EBC Connecticut Program:
Connecticut DEEP Environmental Quality Leadership Team
Welcome

Dana Huff

Chair, EBC Connecticut Chapter

Vice President, Tighe & Bond
Thank you to our Host
Thank you to our Silver Sponsors

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Engineers | Environmental Specialists

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FUSS & O’NEILL
ENGINEERS • SCIENTISTS • PLANNERS
Welcome

Don Boudreau

Vice President of Electric Operations for Connecticut

Eversource Energy
Introduction

Betsey Wingfield

Deputy Commissioner, Environmental Quality

Department of Energy and Environment Protection

State of Connecticut

Environmental Business Council of New England
Energy Environment Economy
Long Island Sound Water Quality Update

Mark Parker
Coordinator
Water Protection and Land Reuse Bureau
Connecticut DEEP

Environmental Business Council of New England
Energy Environment Economy
Long Island Sound
Water Quality Update

Mark Parker, CTDEEP
EBC Connecticut Leadership Program
October 30, 2019
Why Care about the Sound?

- Estuary of National Significance
- 1,320 square miles
- 600 miles of coastline
- Watershed covers 5 states
- 10% of US population lives within 50 miles of LIS
- $8.9 B to the regional economy
Why Care About the Sound?

• 240 beaches, over 15 million summer visits
Why Care about the Sound

• 170 fish species
• 1,200 invertebrate species

Connecticut Department of Energy and Environmental Protection
The Big Issue - Hypoxia in the Sound

- aka – Low Dissolved Oxygen
- DO < 3 mg/L
- Occurs between June – Sept. in bottom waters
- Cause – Too Much Nitrogen
- High cost to remove Nitrogen from wastewater and stormwater
The Big Issue- Hypoxia in the Sound
LIS Total Maximum Daily Load Nitrogen

It’s a Nitrogen Budget or Diet

- **58.5% Reduction in Total Nitrogen Loading**
  - The reduction applied to WWTPs in CT is 63.5%

- **25% Aggregate WWTP Reductions for Upstream States (MA, NH, VT)**

- **10% Reduction in NPS**

- **Atmospheric Reductions**
  - 18% reduction expected (CAA)
Monitoring Progress
Nitrogen Loads from Wastewater

- 105 STPs
- 1 billion gals of wastewater per day
- Facilities monitor effluent for permit compliance
- CT Nitrogen Credit Trading Program
CTDEEP Hypoxia Cruises

R/V Dempsey Cruises
$1.5M/yr from EPA
3 DEEP Staff
2 Summer Interns
Boat Captain
UConn Lab Analysis

Continuously done for 32 years!
Parameters Sampled

- Dissolved Oxygen
- Nitrogen, Phosphorus
- Salinity, Temperature, pH
- Plankton
- Toxic contaminants via the National Coastal Condition Assessment (Every 5 years)
R/V Dempsey also supports researchers, academic institutions
Results
Nitrogen Loads Have Decreased

Point Source Nitrogen Trade-Equalized Loads
1995-2018 - 106 NY/CT STPs

TMDL TARGET = 22,774

Connecticut Department of Energy and Environmental Protection
Nitrogen Loads Then and Now

Then: Wastewater was the biggest source
Now: Nonpoint sources are the biggest

CT Baseline Nitrogen Percentages

- WWTP: 55%
- Developed: 23%
- Agriculture: 6%
- Forest: 17%

CT Current Nitrogen Percentages

- WWTP: 30%
- Developed: 33%
- Agriculture: 7%
- Forest: 30%
Hypoxic Area Has Decreased

Maximum Area of Hypoxia (Jun-Sep)

Area - Square Miles

Cruise Year

Area of Bottom Hypoxia

5 per. Mov. Avg. (Area of Bottom Hypoxia)
What Lies Ahead

Connecticut Department of Energy and Environmental Protection
CT 2\textsuperscript{nd} Generation Nitrogen Strategy

Building on success with a new focus

1) Wastewater Treatment Plants
   - Complete new planned upgrades
   - Continue to operate trading program

2) Enhance NPS/Stormwater Mgt.
   - Regulatory and non-regulatory measures

3) Focus on Embayments
   - Outreach and Education
   - Prioritize embayments for TMDLs
   - Study to assess OWTS nitrogen loading
LIS Monitoring and Research Priorities

