



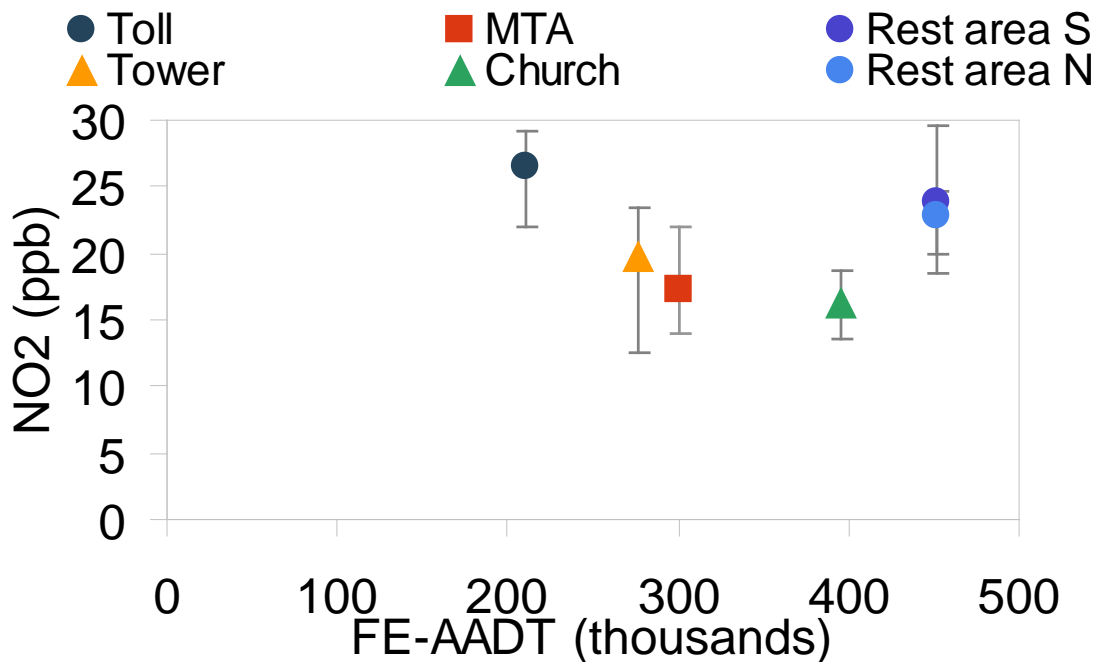
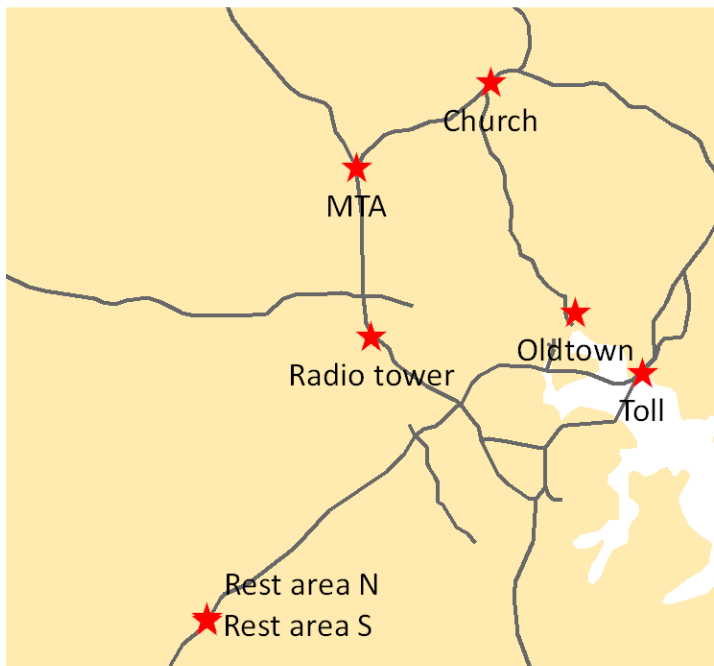
# Near road NO<sub>2</sub>: MDE's Experiences

