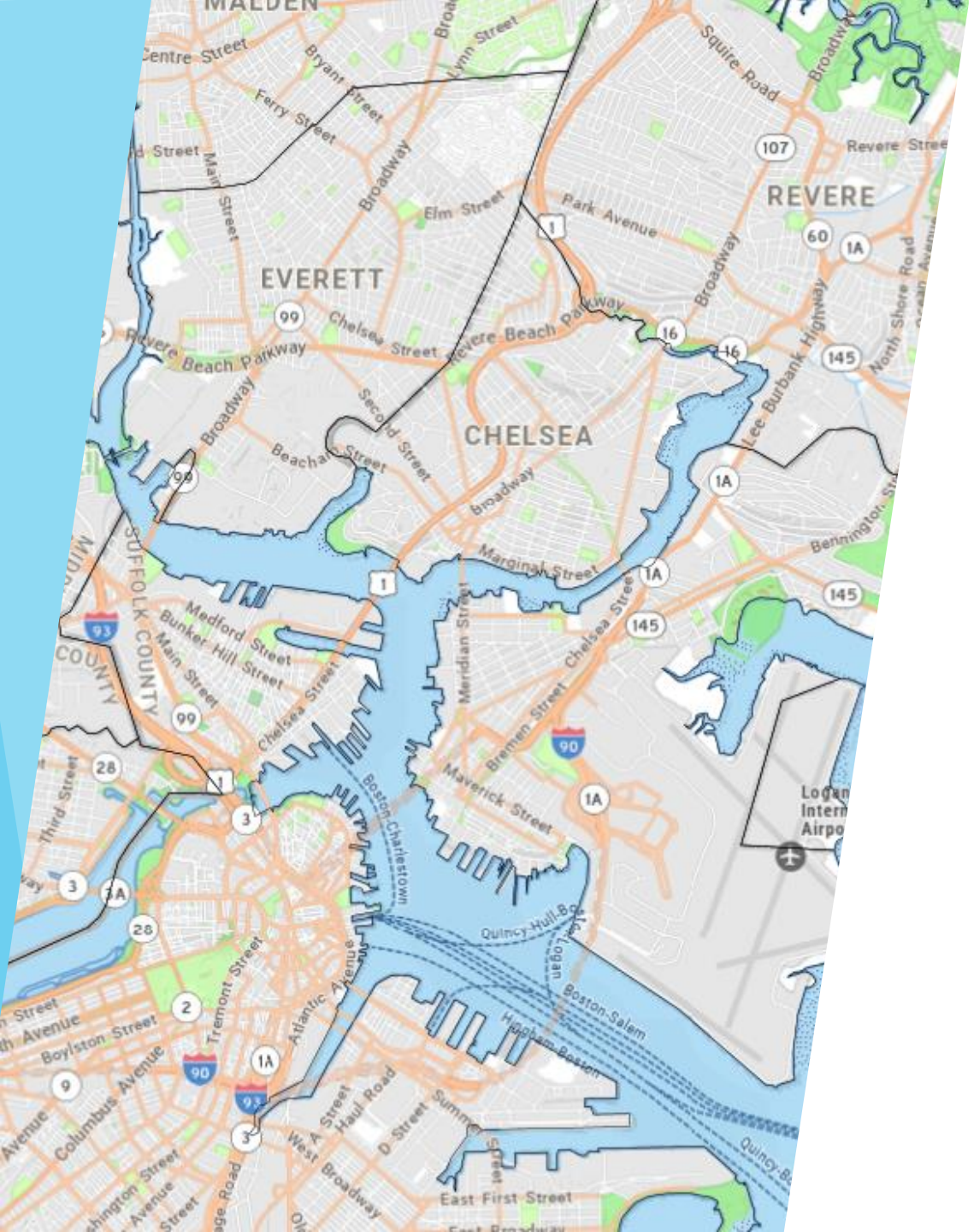
MassDEP Community Air Monitoring

February 14, 2023

Topics

