

COMMUNITY BOARD 7 COMMITTEE Report

Joint Committee Meeting with Transportation, Health & Human Services, Sanitation/Environment Committees

2023-3-13, 6:30pm

1. NYS Air Quality Division Board's Brooklyn Community Air Monitoring Initiative

- Adrian Espinoza and Margaret LaFarr from New York State Department of Environmental Conservation discussed the Brooklyn Community Air Monitoring Initiative, which began in September 2022 and will continue for the next year
- DEC is working with contractor Aclima to use Toyota Prius Vehicles with sensors to monitor PM 2.5 and Volatile Organic Compounds (VOC) and the first quarterly report (September – November 2022) is now available.
- DEC has also created a Community Advisory Committee and is partnering with Borough President Reynoso to help with outreach and inform data collection
- Board and community members asked questions about joining the Advisory Committee and its schedule of meetings, preliminary results of air monitoring, and the differences between this program and DEC's existing stationary Regulatory Air Quality Monitors, and how this corresponds with city air monitoring initiatives.
- Questions were also raised regarding the accuracy and limitations of car-based mobile monitors, the locations of stationary monitors, pollution mitigation strategies, and funding from the recent Environmental Bond Act.
- Attendees also discussed concerns about air quality issues further away from Gowanus Expressway including 4th and 5th Avenue.

2. Neighborhood Air Quality, Traffic and Noise Sensors Project in Red Hook

- Matias Kalwill and Kaveh Waddell discussed a Neighborhood Air Quality, Traffic, and Noise monitoring project in Red Hook sponsored by Red Hook Art Project (RHAP).
- Project stems from Waddell's journalism related to mapping Amazon Warehouse locations and how they burdened communities.
- Project monitors four indicators including air quality, noise, vibration, and traffic counts using Purple Air Sensors and Numina Traffic Sensors.
- Project seeks to find long-term patterns and trends and also includes some real-time data.
- Questions were raised about process for bringing this project to other areas like CB7, how schools are being integrated into monitoring project, community involvement, and upcoming events.

1) Names of the committee members present

- **Transportation:** Katie Walsh, John DeLooper, Sandra Alfonso, Joan Botti, Roberto Martinez, Cindy Vandenbosh, Diana Gonzalez, Sam Sierra, Gabino

Morales, Jerry Chan, Julio Peña III

- **Health & Human Services:** Cynthia Gonzlaez, Pat Ruiz, Joan Botti, Cynthia Felix, Julio Peña III, Sam Sierra
- **Sanitation/Environment:** Diana Gonzalez, Mary Jo Eyster, John Johnston, Julio Peña III, Sam Sierra, Gabino Morales, Nicole Huang

2) Corrections and amendments to previous meeting minutes (if any)

- None

3) Additions to the current agenda

- None

4) Motions taken or rejected (if any)

- None

5) Actions taken or agreed to be taken

- None

6) Next steps

- Participants can learn more about air monitoring projects at www.dec.ny.gov/chemical/125320.html, <http://www.nyaqinow.net/>, and <https://www.dec.ny.gov/chemical/8406.html>

7) Old Business

- None

8) Any new business items

- None

8) Public comment

- None

9) Next meeting date and time, if scheduled

- TBD

10) Time of adjournment

- 8:17 p.m.

Appendix: NYC DEC Presentation



Community Air Quality Monitoring

Brooklyn – CB7

March 13, 2023

Climate Leadership and Community Protection Act (CLCPA)

- The Climate Act is one of the Nation's most ambitious climate laws
- Requires at least 35% of the benefits of New York State's clean energy spending be realized in disadvantaged communities
- As required, the Climate Justice Working Group identified disadvantaged communities (DACs) overburdened by environmental and economic stressors, among others
- Climate Act also requires air monitoring in four DACs

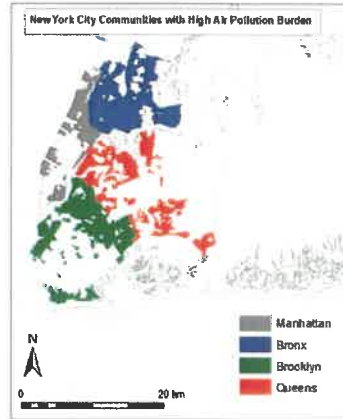
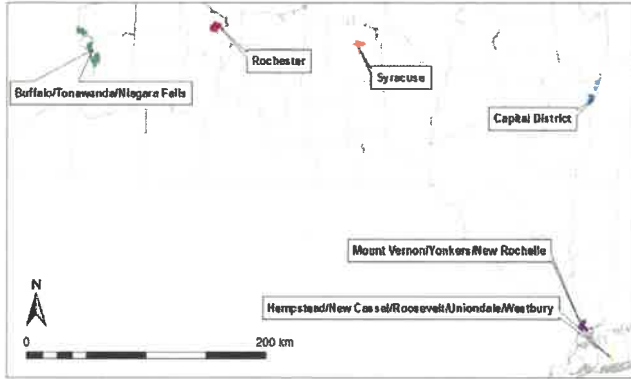
Purpose of the Community Air Monitoring Initiative

