



Mobile Laboratory Measurements of the Atmospheric Chemical Evolution in Urban Outflow Plumes and their Interplay with Coastal Meteorology over Long Island (MLUPCM)

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Presentation to AGES workshop

Acknowledgements

- NYSERDA for supporting this proposal

Program Periods/location

1. 2022 Aug. to Mid-Sep., Pilot study (6 weeks)
2. 2023 Mid-June to Aug., Intense study (10 weeks)
3. Mainly on Long Island

Measurement platform and Instruments



- 2007 Dodge Sprinter Van
- 8 Lithium ion batteries with a fully charged capacity of 13.25 KWh
- Around 5-7 hour measurement deployments possible
- Two inlets, one for gases, the other for aerosols
- Flexible payload configuration
- 2022 Pilot

WFM, 2017



PSP, 2017/2018



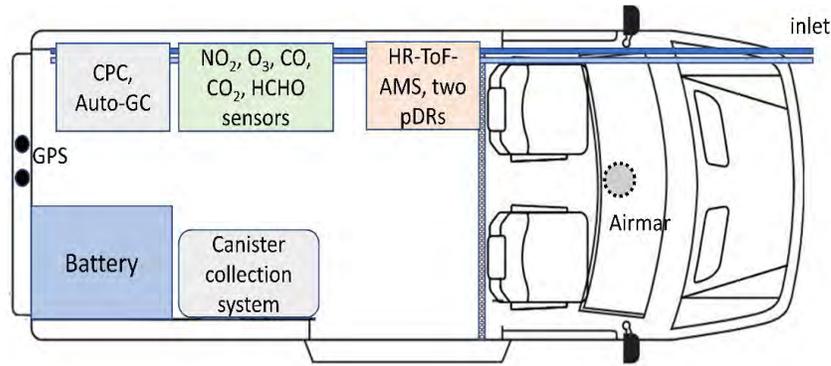
LISTOS, 2018/2019



NYS-CH4, 2021/2022



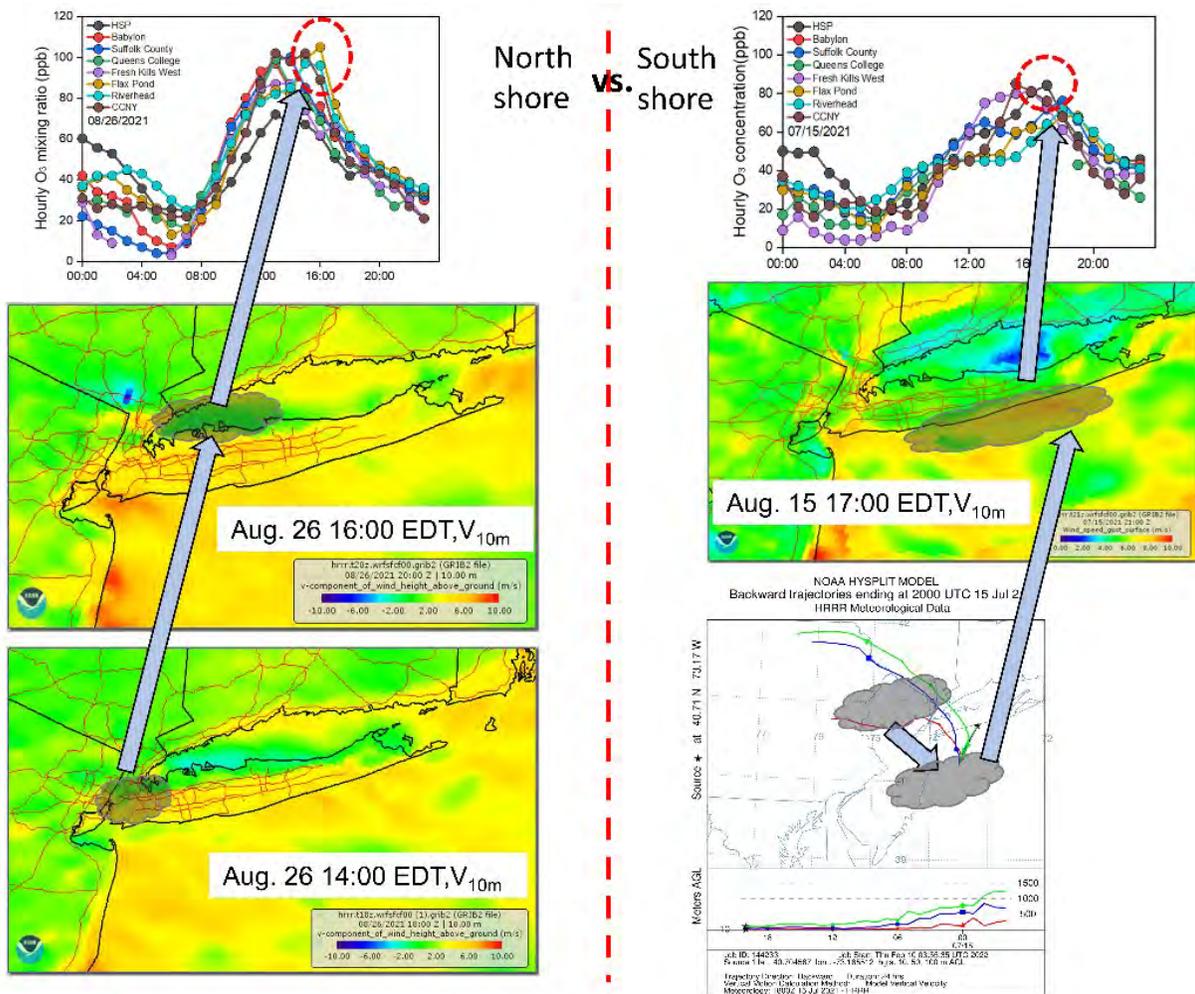
Measurement platform and Instruments



Parameter	Instrument	Sampling Resolution
Ozone	Teledyne API Model 430	10s
NO ₂	Teledyne API Model 500U	10s
CO	Aris MIRA Ultra	10s
CO ₂	LICOR	10s
HCHO	Aris MIRA Ultra	10s
Particulate component mass	Aerodyne high-resolution time-of-flight aerosol mass spectrometer (HR-ToF-AMS)	20s (on-road) 5mins (roadside)
Particulate total mass	Thermo Scientific MIE pDR-1500 (two)	1mins
Particle number	TSI CPC Model 3785	10s
VOCs	Canister sampling system	As needed
VOCs	Kindwell Portable GC	As needed
Mobile meteorology	Airmar	10s
GPS	Airmar and two GlobalSat GPS Receiver	10s