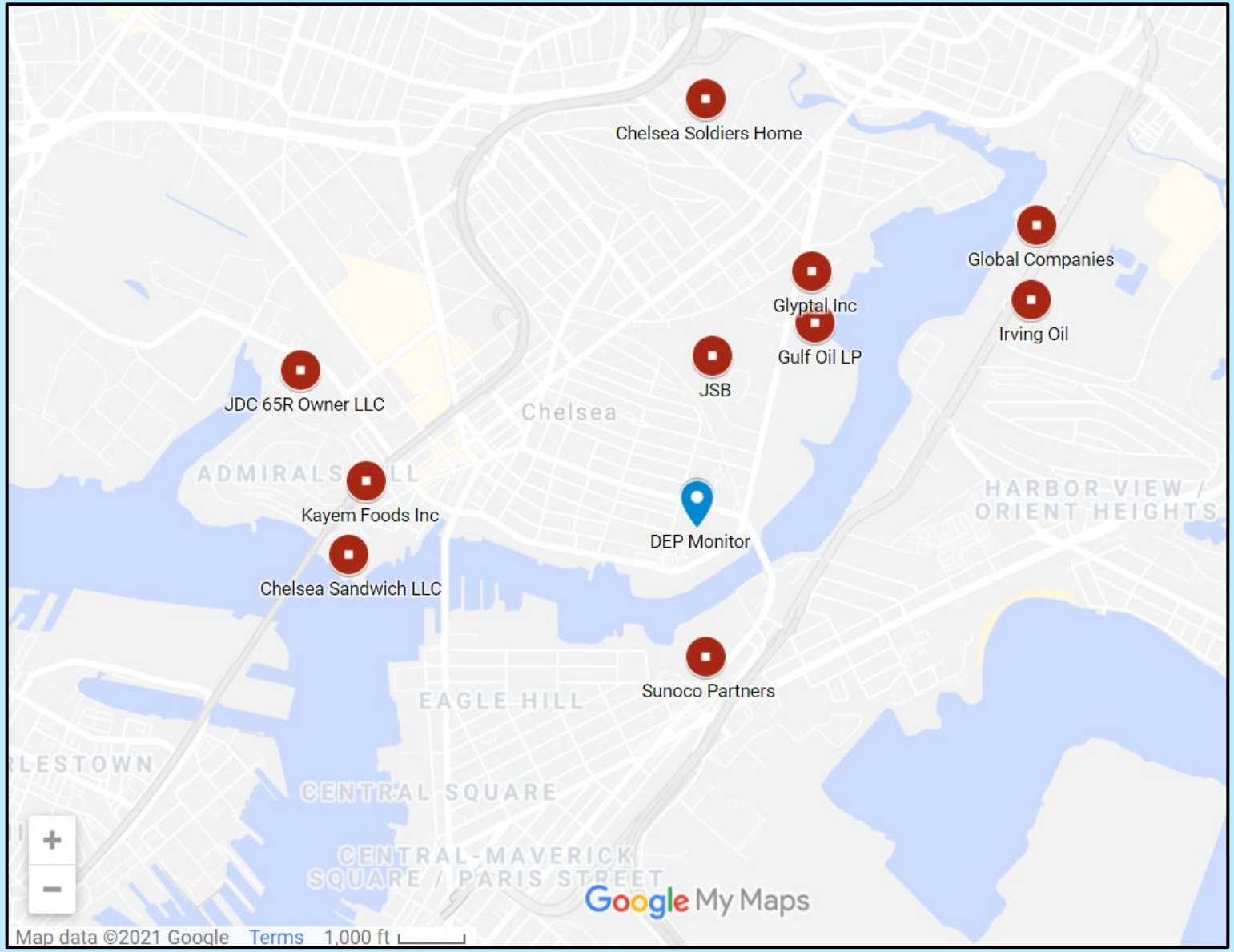
- Chelsea MA Community Monitoring
- Air Sensor Grant Program