- Identify the high air pollution burdens in disadvantaged communities
 - Looking for repeated, peak concentrations
- Identify the local sources contributing to air pollution
- Identify measures to reduce emissions
 - Where possible, implement solutions to reduce pollution
 - At the end of the study, develop strategies to reduce emissions
 - Help meet New York's ambitious goals to reduce the emissions contributing to climate change

Selection of Study Areas

- The study used 12 environmental indicators associated with air pollution to identify high pollution burdened disadvantaged communities
- Developed draft study boundaries
- Two community meetings to gather input on local concerns and locations of sensitive populations to refine study boundaries (July 28th and August 15th)

Communities with High Air Pollution Burdens



Study Start Dates:

July 1: Buffalo/Tonawanda/Niagara Falls, Capital, Bronx, Manhattan

Sept 1: Rochester, Syracuse, Mt Vernon/Yonkers/New Rochelle, Queens, Brooklyn and Hempstead/New Cassel/Roosevelt/Uniondale/Westbury

Targeted Pollutants & Sources

Fine Particulate Matter
2.5 microns or smaller ($PM_{2.5}$)

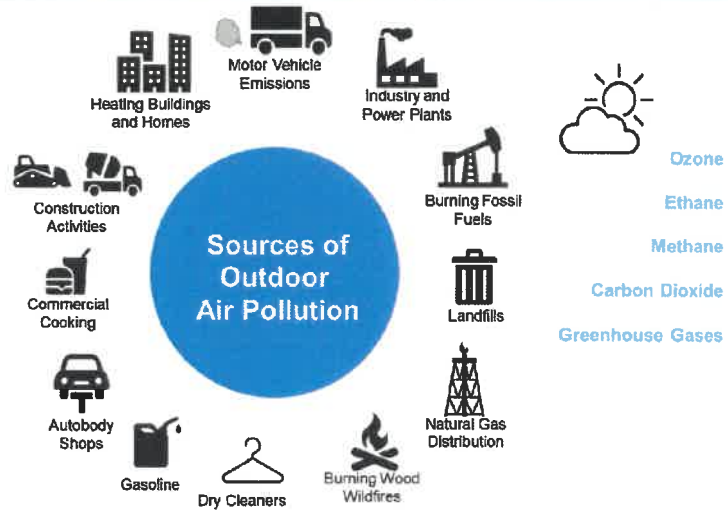
Black Carbon

Nitric Oxide

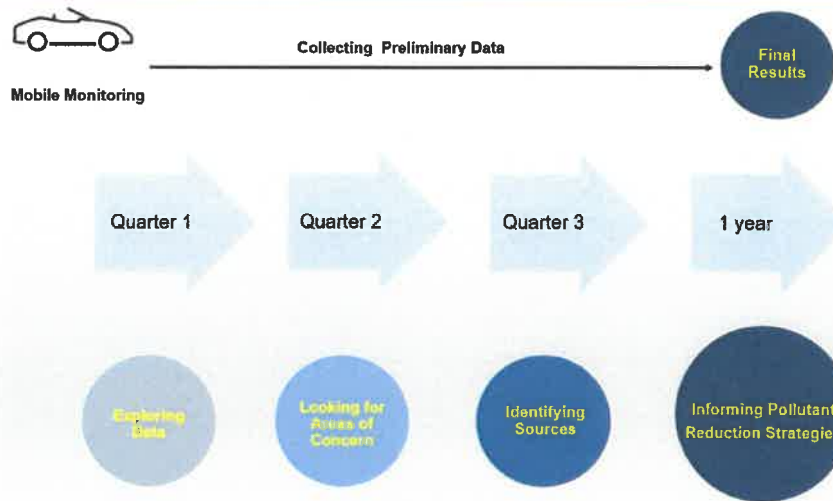
Nitrogen Dioxide

Carbon Monoxide

Volatile Organic Compounds



Year-Long Community Input and Monitoring



Mobile Monitoring



- Aclima is conducting air monitoring using a hybrid Prius
- Vehicle-mounted sensors measure air quality each second
- Mobile monitoring
 - Allows for the study of a larger area than fixed air monitors
 - Good for identifying peak concentrations of air pollution
 - Used to screen for sources of concern
- Does not characterize population exposures or determine risk
 - Sensors have a fast response but are not as accurate as regulatory instruments
 - Measurements collected in the middle of the road