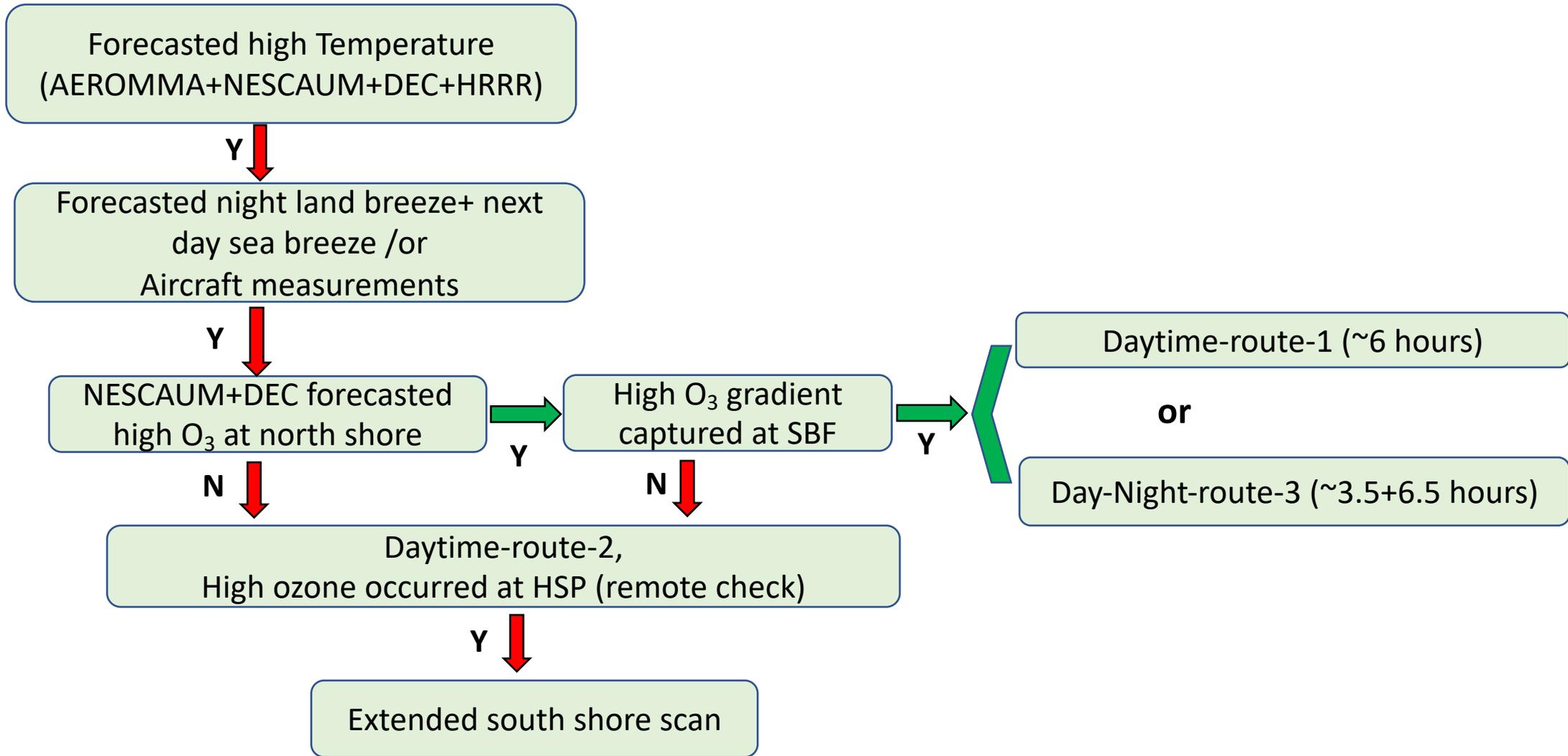


Program Goals



- Identify and measure ozone and PM_{10} chemical evolution for urban plumes under interplay with the sea breeze with a high spatial resolution (main);
- Study the nighttime SOA enhancements at the plume-affected downwind regions following heatwave days.
- Trace the SOA mass concentration variation responding to the emission reductions.
- Cooperation with aircraft and other ground measurements.

