OTC Modeling Committee Update
2023 OTC/MANEVU Annual Meeting
June 14, 2023

OTC Modeling Committee

Chairs, Kevin Civerolo and Margaret LaFarr, NYS DEC
Committee Lead, Alexandra Karambelas, OTC/NESCAUM





OZONE TRANSPORT COMMISSION

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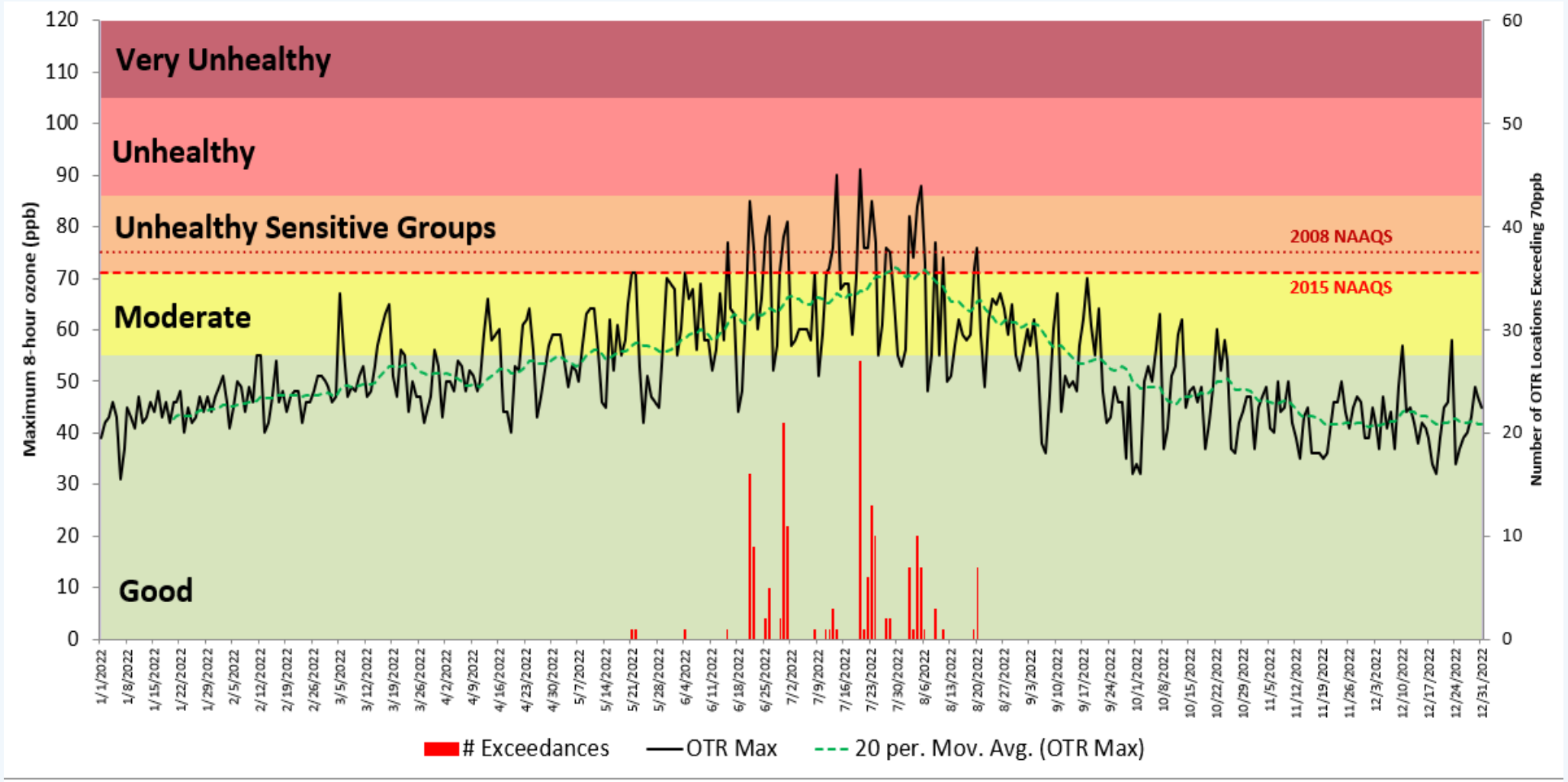
Accomplishments