Progress & Preliminary Data

- September - November, first three months of data
- Aclima Pro provides quarterly summaries for each pollutant
- As an example, we'll show a map for fine particulate matter less than 2.5 microns in size (PM_{2.5})

Brooklyn: Study Boundary & Roads Driven

Census tract boundaries

Road segments in plan

Measurement plan boundary



Brooklyn: How Many Times Road Segments Were Driven

Report 1 of 4: 9/1/2022 - 11/30/2022

Annual Measurement Period: 9/1/2022 - 8/31/2023



Progress Statistics

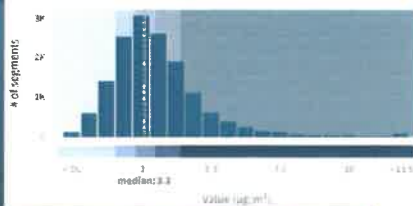


Measurement passes



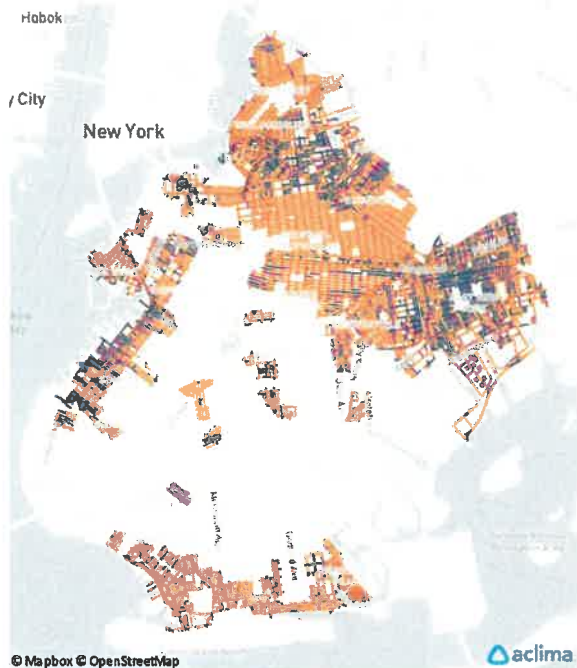
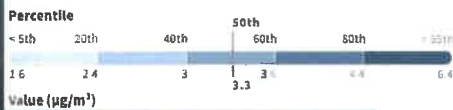
Brooklyn: Preliminary PM_{2.5}

of road segments by PM_{2.5} value

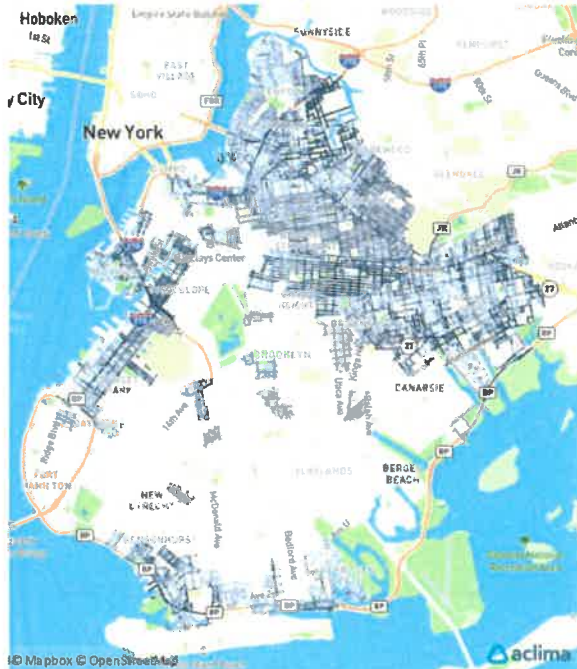


Road segment percentile

Measured PM_{2.5} concentration relative to the area median of 3.3 µg/m³



© Mapbox © OpenStreetMap aclima



© Mapbox © OpenStreetMap aclima

Progress & Preliminary Data

DEC is working with raw 1-second measurements

- Identify areas with elevated and repeated peak concentrations
- Team will review to determine if follow-up is necessary
- We'll report on some of our initial findings