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September 18, 2012

MARAMA Air Monitoring Workshop, Valley Forge, PA

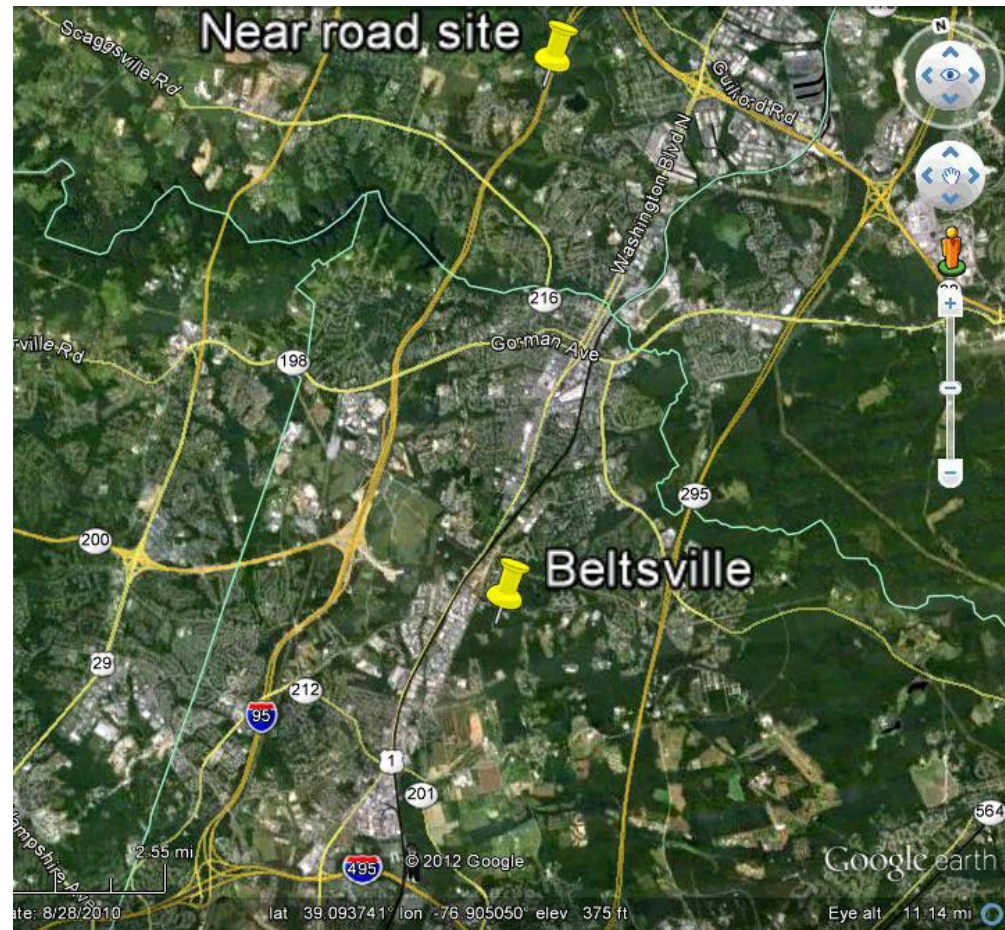
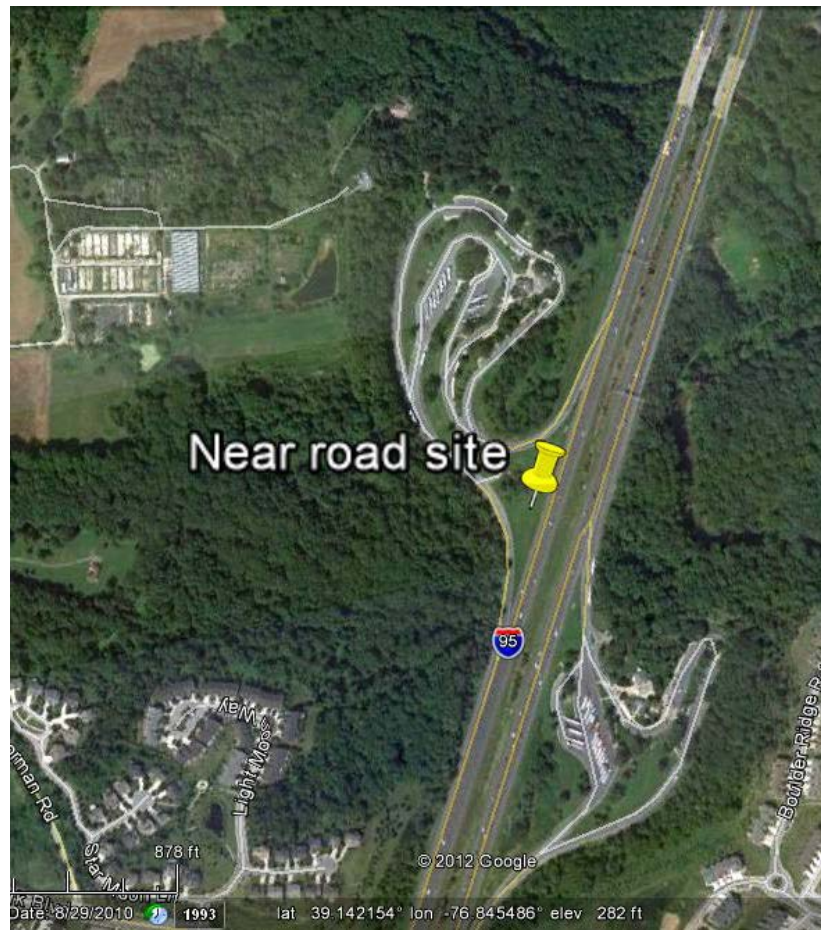
# Site selection