- Data collection and research to parameterize the new systemwide model
- Comprehensive assessments of priority embayments
- Partnerships for academic research on:
  - Hypoxic volume calculator
  - Respiration rate studies
  - Nutrient mass balances
  - Remote sensing
Recent reports

Connecticut’s Second Generation Nitrogen Strategy
Long Island Sound
2017-2022

2018 Long Island Sound Hypoxia Season Review


Connecticut Department of Energy and Environmental Protection
Long Island Sound Tropospheric Ozone Study (LISTOS)

Michael Geigert

Air Pollution Control Engineer

Bureau of Air Management

Connecticut DEEP

Environmental Business Council of New England
Energy Environment Economy
Connecticut has an Ozone Problem

NOx emissions have been declining nationally and this has resulted in lower ozone levels, but Connecticut is still in non-attainment for ozone.
Connecticut’s Ozone Non-Attainment Areas

- Attainment of the ozone ‘NAAQS’ is determined by taking the annual 4th highest daily maximum 8-hr concentration at each site and averaging that over 3 years (design value). The current (2015) ozone NAAQS is 70 ppb.
Connecticut is required to attain the 2008 standard by the end of 2020. Greater CT is required to attain the 2015 standard by the end of 2020, and southwest CT by the end of 2023.
Ozone Design Values (ppb) in other Nonattainment Areas of the Ozone Transport Region (OTR).

Maximum design value within each nonattainment area
Ozone 4\textsuperscript{th} High Trends 1997-2018 Animation

Design values are the 3-year average of the 4\textsuperscript{th} highs. The 4\textsuperscript{th} high trends are a better indication of annual variability.
Connecticut Exceedance Day Trends

- Note that the number of ozone exceedance days has dramatically decreased since 1975, but it appears to have leveled off in recent years, despite all of the control programs that CT has implemented.
Ozone Transport into Connecticut

- EPA’s modeling of Connecticut’s upwind sources showed that NY’s modeled ozone contribution to CT in 2017 (18.8 ppb) was equal to that of PA and NJ combined.
Introduction to LISTOS

In order to better characterize the ozone events around LIS during the summer of 2018, a group of researchers and State Agencies collaborated on a study called LISTOS – Long Island Sound Tropospheric Ozone Study. NESCAUM provided coordination for activities that included:

- NASA GeoTASO/GCAS flights and UMD Cessna flights;
- Wind profiler and ozone/aerosol LIDAR images;
- Pandora instrument measurements (NO₂);
- Vertical ozone profiles from ozonesondes;
- Daily briefings for possible ozone events;

Also available to complement the study:
NO2 Tropospheric column measurements from the recently launched TROPOMI satellite
LISTOS Mission

This study was conducted to monitor Long Island Sound and the surrounding coastlines that continue to suffer from poor air quality exacerbated by land/water circulations.

• The goal of this study was to improve the understanding of ozone chemistry and transport from New York City and upwind regions to downwind areas, particularly over Long Island Sound.
• Despite air quality improvements nationwide, the population in this region still suffers from high ozone concentrations year-to-year. Because of this, the science team has planned to work toward assessing emissions inventories over the region, as well as investigating the complicated chemistry and dynamic meteorological patterns associated with Long Island Sound and its coastlines influenced by sea breeze transported pollution.
Various Research Studies Over Long Island Sound 2018

Image courtesy of [NASA LARC - LISTOS– Long Island Sound Tropospheric Ozone Study 2018 Website](#)
Pandora Spectrometer Instrument

• What is Pandora?
  • Ground-based spectrometer that takes in direct solar radiation (UV-visible) by following the sun throughout the day.
  • Measures differences in absorption and scattering of UV-visible radiation to estimate vertical column amounts of various species (in this case NO₂).
  • Will be used by the EPA to monitor air quality.

• Advantages
  • Gives a column amount of a species similar to a satellite.
  • Cheaper with more continuous measurements (temporal frequency ~ minutes).
  • Acts as a useful proxy to boundary layer NO₂.

• Limitations
  • Often performs poorly when clouds and/or aerosols are present.