After 12 full months of data collection, Aclima will create annual concentration estimates for each segment. A publicly accessible website will be developed with a map of the final estimated concentrations for each 100-meter road segment, for each pollutant

Community Involvement

- Community Advisory Committee Proposed for:
 - Sharing insights from monitoring
 - Attuning the study to community knowledge
 - Respecting community-driven solutions
- DEC will report on progress quarterly
- Any interested stakeholders can participate

Questions

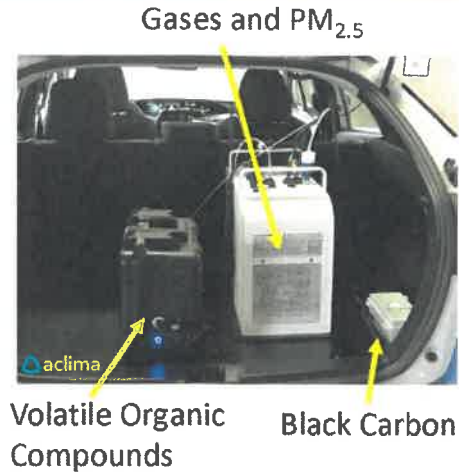
Additional questions or concerns

- Air monitoring: CLCPA.CAM@dec.ny.gov or 518-402-8402
- Grants: Office of Environmental Justice
justice@dec.ny.gov or 518-402-8556
- Receive updates, questions about sources
r2.info@dec.ny.gov or call 718-482-4900
- Community Air Monitoring
Website: <https://www.dec.ny.gov/chemical/125320.html>

Back Pocket Slides after this point

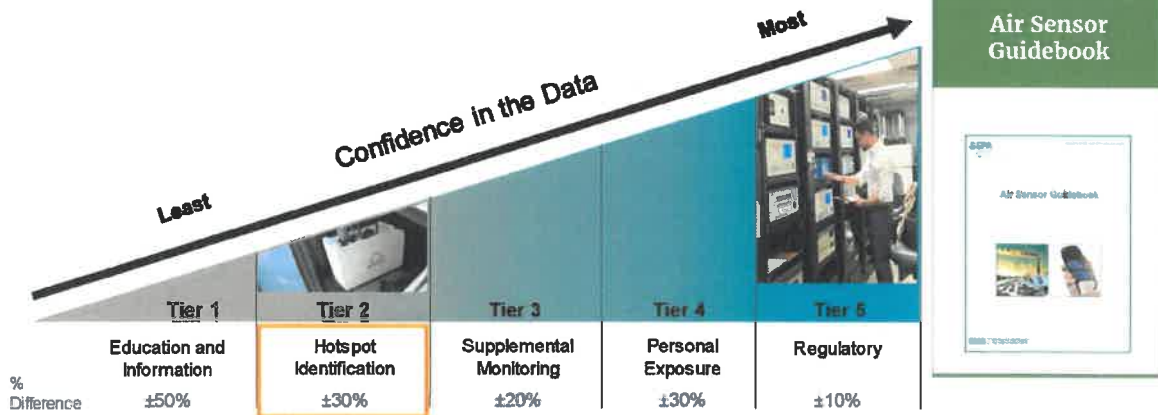
Sensor Technology

- Sensors are lower cost and portable
- Sensor performance is impacted by temperature, humidity, and atmospheric composition
- Aclima calibrates the sensors by comparing to a regulatory monitor or standard before deploying on the road



Sensor Data Quality

EPA Sensor Performance Goals



Sensor Data Quality

Data Confidence Metrics



Accuracy - how close to the "true" concentration



Precision – being able to consistently predict the same concentration



Bias – a systematic (common) error of reporting a value higher or lower than the true value

Sensor Data Comparison

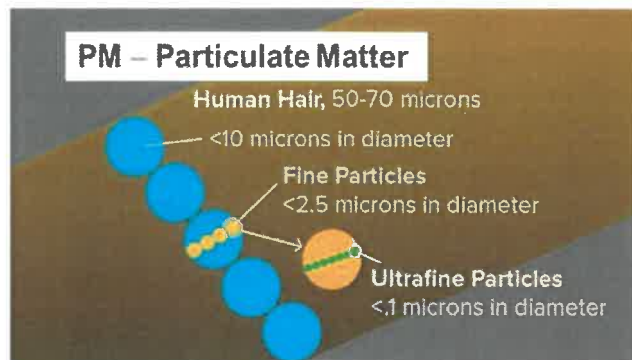
- Sensors are installed at two DEC monitoring stations
- 'Co-location' will show how sensor results are affected by changes in season and environmental conditions
- Review of this comparison will improve initial sensor calibration to make the annual concentration estimates more accurate