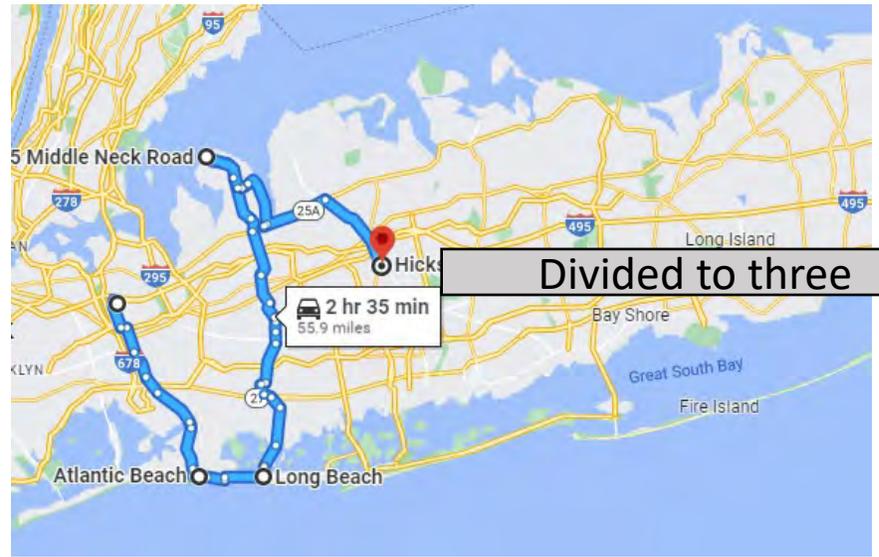
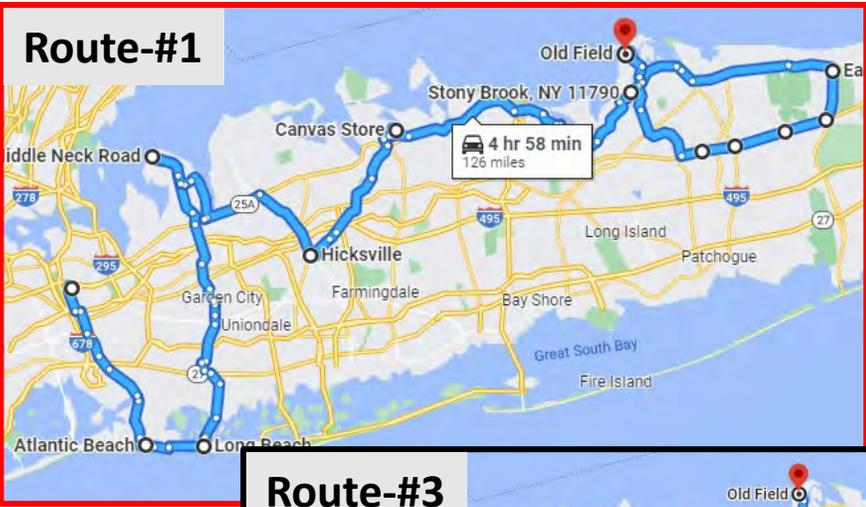
Statement of Work



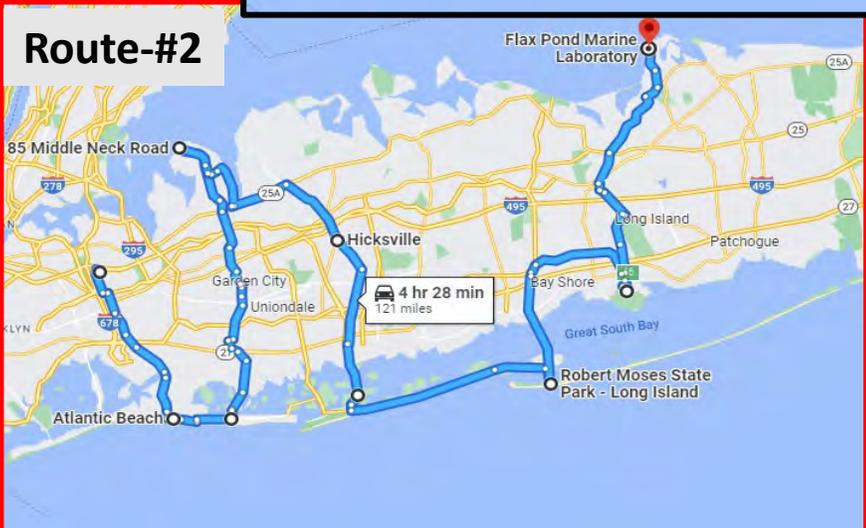
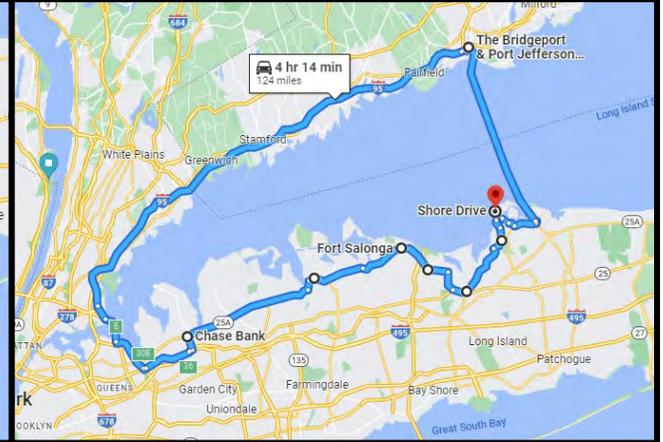
Mobile Lab charging sites