Figure (left): Image from Spinei et al., 2018 showing Pandora tracking the sun and taking measurements.
Figure (left): Image of a Pandora taken from http://pandoria.net/
Ozone Lidar (Light Detection and Ranging)

Langley Mobile Ozone Lidar (LMOL)

- DIAL UV lidar using Ce:LiCAF laser oscillator time multiplexed at two wavelengths
- Licel analog and photon counting data system
- Ozone profiles from 0.12 km up to 8+ km
- Quasi-unattended/automated, can be left running overnight
- Real-time quick-look display
- TOLNet—standardized algorithms, and error propagation


Tim Berkoff – PI, Email: timothy.a.berkoff@nasa.gov; Guillaume Gronoff, Co-PI, Data & Analysis Lead; Bill Carrion, Co-PI, Technology lead; Joey Sparrow, Field support
August 28, 2018 Westport Ozone Lidar

This image shows that the ozone was produced upwind over LIS (below 1500 meters) and transported on-shore and to the northeast to the Westport monitor.
July 2, 2018, New Haven Ceilometer

Both of these instruments showed heavy aerosol backscattering due to smoke.
July 2, Bridgeport to Port Jefferson Ferry Animation

Note that the ferry ozone levels are more often higher than surrounding monitors.
This NASA flyover mission at 30,000 feet, produced high-resolution NO$_2$ images over NYC that could detect single-source emissions.

- Geostationary Trace gas and Aerosol Sensor Optimization/ GEO-CAPE Airborne Simulator
- Hyperspectral mapping instruments utilized as a testbed for geostationary air quality retrievals
  - e.g. upcoming TEMPO satellite launch
- Retrieved NO$_2$ relative to an unpolluted reference spectrum via DOAS in the spectral window of 435-460nm with a Differential Slant Column (DSC) of ~ 250 x 250 m pixels
- Flew parallel flight lines spaced for gapless mapping of our area of interest (creating a raster map)
TROPOMI NO₂ Data Available Since July 2018

- The European Space Agency TROPOMI instrument produced NO₂ images showing the magnitude of NYC NO₂ sources (3x7 km).
- The previous OMI satellite NO₂ images did not have sufficient grid resolution for this, but were useful for trends.
Very hazy over NYC due to the western wildfire smoke.

Max. 1 min $[O_3]$ ~ 150 ppb to the north of NYC.
July 2, 2018 TROPOMI NO$_2$

The TROPOMI satellite detected NO$_2$ along the I-95 corridor, but levels were much higher over NYC. Easterly winds drove the NO$_2$/ozone plume back over NYC during the day and Rockland County NY recorded the highest ozone levels.

What is striking in the Tropomi NO$_2$ images are the relative lack of NO$_2$ emissions around the other major metropolitan areas along the I-95 corridor!
July 2, 2018 (am/pm) Filtered GCAS NO2 with Sources

July 2, 2018pm GCAS NO2 Threshold 9e+15 molecules/cm2
July 2, 2018 GCAS NO₂ NYC Flyover Animation
July 2, 2018pm GCAS NO$_2$ with Maximum 8-hour Ozone AQI

Click for more!
July 2, 2018 (pm) GCAS NO₂ Slant Column With EGU Sources

Click for More
Results

• The new higher resolution TROPOMI NO$_2$ images revealed relatively high NO$_2$ plumes around NYC, compared to other metropolitan areas along the I-95 corridor.

• High resolution NASA flight images confirmed that NO$_2$ plumes originated from EGU facilities around NYC and Long Island and the major airports.

• Ozone LIDAR shows that high levels of ozone form above the surface of LIS and are transported to coastal monitors.

• The New Haven ceilometer confirmed the presence of smoke aerosols during several of the 2018 ozone events, which may have enhanced ozone levels.
Instrumentation Plans:

- Operation of a compact O3 monitor on the Bridgeport, CT – Port Jefferson, NY ferry.
- Installation of one HCHO continuous monitor at the Westport site.
- Installation and operation of two ceilometers, at Westport and New Haven.
- Installation of EPA’s Pandora spectrophotometers at Westport Sherwood Island, New Haven Criscuolo Park and Madison Hammonasset State Park.
Future Challenges

• Major long range transport of pollutants is diminishing, thus we have to look to the NYC area and surrounding States to reduce emissions.