- Tracked current OTR O_3 levels and preliminary attainment status
- Completed 2016 & 2023 simulations with CMAQ and CAMx – V1 platform (Emissions Collaborative), with ERTAC v16.1
- Completed V1 Technical Support Document – OTC website February 2023
- Completed 2016/2023/2026 simulations with CMAQ and CAMx – EPA V2 platform with V3 updates to CMV & solvents (“V2/V3”), with ERTAC v16.2
- Completed tagged emissions contribution modeling
- Completed 2018/19 episodic modeling on high electric demand days (HEDD), and relative impacts of NOx vs VOC reductions

2022 OTR Statistical Information

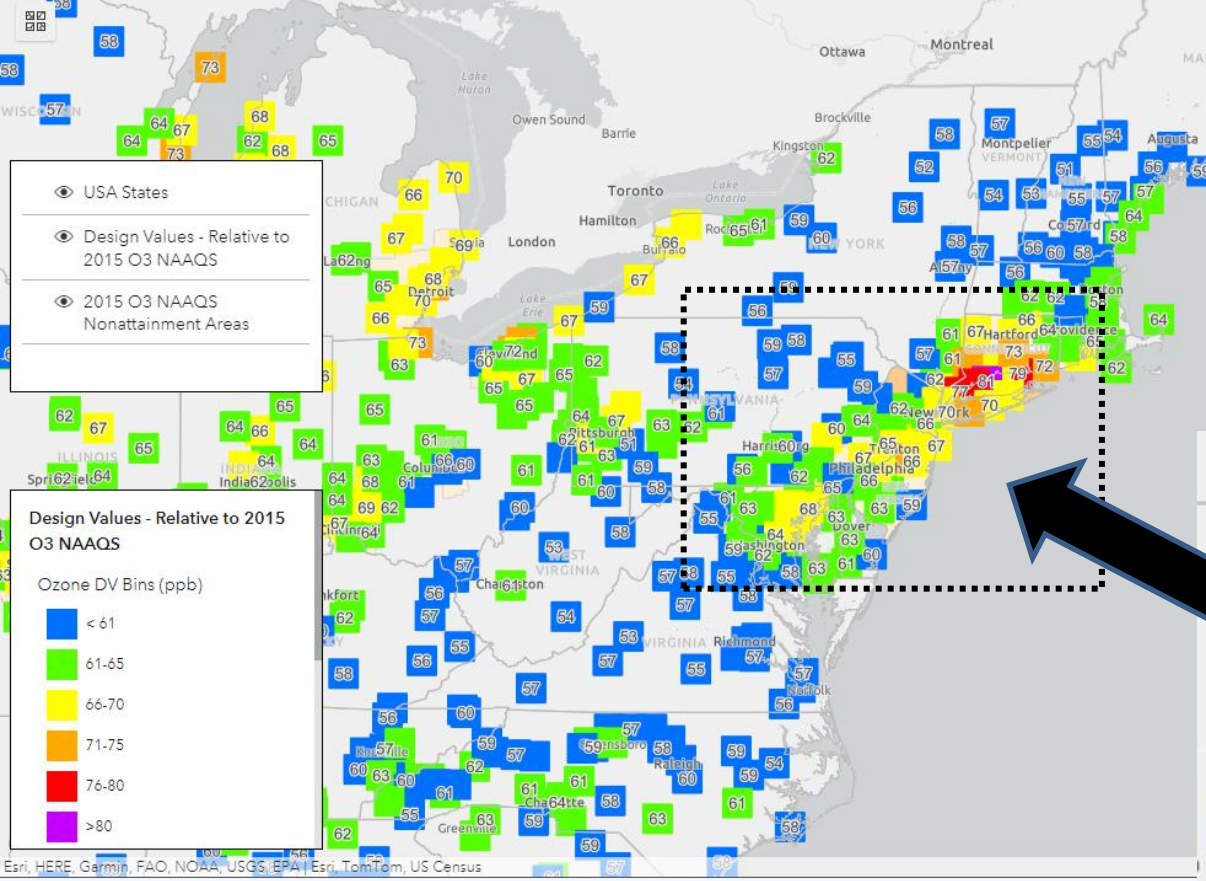
- Highest 8-hour average was 91 ppb found at East Matunuck, RI
- 74 sites have exceeded 70 ppb at least once, with 6 sites exceeding 84 ppb
- 7 sites in NYC NAA, 1 site in the Phila. NAA, and 1 site in the Greater CT NAA have a Preliminary 2020-22 DV > 2015 NAAQS

