

# HAQAST Massachusetts

## NASA Health and Air Quality Applied Sciences Team

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**NYSERDA**

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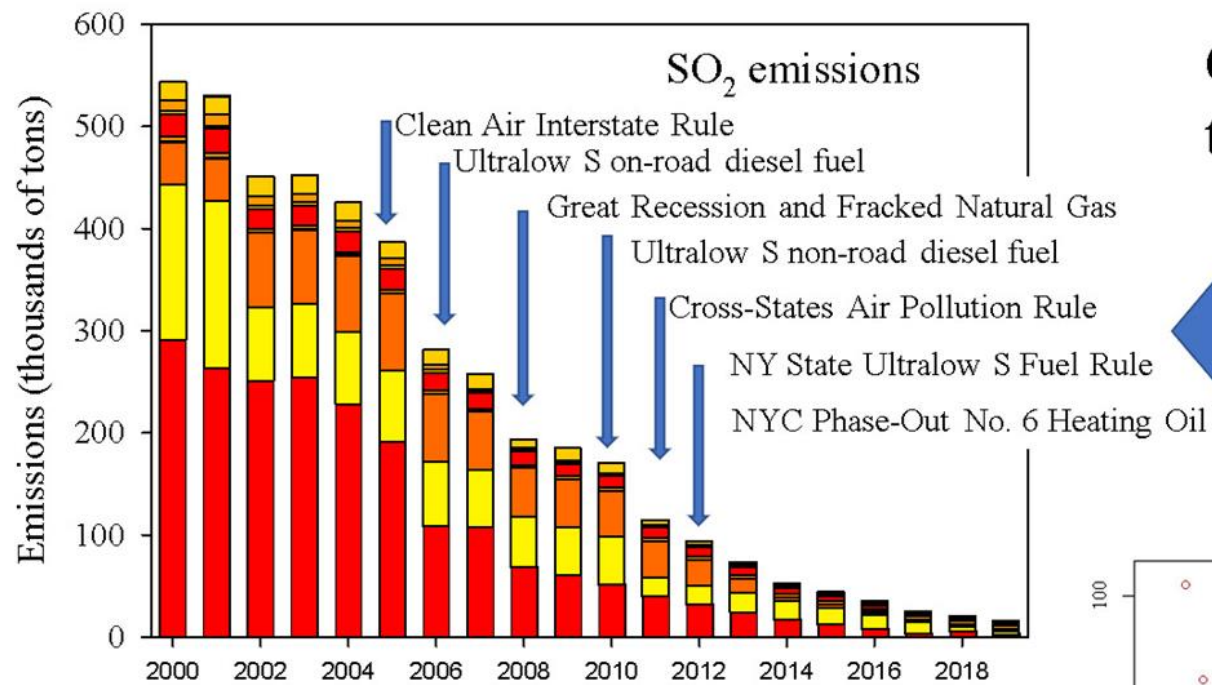
# Environmental Research Program