• It appears that Connecticut’s ozone design values trends have nearly leveled off in the last few years, which presents a real challenge to attaining the NAAQS in the near future.

• Further data analysis and source specific modeling are required to ascertain the most effect methods to reduce emissions that lead to Connecticut's ozone non-attainment status.
Questions?
Narrow’s 16 CTs were a major source of NOx

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<th>NOx Rate</th>
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<td><strong>Total pounds NOx</strong></td>
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</table>
July 2, 2018 (pm) GCAS NO₂ Slant Column With EGU Sources

Click for More

July 2, 2018 (pm) GCAS NO2 Threshold 9*e15
July 2, 2018 (pm) GCAS NO₂ Slant Column With EGU Sources

Click for More
Resiliency Planning for Hazardous Material Business

Diane Duva

Director, Emergency Response Planning

Material Management and Compliance Assurance Bureau

Connecticut DEEP

Environmental Business Council of New England

Energy Environment Economy
Resilient Communities & Businesses: Preventing Pollution from Chemicals

Pollution Prevention Office
Emergency Response Planning Office
Bureau of Materials Management and Compliance Assurance

Connecticut Department of Energy and Environmental Protection
Cartright Street, Bridgeport 2018
The New Normal?

Increased risk and liability as a result of chemical releases into the environment.
Increase in Extreme Weather Events

(% change in last 50 years)

From National Climate Assessment and CIRCA website

Connecticut Department of Energy and Environmental Protection
How Natural Hazards Impact Businesses

- According to FEMA: 40% of businesses affected by a disaster never reopen; 25% that do reopen fail.

- Other studies found: 90+% of businesses fail within 2 years of being struck by a disaster.
CT DEEP’s Pollution Prevention Office and Emergency Response Planning Office collaborating to assist businesses:

- GIS map with flood prone areas, locations of chemical users and hazardous waste generators
- Guidance materials on reducing chemicals, increasing safety, BMPs to increase resilience, reduce pollution
- Online training
- Assist businesses with complying with CGS 22a-610
NEW INITIATIVES

Helping Small Businesses Mitigate Impacts of Natural Hazards

WHAT IS IT?

In an effort to assist small businesses with reduction of property damage or loss due to natural hazards, CT DEEP has proposed strategies for towns to implement educational programs with recommendations for best management practices (BMPs) to prevent pollution from chemicals from getting out into the environment.

According to FEMA, 40% of businesses affected by disaster never reopen, and 25% that do reopen fail; other studies show that 90% of businesses fail within two years of being struck by a disaster. Damage during storm events result in property damage, loss of inventory, and environmental contamination and liabilities resulting from chemical releases into the environment.

The sample mitigation objectives for municipalities is to increase awareness by small businesses of any chemicals and toxic products they use, store and/or sell, and to use BMPs to improve safety. On a regional scale, the objectives are to improve chemical safety practices to prevent disruption of economic activity and protect the environment and public health.

Strategies for educational programs include providing information on municipal websites, social media, brochures and posters, or through workshops.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

The benefits of reducing damage to small businesses during a disaster are a reduction in property damage and losses, avoiding expensive cleanups, reducing liability and risk to public health, and a more rapid recovery and continued operations that result in less impacts to the municipality’s economic base.

The municipalities of the Capitol Region can benefit from mitigation actions related to mitigating flood impacts to small businesses. DEEP has recommended that hazard mitigation plan strategic actions list the municipality as the lead agency, with assistance from CT DEEP, where DEEP would develop information for dissemination. Suggested action priority is on a medium scale, with a completion time frame of one year.
**DEEP’s Outreach Materials for Businesses**

**THE RESILIENT 21ST CENTURY BUSINESS:**
How Managing Chemicals Can Help Your Business Weather the Storm

**Did you know?**
- **40%** of disaster-struck businesses NEVER REOPEN
- **25%** of disaster-struck businesses that reopen eventually FAIL
- **90%** of businesses without a plan FAIL within 2 YEARS post-disaster

Do you have **hazardous materials, chemicals, or wastes** on site?
If so, then you may already be subject to regulatory requirements.
Extreme weather could put your business at risk.
That's why it's important to make your business resilient in the face of natural disaster.