Particulate Matter (PM_{2.5})

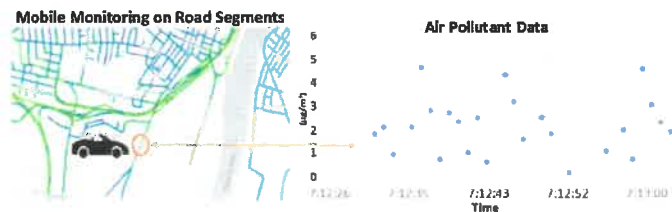
Air pollution is often a mixture of gases and particles of different sizes. Particulate matter are tiny particles or droplets in air.

- Fine particulate matter (PM) or PM_{2.5} is particulate matter that is 2.5 microns and smaller in width
- A strand of hair is ~30x's larger
- PM is defined by size for regulatory purposes
- Black carbon is a part of PM_{2.5}



What do peak concentrations mean?

- EPA has not defined health-based thresholds for very short time periods like those being measured by sensors




- The health effects of very short-term (1 minute) peak concentrations are not well understood
- More research is necessary to understand and communicate sensor data



Map of DEC air monitoring sites

Environmental Monitoring

 Air Quality Monitoring Sites

Reference Layers

 DEC Regional Offices
 County Boundaries



DECinfo Locator tool
<https://www.dec.ny.gov/pubs/109457.html>

Brooklyn First Quarter Summary

	PM _{2.5} (µg/m ³)	O ₃ (ppb)	NO ₂ (ppb)	CO (ppm)	BC (µg/m ³)	CH ₄ (ppb)	CO ₂ (ppm)
Median	3.3	19	8.4	0.42	0.9	2261	447
St Deviation	2.2	7	7.6	0.18	0.9	207	47
5th Percentile	1.6	9	< detection limit (4 ppb)	0.29	0.3	2074	425
95th Percentile	6.4	30	20.5	0.69	2.1	2475	481

Median is the middle of the data

St Deviation = Standard Deviation. Standard deviation shows how spread out the data are around the median

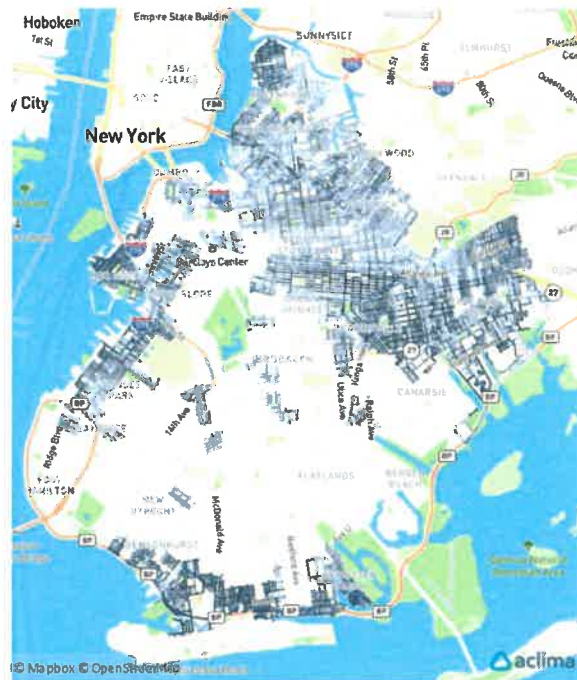
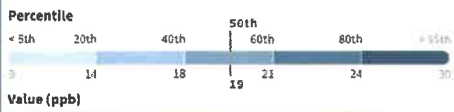
Percentile is a way to see how one value compares to another

Det limit - detection limit. The lowest concentration that can be measured with confidence

Brooklyn: Preliminary ozone (O_3)