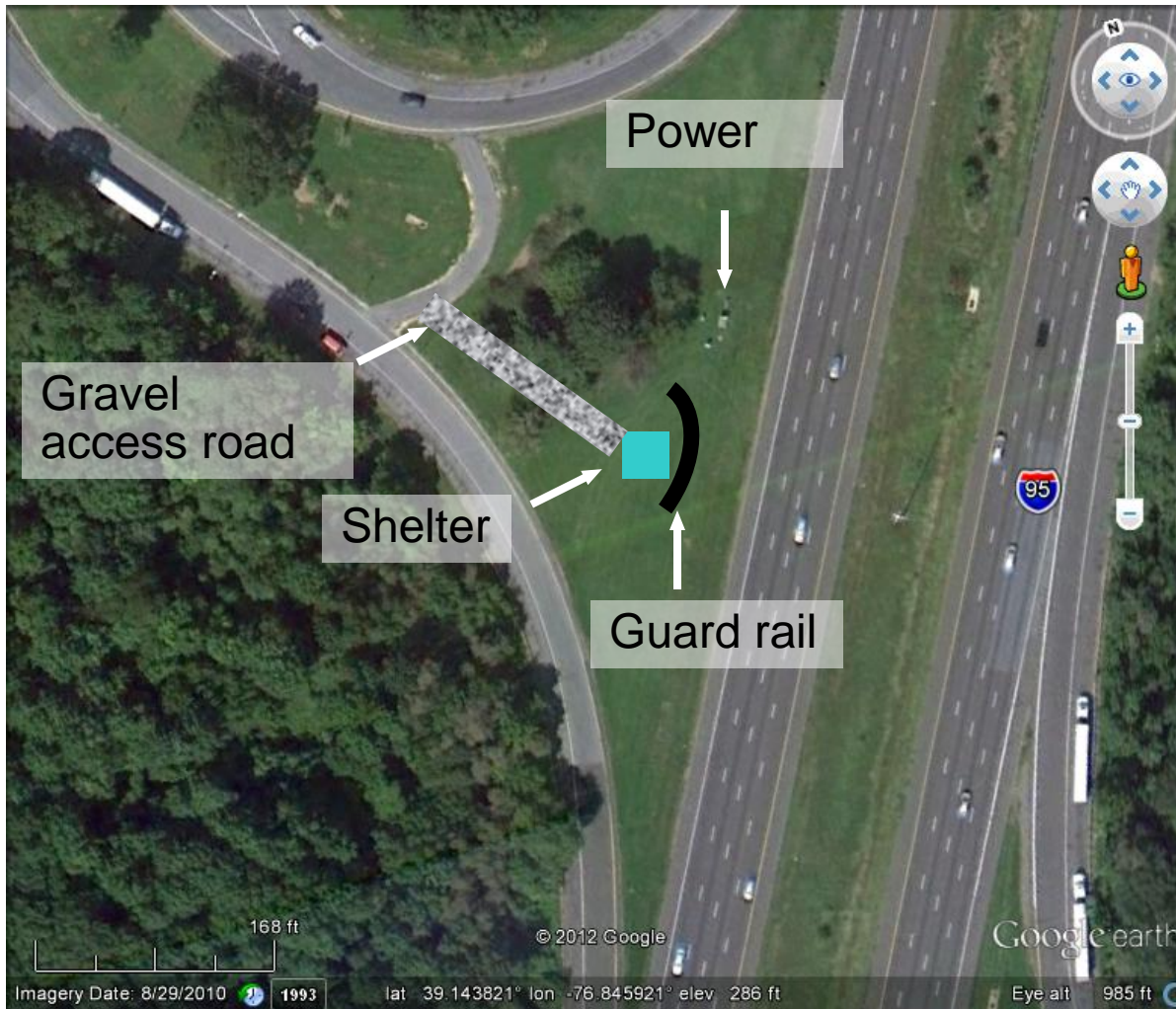
- MDE participated in the EPA pilot study with four other cities.
- In MD, the rest area measured some of the highest NO<sub>2</sub> during the study.
- The AADT (186,750) and FE-AADT for this site were also high.