Here are some tools to help:

- **Become a disaster-resilient, prepared business.**

**THE RESILIENT 21ST CENTURY BUSINESS:**
How Retailers & Service Providers Can Manage Chemical Products to Weather the Storm

You may not realize that some products on your shelves or in your storage areas are toxic to humans & can pollute the environment.

Here's how you can make your business resilient in the face of natural disaster:

1. Understand the risks to your business, employees, customers, & community.
2. Know which products you sell or use that contain chemicals.
3. "Floodproof" your storage of those products.

Become a disaster-resilient, prepared business.

---

**Connecticut Department of Energy and Environmental Protection**
CT’s businesses can be prepared to “weather the storm”

Connecticut was hit with at least 5 major storms plus lesser weather events since 2010. It is important to make your business and property resilient to natural hazards and reduce the risk of on-site chemicals causing pollution. Storm events can result in property damage, loss of inventory, and environmental contamination and liability. Accidental releases of toxic chemicals have also put communities and emergency responders at risk.

Working together, businesses and local emergency officials can increase awareness and take steps to reduce risk and protect human health and safety.

Find out what you can do:

Tools, Outreach Materials & Resources for Businesses:

CT BUSINESSES: ARE YOU PREPARED?

HOW INDUSTRIES, RETAILERS, & SERVICE PROVIDERS CAN REDUCE CHEMICAL RISKS & PREPARE FOR CLIMATE CHANGE

"Planning for critical incidents & training employees on proper emergency procedures should become a standard throughout any business model."

Allen Steinbeck
director of John Deere
Worldwide Security & Aviation
Connecticut Department of Energy and Environmental Protection

CT Toxics Users & Climate Risk Viewer

Locate address on the map and find out if facility is in flood prone area

- EPCRA Tier II
- RCRA LQGs, SQGs
- TRI
- National Flood Zones
- CT Hurricane Evacuation Zone
- Sea Level Rise

ct.gov/deep/CTToxicUsersMap

Connecticut Department of Energy and Environmental Protection
EPCRA Tier 2 Facilities at high risk of (1) Flooding, (2) severe weather event, or (3) sea level rise must:
• update hazard mitigation plan and address such risks

CT DEEP:
• identifying facilities, making them aware of requirements
• creating new “tools” to assist with compliance & preventing accidental release of hazardous chemicals during a storm, flood or other natural hazard.
Key Points and Questions?

- Update and share contingency plans and chemical inventories with local fire department

- “flood-proof” chemicals:
  - Contain and elevate

- Online training coming in Spring 2020
Thank you

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Update from the DEEP Bureau Chiefs

• Yvonne Bolton, Chief
  Materials Management and Compliance Assurance Bureau
• Tracy Babbidge, Chief
  Bureau of Air Management
• Brian Thompson, Acting Chief
  Water Protection and Land Reuse Bureau
Materials Management and Compliance Assurance - Initiatives

October 30, 2019
EBC CT Program
Connecticut Department of Energy and Environmental Protection

**MMCA**

**WPED**
- Industrial Wastewater Discharges - NPDES/Pretreatment
- Stormwater Management
- Large Subsurface and Agricultural Discharges
- Field compliance
- Data Management / Program Support

**WEED**
- Solid and Hazardous Waste permitting
- Solid and Hazardous Waste Enforcement
- Source Reduction and Recycling
- Field Compliance
- Pesticide Management
- Program Analysis

**ERSP**
- Spill Response - 24/7
- Underground Storage Tanks and PCB enforcement
- Site Assessment and Support
- Landfill Sire Operations
- Mobile Lab
- Marine Terminals

**Policy & Planning**
- Policy & Planning
Materials Management

- 2016 Comprehensive Materials Management Strategy
- 60% diversion goal by 2024

Challenges:
- Need to continue to increase source reduction and recycling
- Need to work on developing waste diversion infrastructure
- Need markets for increased source reduction and recycling
Materials Management

• Good News
  ▪ Single-Stream Recyclables – solid MRF infrastructure and widespread curbside collection
  ▪ Organics – Promising progress on AD development, home composting
  ▪ Standardize collected materials – What’s In What’s Out