Chelsea, Massachusetts

- Environmental Justice population
- Severe Covid-19 impacts
- Industrial areas
- Major transportation hubs
  - Route 1
  - Chelsea Creek
  - Logan Airport

Nearby Sources with at least 0.5 tons/year VOC Emissions (MassDEP 2015 Source Registration Reports)



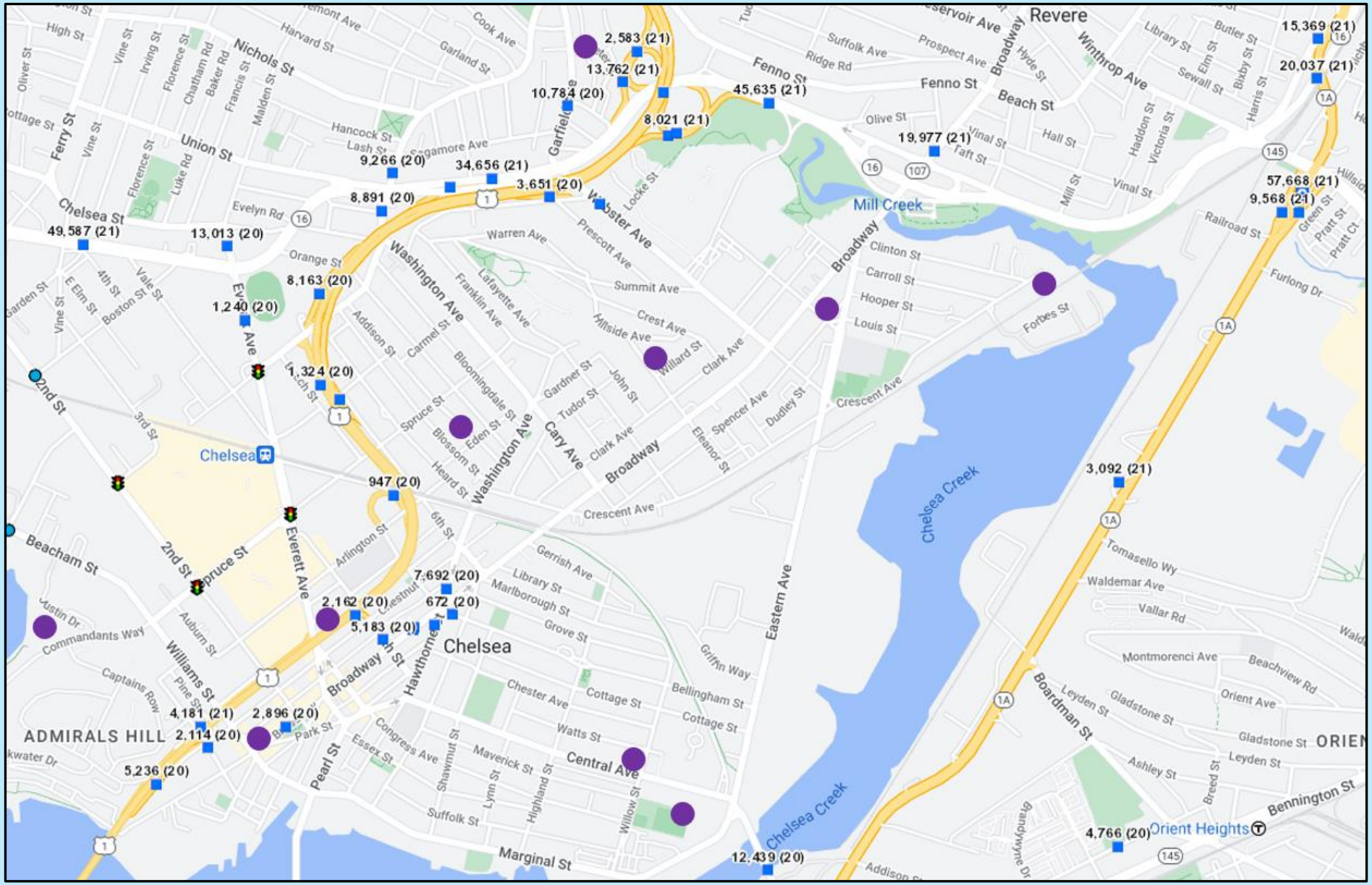
Air Monitoring

- Air monitoring station began operating in Highland Park late April 2021
  - Fine particulate matter (PM2.5) on a continuous basis and a PurpleAir PM2.5 sensor
  - 63 volatile organic compounds (VOCs) every six days (24-hour samples)

- Nine additional PurpleAir PM2.5 sensor locations to show spatial variation of PM2.5

- PM2.5 continuous monitoring data available on MassDEP's website at https://eeaonline.eea.state.ma.us/dep/massair/web/#/pollution/map/max
- VOC monitoring spreadsheet data available on MassDEP's website at https://www.mass.gov/service-details/voc-monitoring-data

Annual Average Daily Traffic Counts



Using Air Monitoring Data

- Regulatory monitors
  - PM2.5 compared to National Ambient Air Quality Standards (NAAQS)
  - VOCs compared to MassDEP Threshold Effects Exposure Limits (TEL) guidance
    - MassDEP guidance are set to be protective of people, including sensitive people, from exposure over a lifetime (i.e., 70 years)
- PM2.5 Sensors: identify potential emissions sources