# Site info

- Near road site is along I-95 between DC and Baltimore.
- This site experiences a mix of commuters and truck traffic.
- Background Beltsville site is 6 miles south of near road site.



# Guard Rail



- Plan to place guard rail around fence.
- State Highway will advise on type of guard rail and location.

# Equipment

- MDE purchased basic required equipment (NO<sub>2</sub>, CO, datalogger and shelter) in early 2011, before EPA NR grants were announced, in hopes of getting an early start on NR monitoring and as leverage to participate in the pilot study.
- Additional recommended equipment will be purchased with the EPA NR grant to be deployed at both the NR site and Beltsville to allow for neighborhood background measurements. This will aid in quantifying the pollutant excess from motor vehicles.
- Instruments at both sites: NO<sub>2</sub>, CO, Met One BAM PM<sub>2.5</sub>, API/teledyne 651 ultrafine particle counter, API/teledyne 633 aethalometer, 3-D wind anemometer, traffic counter, Vaisala WXT 520 weather station (wind speed, wind direction, temperature, pressure, RH, precip) and summa canisters for air toxics.

## CASAC AAMMS's recommended priorities for near-road multipollutant monitoring

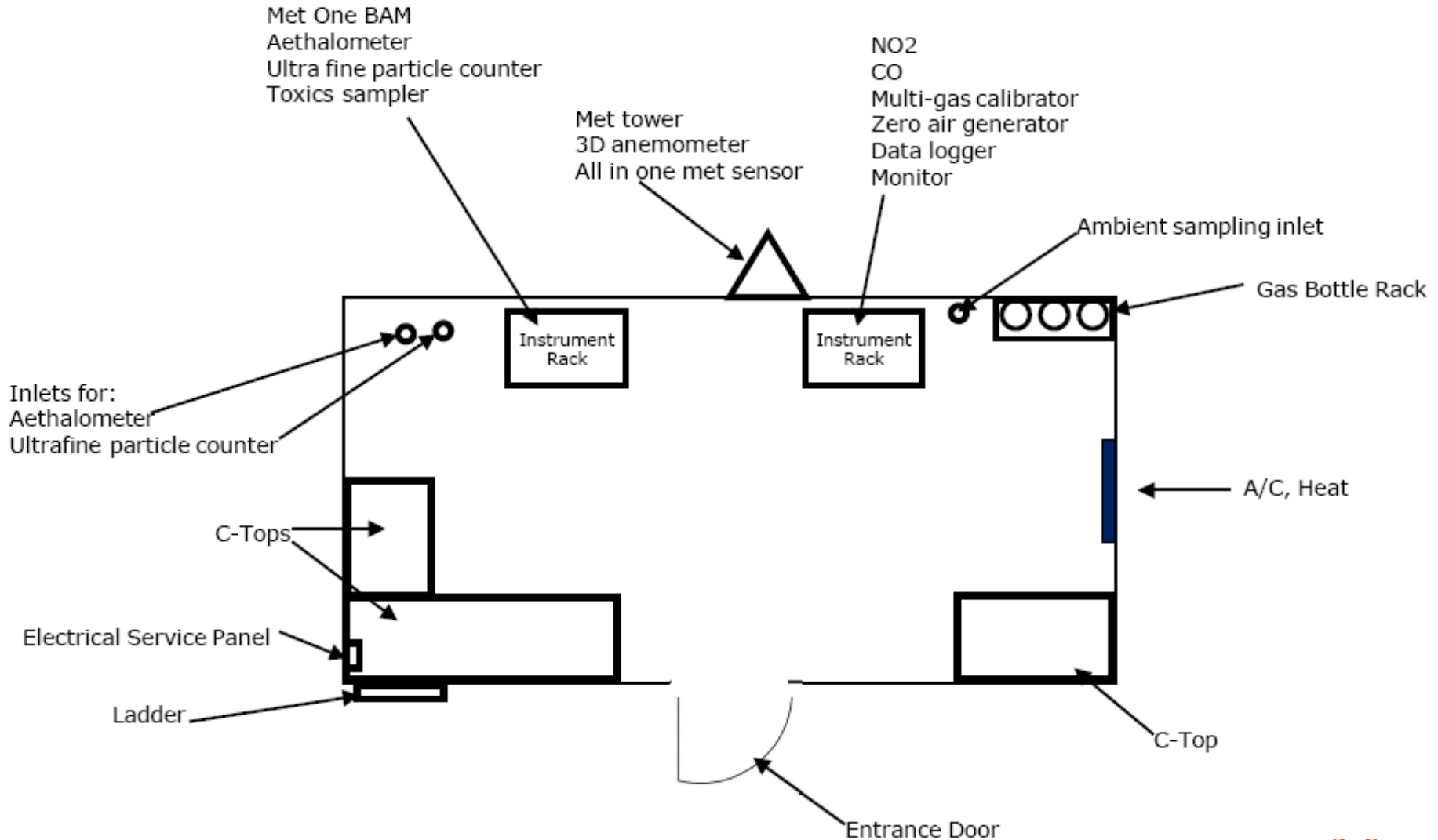
Priority	Pollutants
Primary	NO and NO <sub>2</sub> (where NO <sub>2</sub> is required), CO (required in a subset of near-road NO <sub>2</sub> monitoring sites), ozone, and meteorology (wind speed, wind direction).
Secondary	Air toxics (at least benzene, toluene, ethyl benzene, and xylenes), black carbon, ultrafine particle size distribution (preferred) or ultrafine particle number concentration, and traffic counters (if the site is not already in proximity of a fixed transportation agency traffic counting device).
Tertiary	PM <sub>2.5</sub> , PM <sub>10-2.5</sub> , CO <sub>2</sub> , and organic and elemental carbon (OC and EC, respectively). <sup>2</sup>