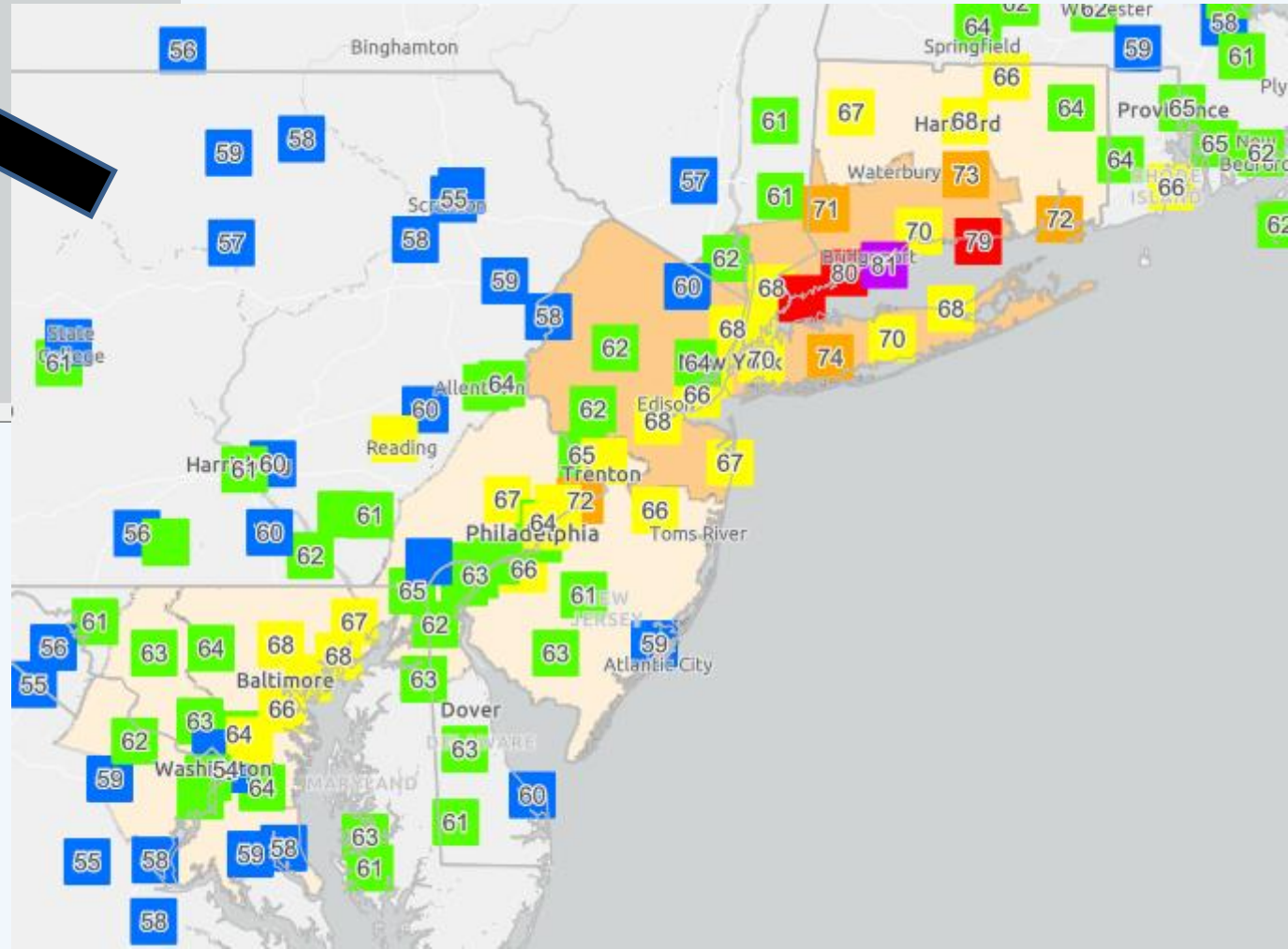


32 days exceeding 70ppb	74 different monitors in	10 states (including DC) exceeded 70ppb
20 days exceeding 75ppb	35 different monitors in	10 states (+DC) exceeded 75ppb
5 days exceeding 84ppb	6 different monitors in	4 states exceeded 84 ppb