• Bad News
  ▪ MSW – Current capacity shortfall, forecasted to grow
  ▪ Bulky Waste / C&D – Overly reliant on out-of-state landfills
E-Government

- EZFile
  - UST Notifications
  - Stormwater registrations

- Starting work for an online system for licensing and renewal of pesticide operators

- Records - Digitizing Spill Incident Reports
Regulations

- UST updates
- Update Hazardous Waste regulations
- Spill Reporting regulations
Reduce Legacy Permit Applications

- Pre-2017 applications
- Working on moving “oldies”
- Majority of MMCA’s legacies are renewals – ‘continuing in effect’
Planning for 2022

• MMCA retirement eligibility 25-45%
• Vulnerabilities in some areas
• Successful hiring in past year – new relationships

• Looking at SOPs
• LEAN
• Evaluating what work we do and how we do it
Planning for 2022

Where is???
Connecticut’s Key Air Quality Initiatives

October 30, 2019
Tracy Babbidge, Bureau Chief
Department of Energy and Environmental Protection
Air Bureau- Strategic Goals

1. **Continue programmatic efforts to achieve clean air** and mitigate climate change, assure radiation safety and measure success

2. **Focus on solidifying relationships with external constituencies**
   - Education and Outreach-Re-aligning SIPRAC

3. **Invest in our organization and staff**

4. **Further our understanding of the science of air pollution** impacting our ability to attain the National Ambient Air Quality Standards

5. **Prioritize efforts recognizing ongoing attrition**
Connecticut Department of Energy and Environmental Protection

Addressing Connecticut’s Ozone Challenge

- Connecticut - non-attainment for both the 2008 and 2015 8-hr ozone national ambient air quality standards

- 2008 Standard: Failed to attain by July 2018 and has been redesignated to serious nonattainment.

- 2015 Standard: Greater CT designated marginal and NY-NJ-CT designated as moderate.

- Ozone Design Values
  - Greater CT: 75 ppb
  - NY-NJ-CT: 82 ppb
Connecticut Ozone Trends

![Graph showing Connecticut Ozone Trends from 1983 to 2018. The graph compares Greater Connecticut Area and NY-NJ-CT Area ozone levels over the years. The 2015 Ozone Standard (70 ppb) and 2008 Ozone Standard (75 ppb) are also indicated.](image-url)
Connecticut 8-Hour (70 ppb & 75 ppb) Ozone Exceedance Day Trends and Implemented Control Strategies

- **Federal Motor Vehicle Standards**
  - Stage 1 Gasoline Vapor Recovery
  - Motor Vehicle Inspection and Maintenance
  - Gasoline RVP Standard (9.0 PSI)
  - Stage II Gasoline Vapor Recovery Phase-in
  - Federal Tier-1 Motor Vehicle Standards
  - Phase 1 Reformulated Gas & NOx RACT
  - Non-Road Engine Standards
  - Consumer Products, AIM Coatings
  - Auto Refinishing, CT NLEV, Enhanced I&M
  - OTC NOx Budget
  - Phase II RFG
  - NOx SIP Call Phase 1
  - Tier II MV& HD Diesel Phase 1
  - CT MW Combustors NOx
  - Portable Fuel Containers
  - Auto Refinishing
  - Stage II Gas Enhancements
  - HD Diesel Phase II
  - CT Solvent Cleaning
  - CT AIM Coating
  - Stage II Gas Enhancements

- **Consumer Products**
  - Adhesives and Sealants
  - CAIR
  - LEV II
  - LEV III

- **VOC Tanks**
  - VOC CTGs
  - VOC CTGs

*NOx RACT Fuel Burning Sources, NOx Reductions MWC and Federal Tier 3 Motor Vehicle Fuel Requirements*
Dominant Wind Patterns Drive Air Pollution Transport into Connecticut

Ozone Transport Map

- **Westerly Transport**
  (Aloft, Hundreds of Miles, Generally from West or Northwest)

- **Southerly Nocturnal Low Level Jet**
  (Aloft, Hundreds of Miles, At Night, Generally Southwest to Northeast along the Atlantic Coast)

- **Short Range**
  (Groundlevel, City-to-city in Mid-Atlantic and Northeast)
Stationary Source Efforts

- Stationary sources represent an increasingly smaller percentage of Connecticut’s emissions inventory.

