMENT'S CORE FUNCTIONS

## Core functions by Division

Planning – Mobile Sources, Attainment Planning, Ambient Monitoring, Data Analysis

Engineering – Stationary Source Control, Permitting, Technical Services

Enforcement – Field Enforcement, Source Emissions Monitoring, Compliance Analysis, Administrative Enforcement, Investigations

Radiation – Radioactive materials, Medical x-ray, Agreement State and EOC Support

DEEP Air Planning & Standards Division 2023 Business Plan <i>Ensuring clean air for everyone every day</i>				
Implementing Source Policies	Meeting Clean Air Act Milestones	Monitoring Ambient Air Quality	Improving Regional Air Quality	Ensuring Data Quality
<b>CHIEF 3.0</b> Implement new program requirements – e-Bikes, vouchers and fleet applicability, work with Com on LM out-reach, fill lower vacancies <b>Deploying Clean Vehicles:</b> VW, DfRA, and H2 Fuels <b>Transportation Modeling:</b> MOVES modeling for OOT and other mobile source efforts; M2D modeling <b>Regulatory Programs:</b> LEVIV; 2015/2015 GHG; IM SIP updates; and ACT & Low NOx MHD	Meet SIP requirements for 2015 and 2008 Ozone Std., including "Bump-up" (e.g., RFP) applicability, work with Com on LM out-reach, fill lower vacancies 2015 Std SIP: SW CT (mod) SIP due Aug 2022 (target Jan 2023); Hartford, Litchfield, Tolland, New London, Windham (mod. - due Jan 2023) 2008 Std SIP: Fairfield, New Haven Middlesex (severe) SIP due May 2024. Regional Haze MAINE-VU TSC: Mid-planning period review due 2023 Advancing for Clean Air Explore new outreach tools (e.g., Graphics), Automate outreach; Continue to push EPA to address transport and adopt national rules for tougher mobile source standards	<b>Core Activities</b> Maintain Network 14 Sites throughout CT 8 Pollutants & Met address Attention Hire and train new staff to address prior attrition New Requirements Community-based monitoring Sensor loan program 2023 LISTOS campaign Asset Management & Modernization GHAP tech support	OTC Regional ozone planning NESCALUM "Smells" technically, focused on climate issues, transportation electrification and wood smoke MARAMA Mid-Atlantic technically oriented support Georgetown Climate Center Multi-state collaboration to support all aspects of developing/implementing community based monitoring	Network Planning 2023 Technical Systems Audit (TSA) Annual EPA Monitoring Network Plan QA/QC Provide QA/QC for all monitoring data – including assisting with GHAP data review/collaboration Data Submissions Submit GHG data to EPA to comply with grants and monitoring program requirements

DEEP Air Engineering 2023 Business Plan			
Timely and Protective Air Permit Processing	Accurate and Secure Emissions Data Collection	Regional Collaboration	Sound Policy and Regulatory Development
Title V Permit Program NSR Permit Program	Stationary Source Emissions Inventory Mobile Source Emissions Inventory Area Source Emissions Inventory Maintenance of EMIT and EIS Modeling to support Air Permitting	<b>Core Activities</b> Ozone Transport Commission (OTC) Technical Work Groups: o Stationary Source o SW Workgroup o High Electric Demand ERAC EGU Technical Work groups MANE-VU Workgroups	SIP Approved Regulations NAAQS Implementation Regulation Promulgation Power Sector Research to Inform Ozone Attainment and Climate Policy Development
Meet 20 by 20 and EPA Timeliness mandates Continue to expand knowledge of PFAS air emissions treatment methods and nationwide permit developments regarding PFAS. Provide prompt permit assistance and processing in response to Ozone reclassifications	Annual Emission Reporting and Emissions Fee Calculation Complete Statewide Periodic Emissions Inventories to support 2008 Ozone NAAQS Bump Up and 2015 Ozone NAAQS SIP submissions Restore IT Development Environment and implement efficiency upgrades to EMIT	Participate in OTC, MARAMA and ERAC emissions inventories and projections to support Ozone and Regional Haze Attainment Plans Support OTC Charge Development and Modeling	Revise State Implementation plan regulations in response to 2008 Ozone designation "Bump-up" to Severe in New Haven and Middlesex Counties Revise State Implementation Plan to obtain additional NOx reductions from MWCS Support Rad Regulation Development