Road segment percentile

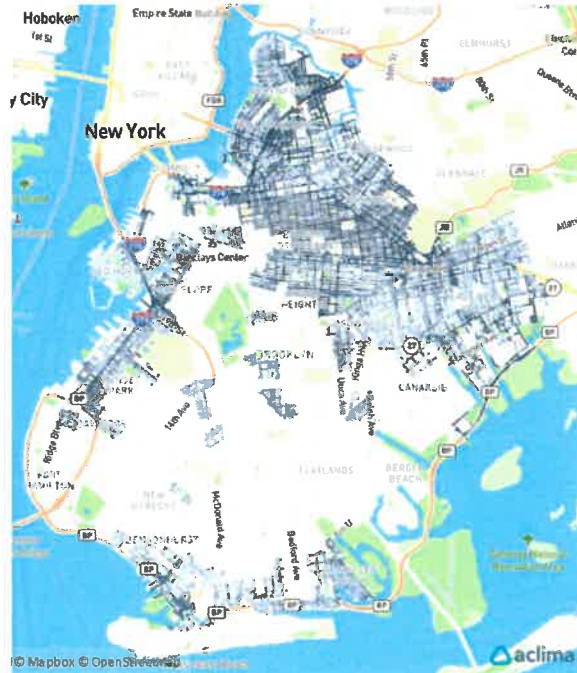
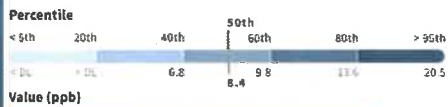
Measured O_3 concentration relative to the area median of 19 ppb



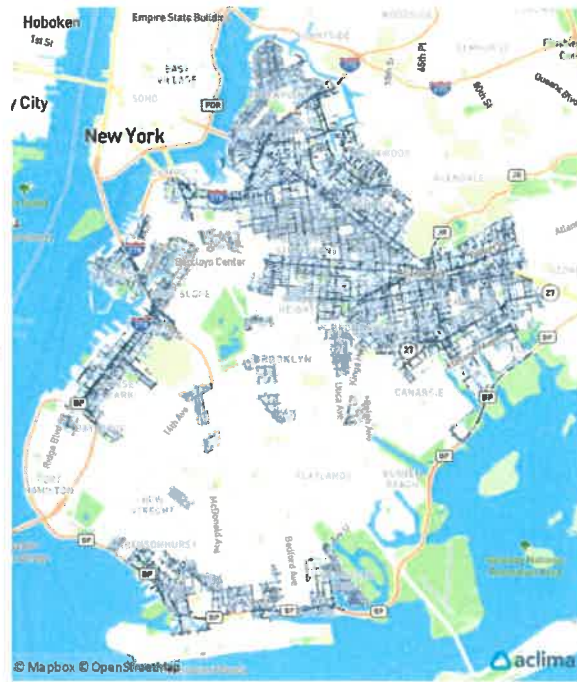
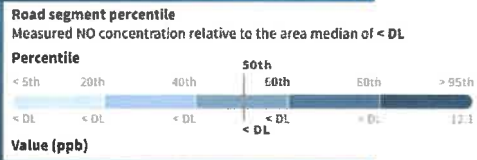
Brooklyn: Preliminary nitrogen dioxide (NO_2)

Road segment percentile

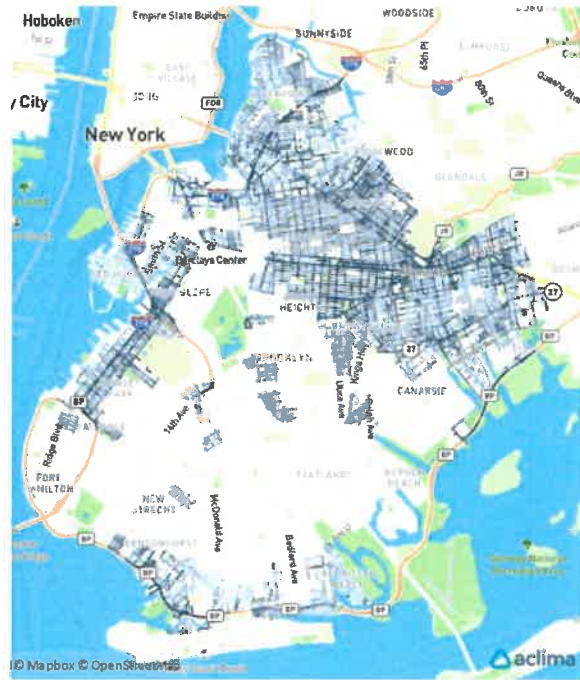
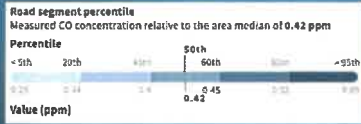
Measured NO_2 concentration relative to the area median of 8.4 ppb