  - Daily and hourly concentrations and patterns can be used to better understand spatial variation and potential sources
  - Concentrations likely to vary by location, during each day, and across days and seasons
  - Potential sources can be general (e.g., traffic) or specific (e.g., facility)

Air Monitoring Results - Summary

- What's different in Chelsea compared to other monitors in MA?
  - VOCs found in petroleum products at higher levels – biggest difference
  - Other VOCs at higher levels
  - PM2.5 is consistent with other urban areas

- All PM2.5 and most VOC air monitoring data are below applicable standards and guidelines

- Three VOCs regularly exceed MA guidance in Chelsea and at the other three monitors in MA
  - Benzene, formaldehyde and acrolein
  - These VOCs are common in outdoor air

MassDEP Air Sensor Grant Program

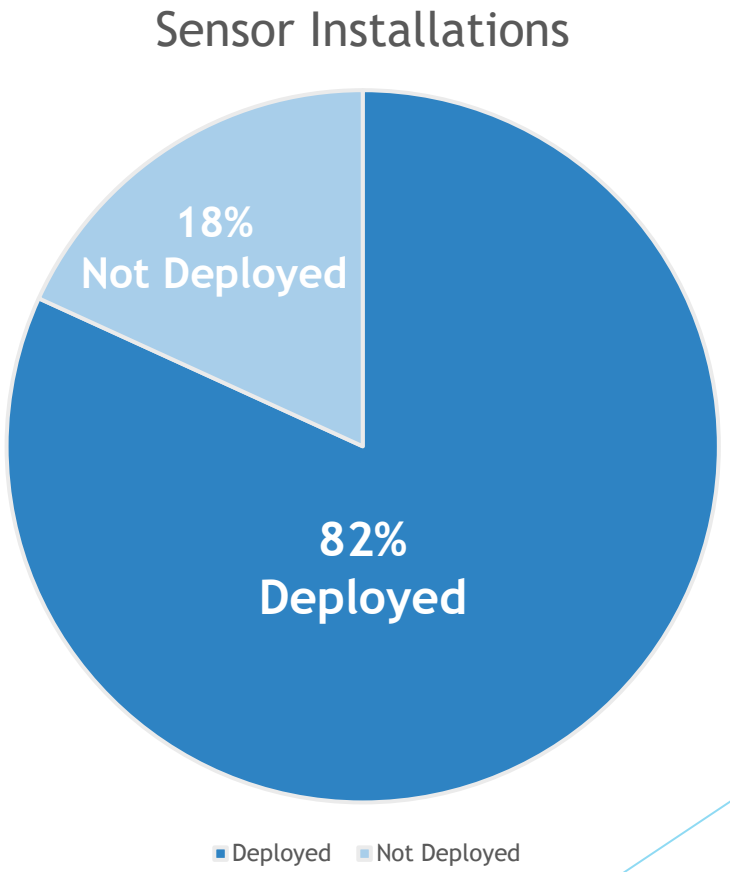
- Success in Chelsea built confidence in sensor technology
- In July 2021, MassDEP announced the Air Sensor Grant Program
  - MassDEP allocated $200,000 for the purchase of PM2.5 sensors
  - Municipalities receive between five and ten PurpleAir sensors to measure PM2.5 in outdoor air for at least one year
  - Encouraged the placement of air sensors in communities with Environmental Justice (EJ) populations by giving preference to these applicants