Photo credit: Eric Leibensperger

## **Purpose: Support policy-relevant research to enhance understanding of energy-related environmental issues**

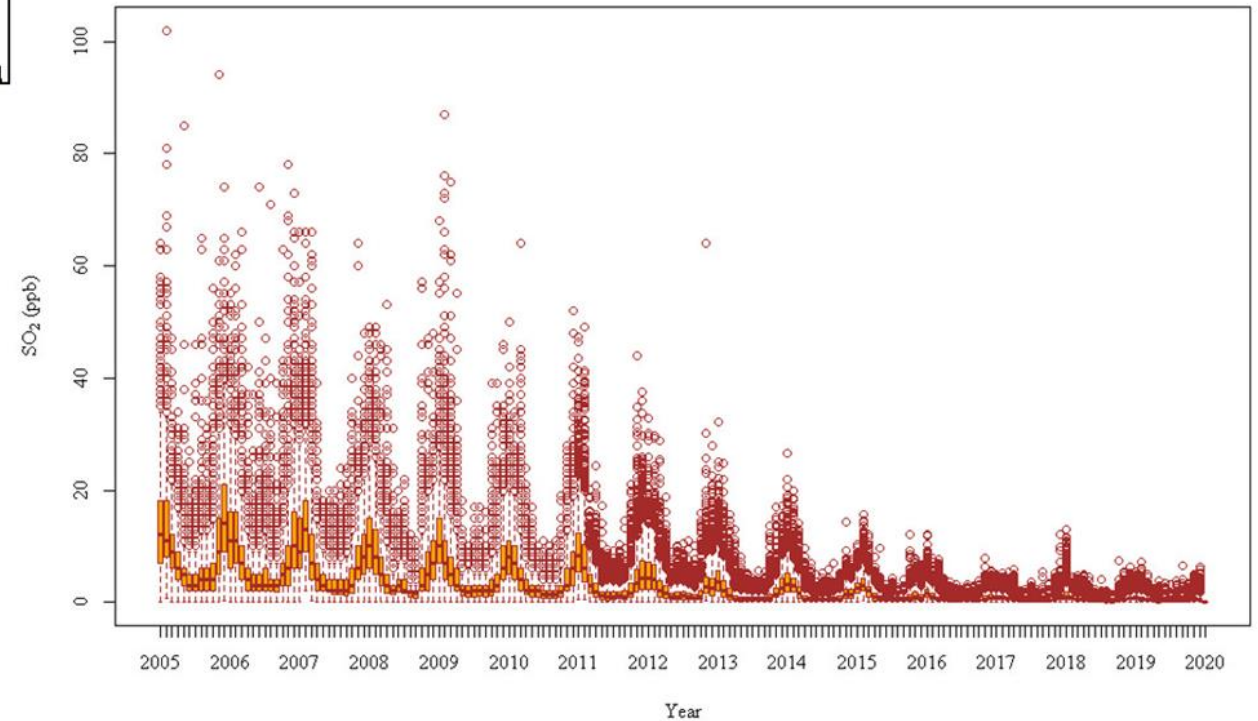
- > Enhance understanding of energy-related environmental issues in New York State
- > Support accountability through analysis of long-term monitoring records and modeling
- > Examine the public health and ecological co-benefits of alternative energy and technology solutions
- > Support an environmental research capability to better address the critical problems facing the state and region



Changes in local and regional emissions due to regulations and economic drivers

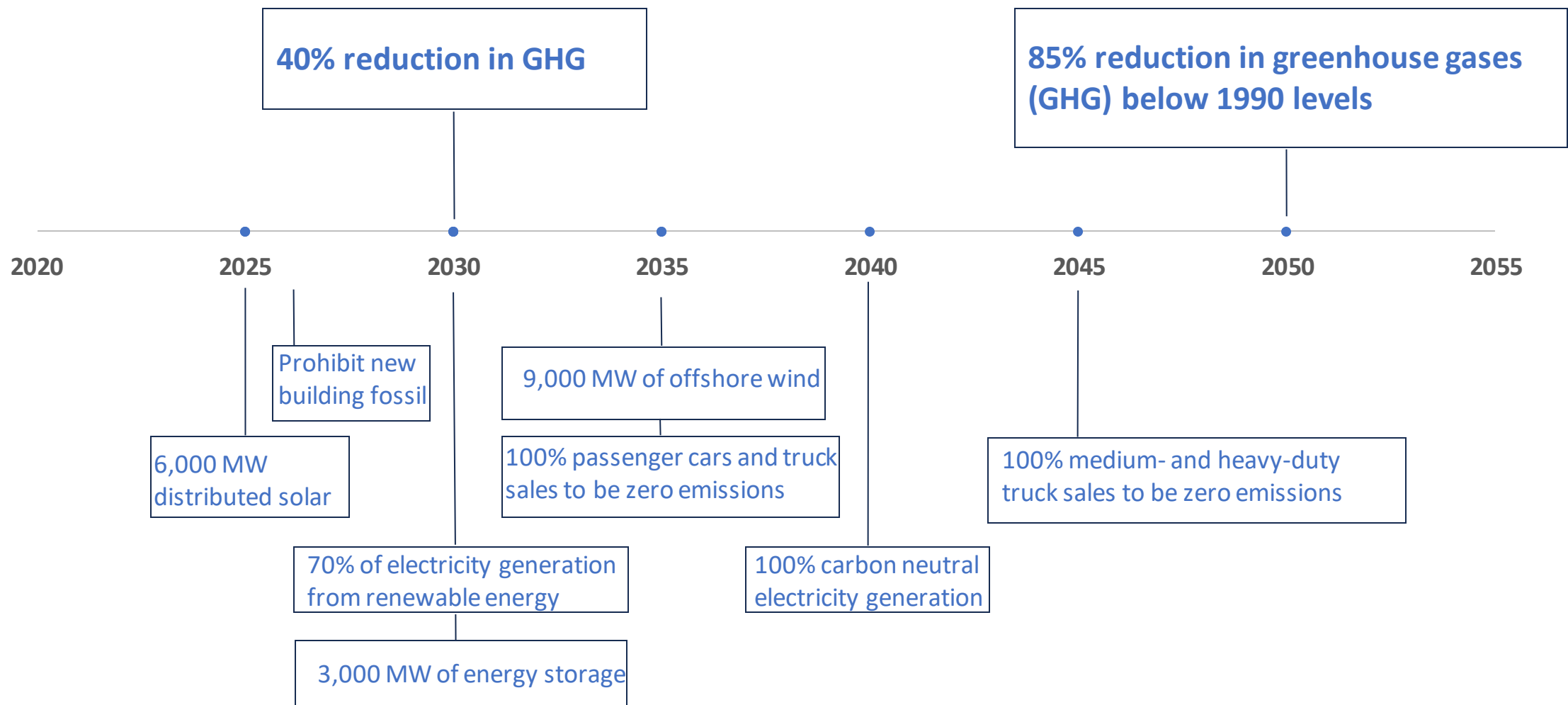
Result in reductions in ambient concentrations.