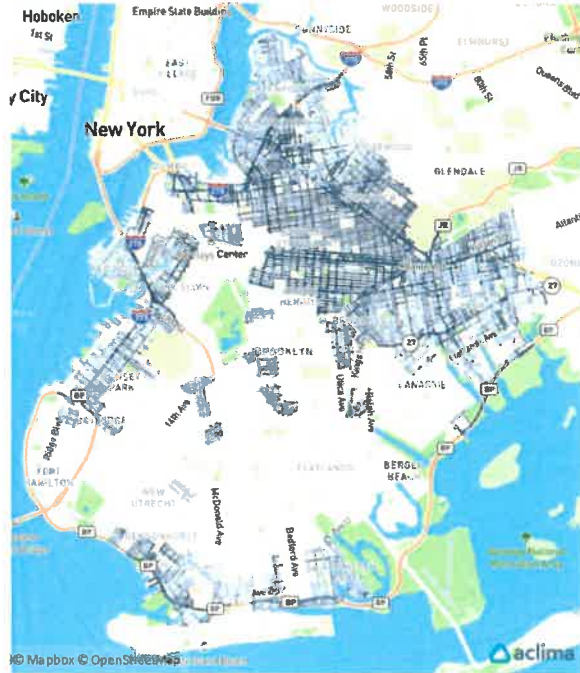
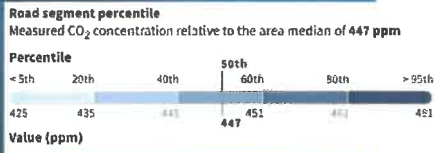
Brooklyn: Preliminary nitric oxide (NO)



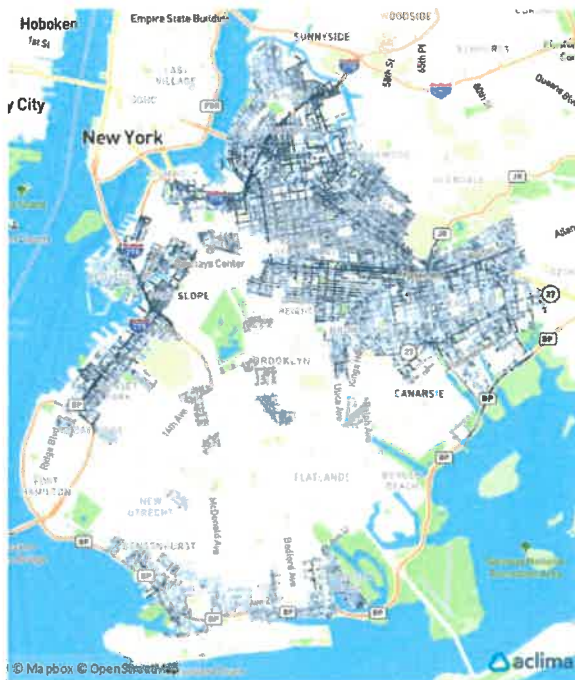
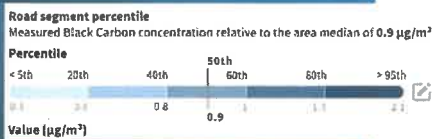
Brooklyn: Preliminary carbon monoxide (CO)



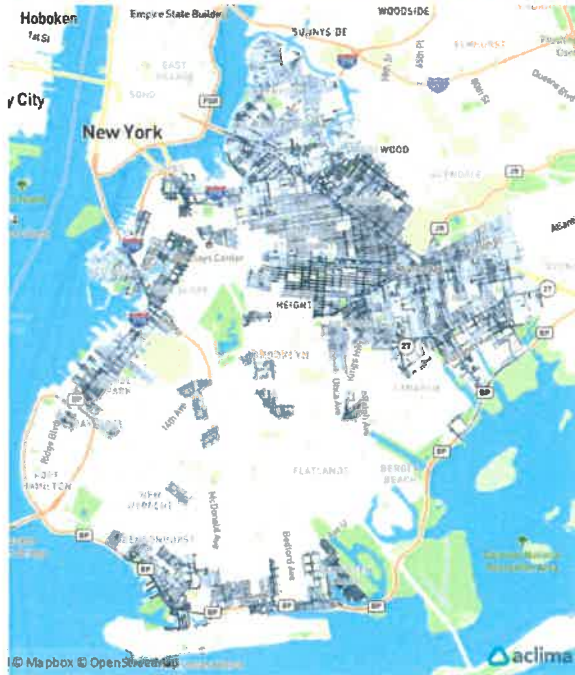
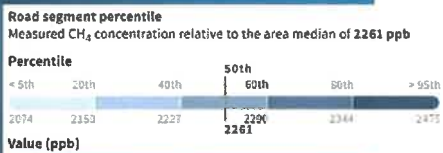
Brooklyn: Preliminary carbon dioxide (CO₂)




Brooklyn: Preliminary black carbon



Brooklyn: preliminary methane (CH_4)