Sensor Grant Program Overview

- 39 Municipalities Applied & Awarded
  - 33 signed agreements
  - 5 declined award
  - 1 unresponsive
- 33 towns were shipped 5 – 10 PurpleAir PM2.5 sensors
- Sensors were shipped between February – June 2022

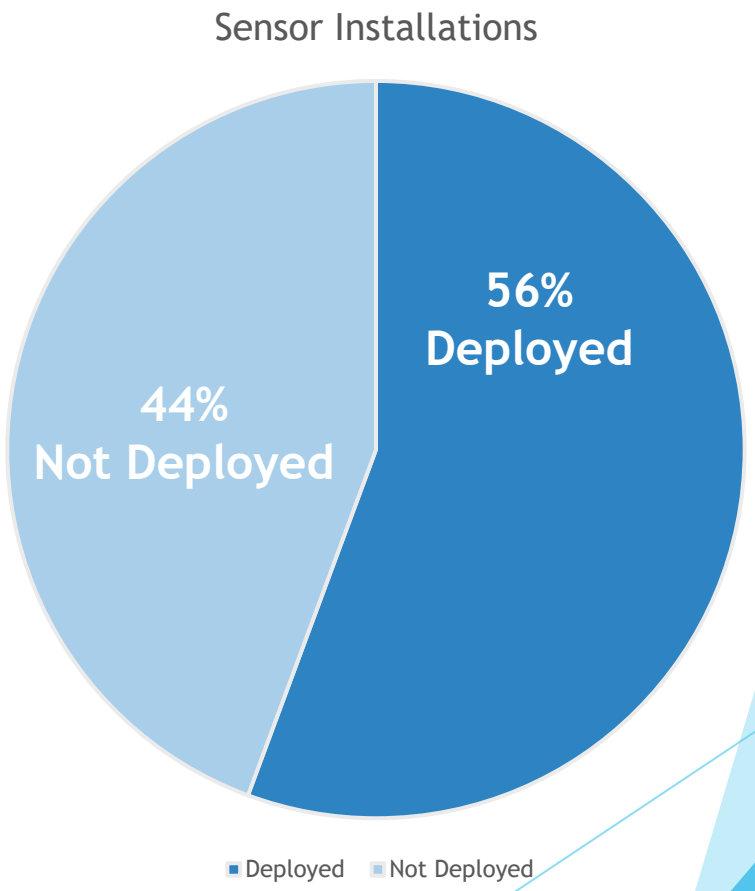
Installation Progress by Municipality

- 27 municipalities have installed at least one sensor
- 6 municipalities have not installed any sensors



Installation Progress by Total Sensors

- 248 total sensors were distributed to grant participants
- 138 have been installed*
- 110 have not yet been installed



*some sensors have been physically installed and registered but not showing on the map due to dropped WiFi connections