SO<sub>2</sub> in New York City

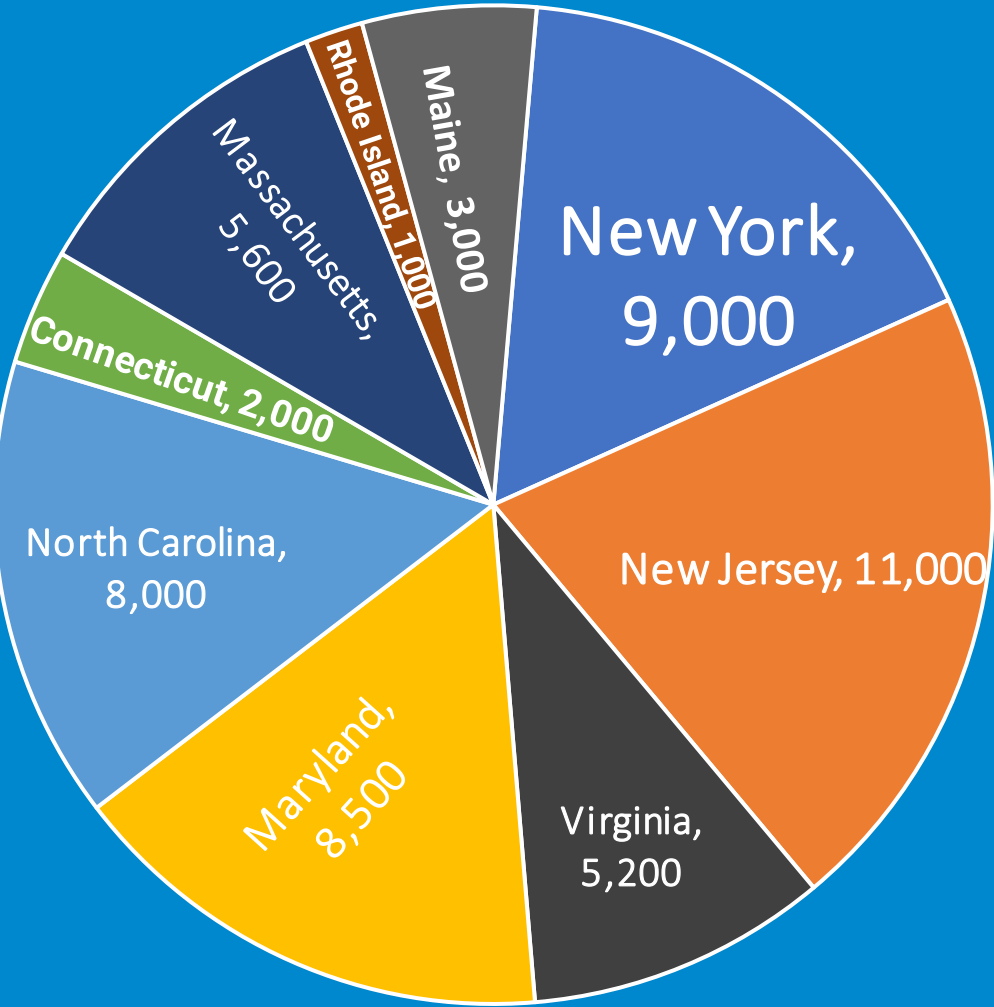


Changes in ambient air pollutants in New York State from 2005 to 2019: Effects of policy implementations and economic and technological changes, Y. Chen, D.Q. Rich, M. Masiol, P.K. Hopke, Atmos. Environ. 311: 119996 (2024).