DEEP Air Enforcement 2023 Business Plan			
Field Enforcement	Compliance Analysis & Coordination	Source Emissions Monitoring	Administrative Enforcement
OTC (Title V and 120) Inspections State (38a and true minor) inspections – <i>expanding to investigations</i> RI, WCs, SOCs Complaint investigations – <i>expanding to investigations</i> Over burning inspections, issuance of permits, administration of Open Burning Official set program Stage 1 test audits/inspections, review of test reports	Review of compliance certifications, monitoring reports, deviation reports NSPS and MACT reports, and CEM summary reports ICS data stewardship Off-site PCBs (information requests) 38a administration Compliance oversight of trading programs NSPS and MACT/KTR analyses Fuel inventory tracking	Review of emission test protocols Emission test audits Review of emission test reports Review of RATA protocols RATA audits Review of RATA reports Determination of compliance with regulatory/permit limits based on emission test and RATA results Review of CEMS QA/QC audits	Development of enforcement codes and assessment of civil penalties/SEPs Closure of NOVs and orders Referral of cases as needed (AG, Chief State's Attorney, EPA) Implementation of NOx RACT program Implementation of VOC RACT program
Staffing Restore lost capacity in Regulatory Development group. Review key staff positions that are vulnerable to attrition and build capacity.	Procedures Support Radiation Agreement pursuit and continued regulator development.	Reports reviewed Timeliness of federal data entry Off-site PCBs conducted NOVs issued	Protocols reviewed Tests audited/observed Test reports reviewed NOVs issued
Inspections conducted Complaints addressed, response time Open burning permits issued Stage 1 tests observed NOVs issued	Meet federal grant commitments Integrate IIR camera into inspections of VOC/methane sources	Ensure timely entry of federal enforcement data into ICS Expand off-site PCB program, with emphasis on minor NSR sources in E communities Develop and implement GHAP community targeting and public outreach strategy	Protocols reviewed Tests audited/observed Test reports reviewed NOVs issued

DEEP Radiation Division FY23 Business Plan <i>Ensuring the safe, secure and environmentally responsible use of ionizing radiation</i>				
Developing Sound Policy and Regulation	Ensuring Compliance	Environmental Monitoring and Decommissioning	Preparing for Radiological Emergencies	Responding to Radiological Incidents
Council of Radiation Control Program Directors (CRCPD) Nuclear Sector Critical Infrastructure Protection Advisory Committee Spent Nuclear Fuel (SNF) NRC State Liaison Officer Low Level Radioactive Waste/Atlantic Compact	Millstone Oversight & Nuclear Energy Advisory Council (NEAC) RMI/DTX Registration DPH Hospital Inspections/ Federal Surveys Mammography Qual Stds Act (MQSA) Inspections Rad Division NRC License Inspections & Enforcement	Millstone Environmental Monitoring Decommissioning and Decontamination Confirmatory Surveys	Radiological Emergency Plan (REP) – drills and exercises NSEP Budget Maintain equipment and facility readiness New England Radiological Health Compact (NERHC)	Emergency Calls Waste facility rad alarm response Secure The Cities (STC) Reach-back Rad Shipping (DOT) Transportation Evals FBI WMD Coordination State Lab Preparedness Committee
Agreement State Application Radiation Reg Updates Report		Radium Sites - Waterbury Clock - New Haven Clock - Seth Thomas Clock	Update of Radiological Emergency Plan Integrate and KTR with new DEMHS staff	EcoGamma Monitor Network Responding to Ukrainian Nuclear Threat
<b>Agency Incident Command</b> - IC leadership - Integrating with SEOC staff - Energy Assurance				
<b>Staff Development</b> • Staff Agreement State Training and Qualification • Knowledge Transfer and Retention (KTR) • Division realignment and staff on boarding • Career development				

# DEEP'S AIR AND TRANSPORTATION FOCUS FOR 2023

## Address the reclassification to “severe” ozone nonattainment in Middlesex and New Haven Counties

- By operation of the federal CAA, not due to degraded air quality, DEEP will need to amend regulations to impose “major source” requirements (e.g., RACT, NNSR and Title V) on smaller sources in these two counties.

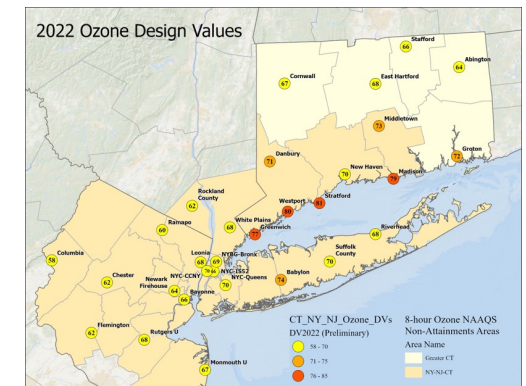
## Continue Implementing Public Act 22-25

- Improve CHEAPR by adding an income qualified voucher program for new and used electric vehicles
- Extend CHEAPR to fleets and electric bicycles
- Develop grant programs for electric school buses and an incentive program for medium and heavy-duty (MHD) electric vehicles

## Adopt California’s emission standards for Light Duty and MHD vehicles for the 2027MY

## Monitoring initiatives

- GMAP roll-out this Spring
- Community based monitoring sensor loan program and school outreach
- Working with DPH to implement their community-based monitoring study



# RECAP – OPPORTUNITIES FOR THIS SUBCOMMITTEE

- Community based monitoring
  - **Georgetown effort**
  - **Developing DEEP's Community Based Monitoring program**
  - **IRA funding**
- GMAP
  - **Roll out during Air Quality Awareness Week**
  - **Developing initial list of priority areas**
  - **Data**
- Other topics to cover?

# Q&A; PUBLIC COMMENTS; NEXT STEPS; NEXT MEETING

CEEJAC Subcommittee member Q&A

Public Comments-

Next Meeting (tentative) March 29, 2023 at 5:30PM

Adjourn