Appendix B: Red Hook Air Monitoring Presentation



low cost + long term + high confidence

An environmental monitoring project with Red Hook neighbors

March 13th '23 update - Prepared for Brooklyn Community Board 7

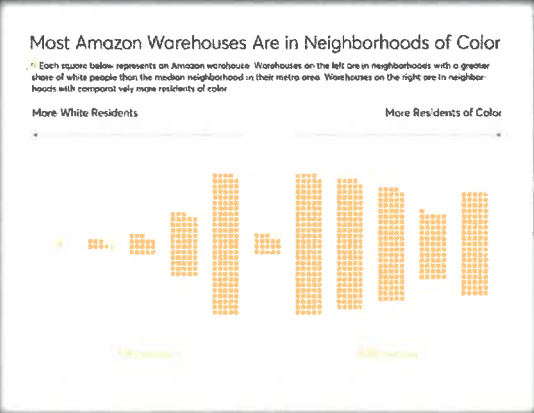
A COMMUNITY SCIENCE EXPERIMENT WITH RESPONSE FROM COMMUNITY MEMBERS

How we got here

Most Amazon Warehouses Are in Neighborhoods of Color

Each square below represents an Amazon warehouse. Warehouses on the left are in neighborhoods with a greater share of white people than the median neighborhood in their metro area. Warehouses on the right are in neighborhoods with comparatively more residents of color.

More White Residents | More Residents of Color



[cr.org/amazonwarehouses](https://www.consumerreports.org/amazonwarehouses)


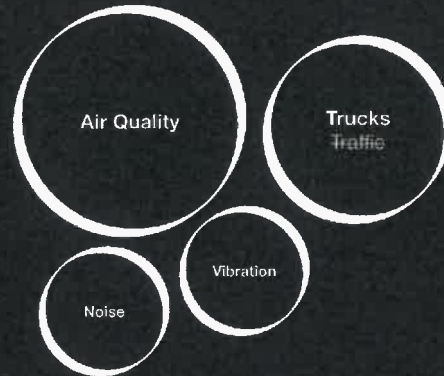


Photo: Amir Hamza for The Guardian & Consumer Reports

- ✓ Monitor changes over time
- ✓ Across 4 indicators
- ✓ Using science-based methods
- ✓ With privacy-by-design sensors
- 📖 Share with neighbors on the web
- 📖 And in public space

The Experiment 🌐



Sensors



PURPLEAIR OUTDOOR AQI MONITOR



MIMIUS TRAFFIC SENSOR



NSRTM MK3

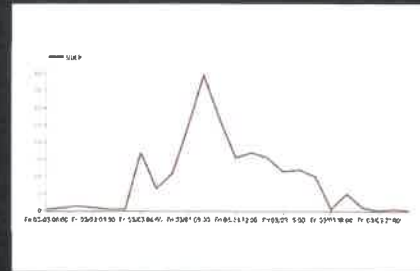


VSEW MK2 VIBRATION

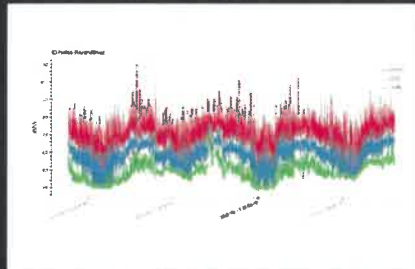
Data



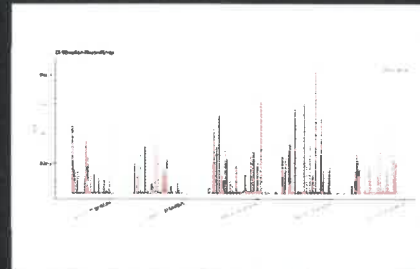
FURFELAIR OUTDOOR AQI MONITOR



HUMINA TRAFFIC SENSOR



COMPARABLE ENVIRONMENTAL DATA



COMPARABLE ENVIRONMENTAL DATA

Status



3 sensor stations
in red hook, brooklyn



8 sensors
counting trucks, and measuring air quality, noise and vibration



1 data pipeline
for integrating, processing and reporting sensor data



1 map application for neighbors
in development - to display data from the sensors on mobile and desktop



1 prototype physical interface
in development - or an interactive map station displaying sensor data



Exploring a new deployment outside of Red Hook

What we can learn



Current air quality and truck traffic volume



Patterns and trends: average week/weekend, rush hour, shopping season...



What peak traffic volume, pollution, noise and vibration looks like



How sound, vibration and air quality relate to traffic



What happens when a new facility opens or closes



Questions?

Thank you

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