Data prepared by Marcus Chase (NH DES)

Preliminary 2020-22 Design Values





"2022 Ambient Ozone Concentrations - Relative to the 2008 and 2015 8-Hr Ozone NAAQS" – https://experience.arcgis.com/experience/502feb600b32460caee6bbd10f8f4559/page/2015-O3-NAAQS---Prelim-DV//

Data through October 2022
(Credit: Mark Prettyman and DE DNREC. Data available at https://experience.arcgis.com/experience/502feb600b32460caee6bbd10f8f4559/page/2015-O3-NAAQS---Prelim-DV/*)*

Model-Projected 2023 Design Values

	2020-22 Preliminary	OTC V1 CMAQ	OTC V1 CAMx	OTC V2/V3 CMAQ	OTC V2/V3 CAMx	EPA V3 CAMx
Greenwich, CT	77	78.5	74.5	74.6	73.4	71.6
Danbury, CT	71	69.1	69.3	69.3	69.5	67.3
Stratford, CT	81	75.3	75	74.7	75.1	72.9
Westport, CT	80	75.6	76	76	75.6	73.3
Middletown, CT	73	69.2	70.3	69.6	70.5	68.7
Madison, CT	79	71	72.3	71.1	72.7	70.5
Groton, CT	72	71.3	68	71	67.8	65.5
Babylon, NY	74	67.6	68.2	67.7	68.5	66.2
Bristol, PA	72	69.3	71.1	70.2	71.6	67.9

Note: All 2023 design values computed with EPA's 3x3 "no water" method

O_3 Thresholds and Preliminary 2023 Design Values

	O_3 threshold to meet the 2015 NAAQS	Preliminary 2021-2023 Design Value*
Greenwich, CT	58	75
Danbury, CT	67	69
Stratford, CT	46	78
Westport, CT	46	79
Middletown, CT	62	73
Madison, CT	54	75
Groton, CT	67	68
Babylon, NY	60	71
Bristol, PA	66	72

*Based on data through 6/4/2023

Ongoing Initiatives

- V2/V3 supplemental addendum to the V1 Technical Support Document – currently being reviewed by the MC
- Report out on HEDD modeling
- Report out on NOx/VOC reductions across urban and nonattainment areas
- Track field campaigns in the region in 2023 – AEROMMA, CUPiDS, STAQS, and others – Lukas Valin (EPA)
- Work with EPA, states, MJOs on next modeling platform – likely 2022 base year, with future years 2026, early 2030s, 2038
- Collaborate with SAS (e.g., electrification, MWC, ICI wood boilers) and MSC (e.g., EPA/CARB rules) to design episodic modeling scenarios

Possible New Initiatives

- Examine pollutant ratios (e.g. formaldehyde/NOx ratios) to characterize O_3 precursor limiting regimes
- Revisit/refine existing tagged contribution modeling to determine top control strategies (discussions with SAS and MSC)
- Closer look at key urban VOCs (e.g. solvents) and specific SCCs, by mass and reactivity
- Impacts of model boundary conditions on O_3 predictions in the OTR (new HAQAST Tiger Team)

Thank you!

Model Committee Chairs

- Kevin Civerolo and Margaret LaFarr, NYSDEC (kevin.civerolo@dec.ny.gov and margaret.lafarr@dec.ny.gov)

OTC Committee Lead

- Alexandra Karambelas, OTC/NESCAUM (akarambelas@nescaum.org)

Emissions Inventory Lead

- Susan McCusker, MARAMA (smccusker@marama.org)

O_3 Season Updates

- Marcus Chase, NHDES (marcus.a.chase@des.nh.gov)

Bonus slide

Preliminary Model-Projected 2026 Design Values

	2020-22 Preliminary	OTC V2/V3 CMAQ	OTC V2/V3 CAMx
Greenwich, CT	77	73.1	72.2
Danbury, CT	71	67.9	68.2
Stratford, CT	81	73.2	73.8
Westport, CT	80	74.6	74.2
Middletown, CT	73	68.0	69.0
Madison, CT	79	69.5	71.3
Groton, CT	72	70.9	66.5
Babylon, NY	74	66.4	67.4
Bristol, PA	72	68.7	70.3

Note: All 2023 design values computed with EPA's 3x3 "no water" method