# Climate Leadership and Community Protection Act (2019)

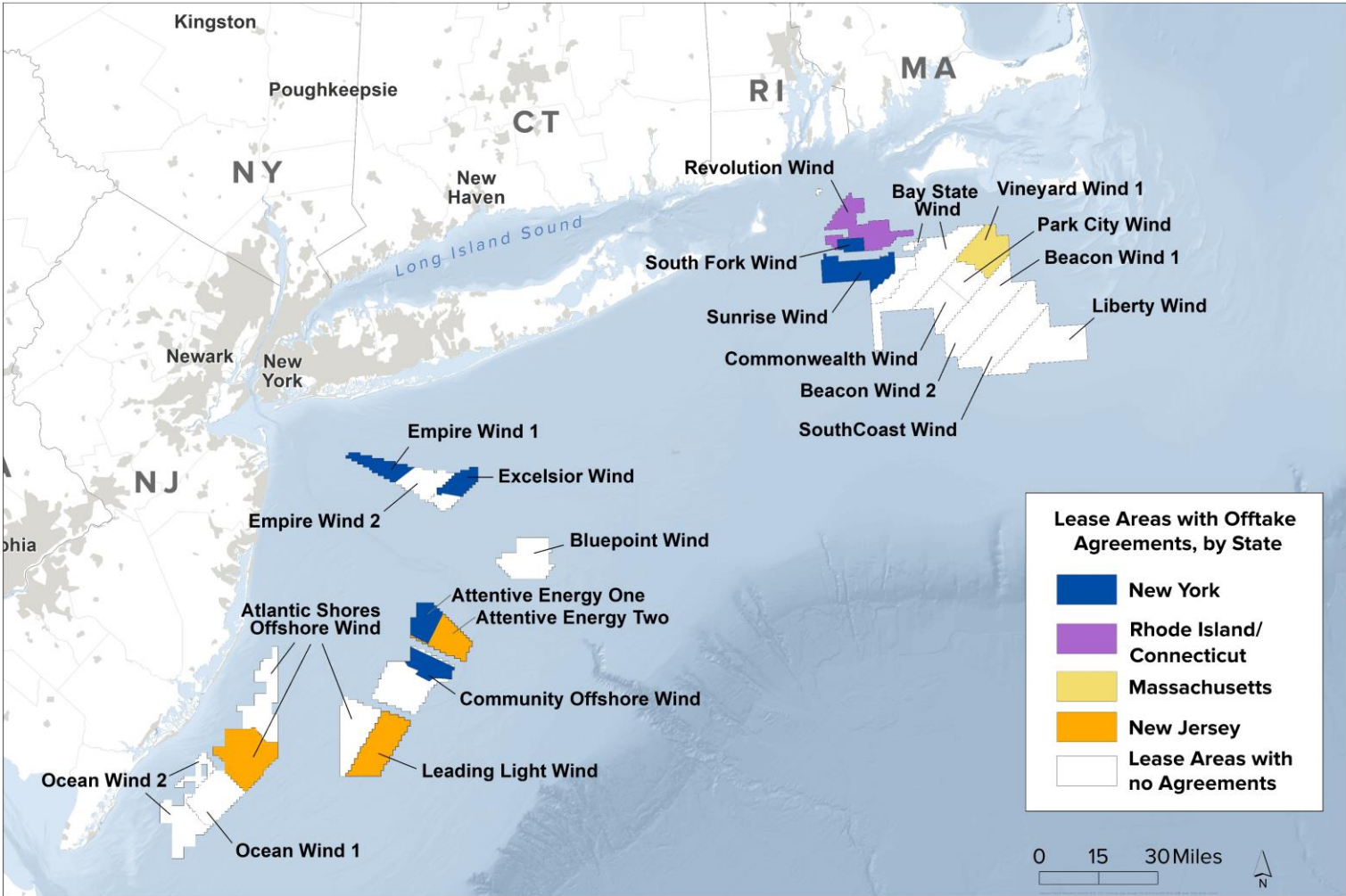


EAST COAST Goals:  
>50,000 MW

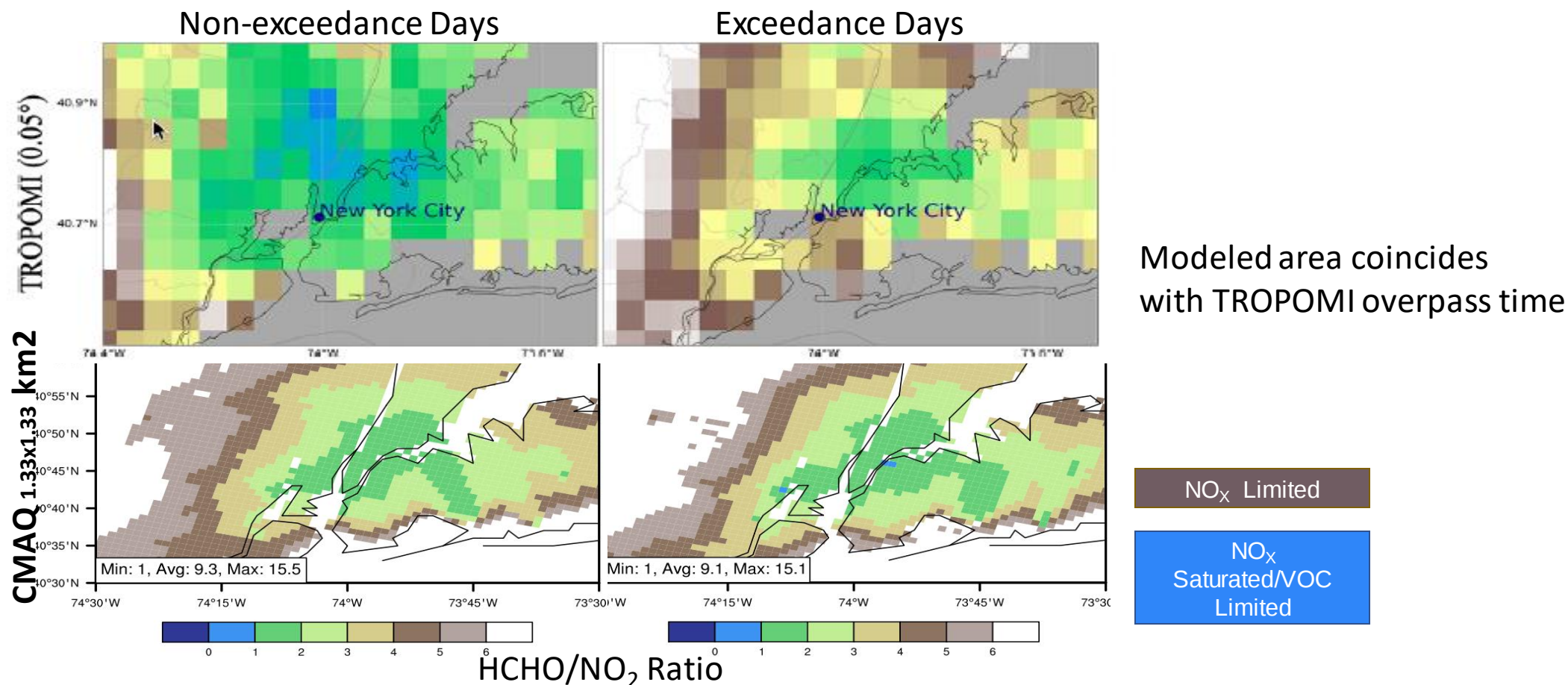


Offshore Wind Goals in Megawatt (MW) by State

Regional Industry:  
Federal Offshore Wind Lease Areas



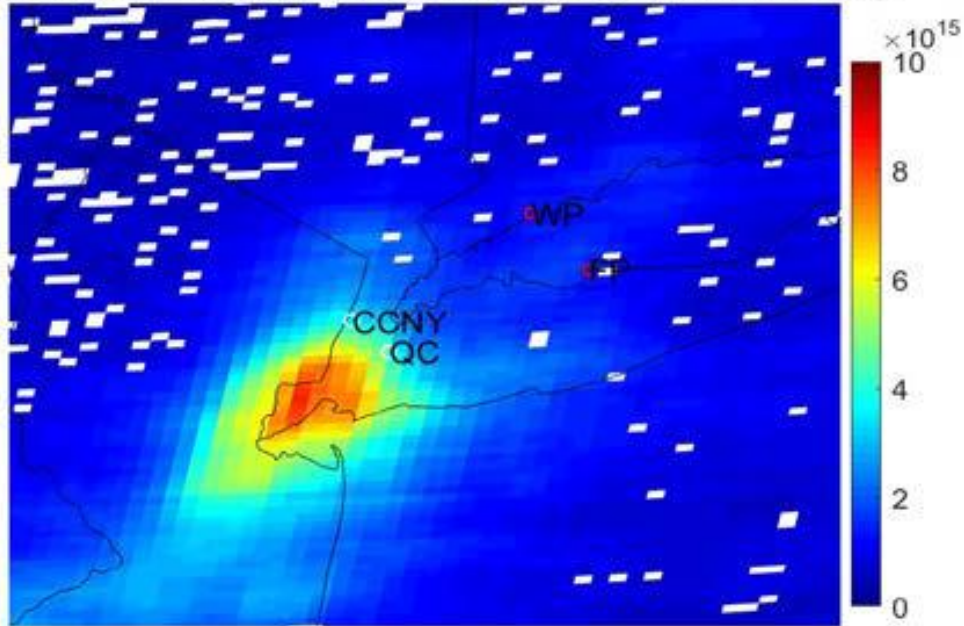
# On NYC's high O3 days, CMAQ modeling predicts slightly expanded NOX