Special thanks to Stephen from FPML, Dirk and Mike from DEC, and Drew from Yale



Divided to three

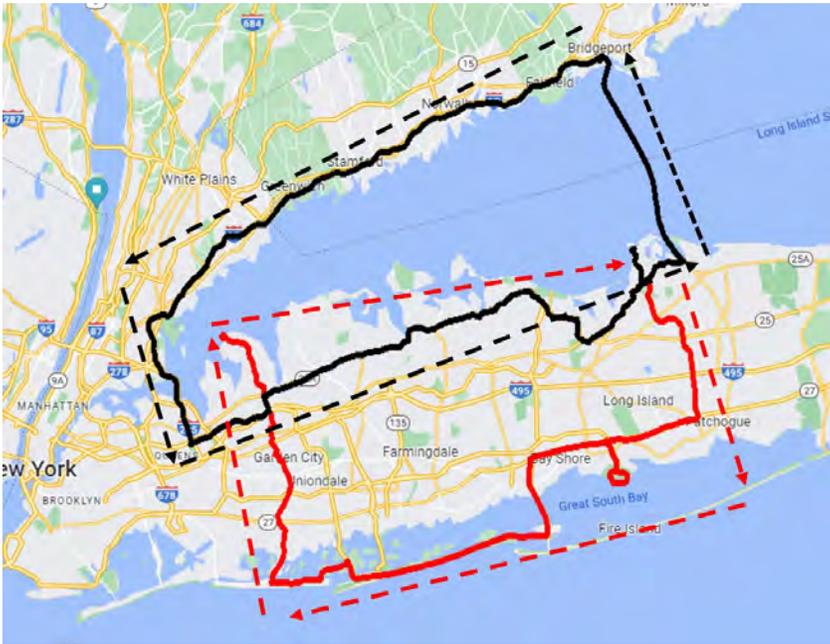
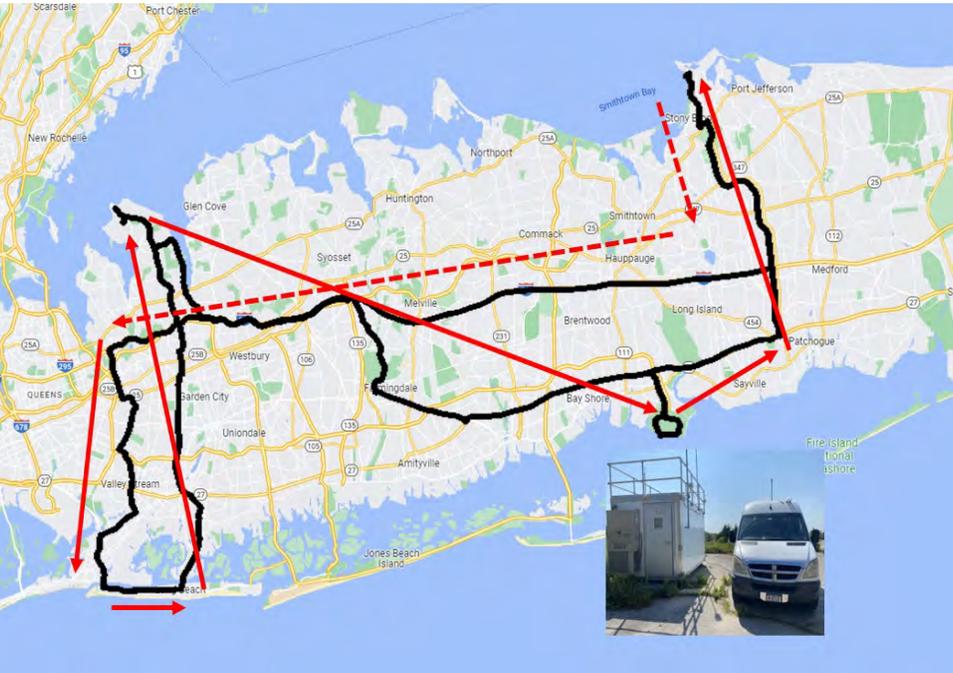