- Limited emission reduction potential from stationary source control programs to attain the ozone standard.

- Transport remains an unsolved issue.

- EPA must require emission reductions in upwind states.

“Other Fuels” is the combination of residential, commercial and industrial fuel use.
Mobile Source Efforts

• Adoption of CARB LEV and ZEV Programs in 2004/05, amended to provide new vehicle emission standards until 2025 (including ‘deemed to comply’ provisions)
• State-wide clean fuels requirement/RFG and ULSD
• State-wide Inspection and Maintenance Program
• Multistate ZEV MOU and related ongoing efforts
• EVConnecticut & EVSE grants, EV Roadmap
• EV incentives - CHEAPR
• On-road HDDE testing – Opacity/PM
• CA NOx HD New Vehicle or In-Use Standards
Why Focus on Heavy Duty?

Today...

65% of all NOx emissions in Connecticut are emitted by mobile sources.

40% of those mobile source emissions are from on-road highway vehicles.

40% of those on-road mobile source emissions are from heavy duty vehicles.

Note: Data from NEI Tier 1 Estimates and CT local data.
By 2045, Heavy Duty on-road vehicles will account for 66% of all on-road NOx emissions in Connecticut!

- **2018 (16,397 TPY)**: 40% HD, 60% LD
- **2025 (9,661 TPY)**: 41% HD, 59% LD
- **2035 (5,832 TPY)**: 61% HD, 39% LD
- **2045 (5,426 TPY)**: 66% HD, 34% LD

Note: Estimates developed with MOVES2014b

(Estimate Total Annual On-Road NOx Emissions)
Questions?

Tracy.Babbidge@ct.gov

Connecticut Department of Energy and Environmental Protection
Water Planning & Management Division

### Municipal Wastewater
- Clean Water Fund
- Permits for municipal wastewater treatment plants
- Reduced combined sewer overflows
- Operator certification program
- Sewerage Right-to-Know reporting

### Planning
- Watershed Management
  - Long Island Sound Study
  - Nonpoint Source grant program
  - Watershed mgmt. plans
  - Outreach

- Water Monitoring Programs
  - Inland and LIS water quality
  - Beach monitoring
  - Stream flow assessments
  - Data analysis

- Water Quality Programs
  - Surface water quality standards
  - WQ action plans
  - Ecological risk assessments
  - Toxicology support for permitting

### Dam Safety
- Dam Safety Regulatory Program
  - Enforcement of dam safety laws
  - Permits for repairs, modifications or construction of dams
  - Inventory of dams

- State Dams Program
  - Maintenance of 260 state-owned dams
  - Flood response
Remediation Division

5 Geographic Districts

- Brownfields & Urban Sites
- Property Transfer Program
- Voluntary Rem Programs
- State Superfund Program
- Federal Superfund Program
- RCRA Closure & Corrective Action
- UST Clean-up Program
- Significant Hazards Program
- Potable Water Program

Technical & Compliance Support

- RCRA Coordinator
- Records Management Coordinator
- LEP Coordinator & LEP Board Administrator
- Enforcement & Compliance Support
- Permitting Support
- Federal Grant Support
- Emerging Contaminants policy development and implementation

Connecticut Department of Energy and Environmental Protection
Regulatory Efficiency

• RSR Wave 2 and EUR Regulations
• Remediation Case Management System
• Improve LEP Audit Process
• Reduce permit backlog and improve certainty of permitting timeframes
Water Protection and Land Reuse
Major Initiatives

Planning & Assistance

• PFAS Task Force and Action Plan
• CWF grants for municipal WPCFs – phosphorus
• Long Island Sound Nitrogen reduction strategy
• State Water Plan implementation
• Blue Plan approval and implementation
• Climate change & resiliency
  – Guidance, tools, technical assistance
  – Executive Order #3
Panel Discussion

Moderator: Andrew Zlotnick, *Fuss & O’Neill*

Panelists:
- **Betsey Wingfield**, *Deputy Commissioner*
- **Tracy Babbidge**, *Bureau of Air Management*
- **Yvonne Bolton**, *Materials Management & Compliance Assurance Bureau*
- **Brian Thompson**, *Bureau of Water Protection and Land Reuse*