saturation, while TROPOMI shows a reduction



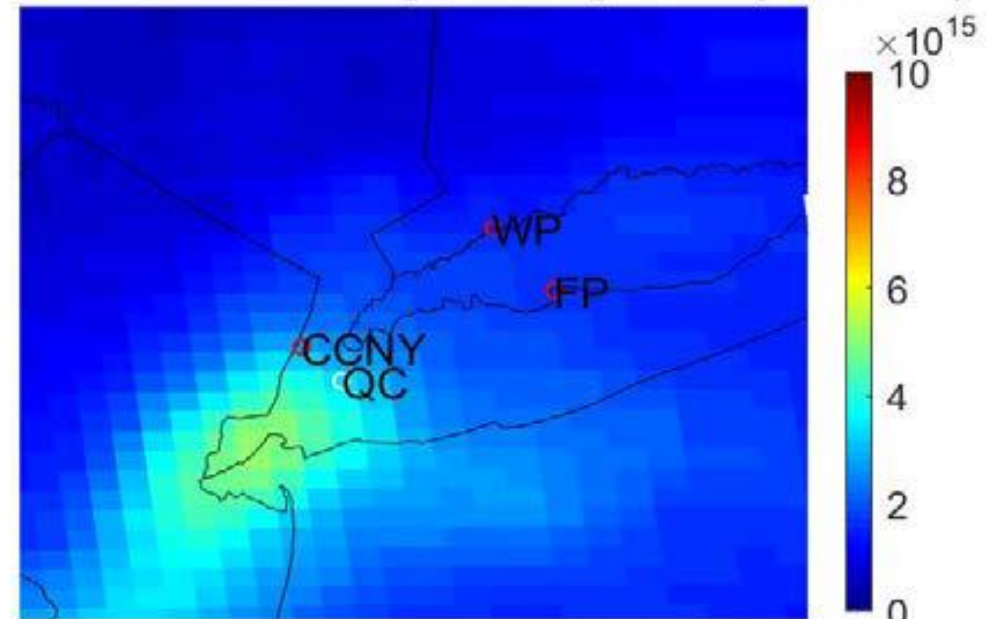
TROPOMI ratios from M. Tao et al., Investigating Changes in Ozone Formation Chemistry during Summertime Pollution Events over the Northeastern United States, *Environ. Sci. Technol.* 2022, 56, 15312–15327.  
CMAQ modeling from A. Karambelas, NESCAUM.

# Improved local-scale measurements – helpful for community protection goals.

20230822 18:45-18:45 UTC TEMPO trop-NO<sub>2</sub> (mole/m<sup>2</sup>)



20230822 18:37 UTC Tropomi trop-NO<sub>2</sub> (mole/m<sup>2</sup>)



Comparison of tropospheric column NO<sub>2</sub> between NASA-TEMPO and TROPOMI/Stein3 on Aug.22, 2023 (QC: Queens College, CCNY: City College of New York, FP: Flax Pond, WP: West Port.)  
Personal communication, Fred Moshary, CUNY

# Thank you!