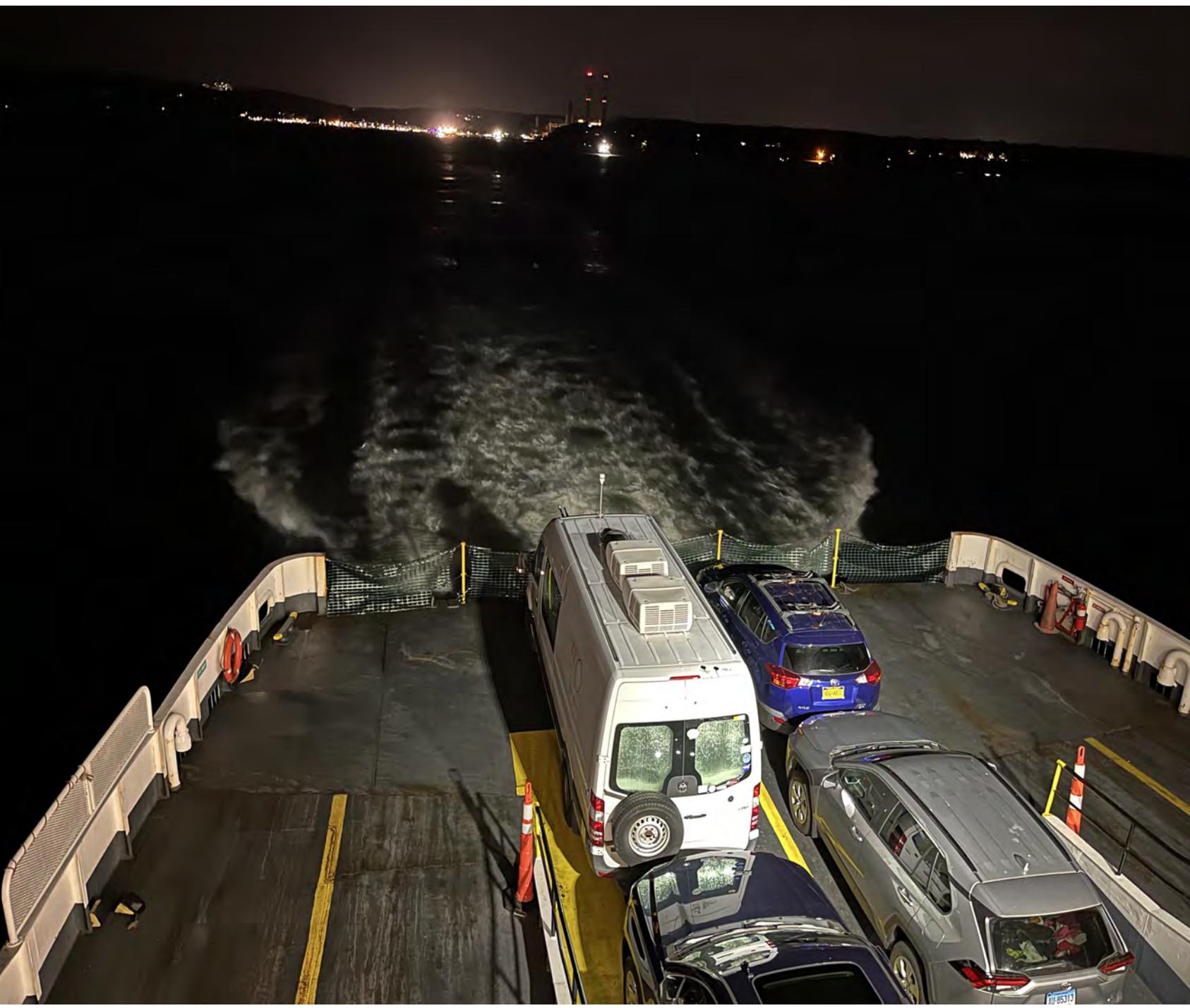
Mobile Lab charging sites-2022



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Mobile Lab routes





**Thank you so
much!**

**Looking forward
to cooperate
with all!**