Source: EPA Near-road NO<sub>2</sub> Monitoring Technical Assistance Document

<http://www.epa.gov/ttnamti1/files/nearroad/NearRoadTAD.pdf>

# Proposed Shelter Configuration

## Inside Shelter From Above



# Challenges

- Could not access NR grant funds until July 1, 2012 due to MD State fiscal year close out process.
- MD Legislature also had to amend MDE's FY 2013 appropriation to include NR grant, causing further delay.
- The process for getting permission from MD State Highway to install monitoring trailer has been very slow— lots of back and forth over the agreement.

# Challenges

- No experience running ultrafine, traffic sensors and newer version of the aethalometer.
  - Hope to learn from DE experience on ultrafine. Specifically interested in learning about acceptance testing, QA procedures and best practices.
- Informal conversations with other researchers suggest these instruments should be fairly easy to run but challenges can always arise.
- MDE's primary focus will be on NAAQS parameters NO<sub>2</sub>, CO and PM<sub>2.5</sub>. Ultrafine, black carbon and traffic results will be shared when we are confident with methods (this may be some time after January 1, 2013 start date).
- No new staff anticipated to help with NR monitoring.



# Lessons Learned

- Get a large enough shelter!
  - The original shelter MDE ordered was similar in size and configuration to that at current monitoring sites. CASAC recommended more instrumentation than just NAAQS and this requires a bigger trailer.
- Start as early as possible! Include everyone at the outset!
  - Site selection and discussion with MD SHA began in winter 2010, presumably early enough to ensure the site would be up and running by January 1, 2013. Numerous discussions concerning the agreement and repeated inclusion of additional parties (SHA engineers, lawyers, FHWA, etc.) have slowed the process considerably. Contracts will be necessary for infrastructure installation (access road, concrete pad, fence, guard rail and electricity). Cannot proceed until agreement is finalized.

# Other Helpful NR Contacts

- Bruce Louks - Idaho DEQ  
Modeling, Monitoring, and Emission Inventory Program Manager  
bruce.louks@deq.idaho.gov
- Sue Kimbrough - participated in Las Vegas Study  
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