BAY AREA AIR QUALITY MANAGEMENT DISTRICT

AGENDA: 4

Marie Harrison Environmental Justice Scholarship Update

Community Equity, Health, and Justice Committee
May 8, 2024

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Presentation Outcome

The Committee will receive a presentation on the Air District Marie Harrison Environmental Justice Scholarship Program, which awarded seven scholarships to college students in 2023, its inaugural year, and is currently accepting applications for the second year of the program until May 31, 2024.

Outline

- Introduce Marie Harrison Community Foundation
- Overview of Marie Harrison Environmental Justice Scholarship
- Report on first year of the scholarship
- Share plans for second year of the scholarship

Presentation for Informational Only

No action requested, informational only.

Marie Harrison Community Foundation

Marie Harrison Environmental Justice Scholarship

Images from the Marie Harrison Community Foundation website: canwelive.org

Scholarship Goals

- Honor the life of Marie Harrison, an environmental justice leader and supporter of impacted youth, who worked to bring environmental, health and social justice to the Bayview Hunters Point community in San Francisco and the Bay Area.
- Support college students who demonstrate a passion for improving environmental health and air quality in the overburdened frontline communities of the Bay Area.
- Support Air District's values of excellence, leadership, collaboration, and equity.

Year One Scholarship Review

- $85,000 provided by the Air District for year one (May 2022)
- Conducted focus groups and key informant interviews to support design of scholarship
- Developed application and outreach strategies
- Reviewed applications and selected awardees
    - Eleven applications received; seven scholarships of $5,000 distributed to awardees for a total of $35,000
- Followed-up with awardees to support educational goals
- Scholarship administered through Kaleidoscope platform for $15,000 a year

Year One Scholarship Recipients

Kevin G. Ruano Hernandez

Jaheim Smith

Jaiyah-Shalon Gordon

Lorrene Fudge

Images submitted by scholarship recipients

Year One Scholarship Recipients (cont.)

Ryan Feng

Toddiana Jasper

Yolanda Harris

Images submitted by scholarship recipients

Marie Harrison Environmental Justice Scholarship Year Two

- Scholarship application is open until May 31, 2024: bit.ly/MHEJ2024
- Next steps:
  - Outreach across the Bay Area to notify eligible students at schools, after school programs, youth leadership programs, Assembly Bill 617 sites, and to James Cary Smith Grantees
  - Review applications, select awardees, and distribute funds
  - Mentor and support scholarship recipients
  - Distribute nine scholarships of $5,000 for a total of $45,000
  - Scholarship administered through Kaleidoscope for $15,000 a year

Feedback Requested

Beyond the outreach strategies described, who else can we outreach to about year two of the Marie Harrison Environmental Justice Scholarship?

AGENDA: 5

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Air Monitoring Data for Bay Area Communities

Community Equity, Health and Justice Committee
May 8, 2024

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Presentation Outcome

Provide an overview of air monitoring data available for communities and ongoing efforts to work with communities to improve data accessibility and use.

Presentation Outline

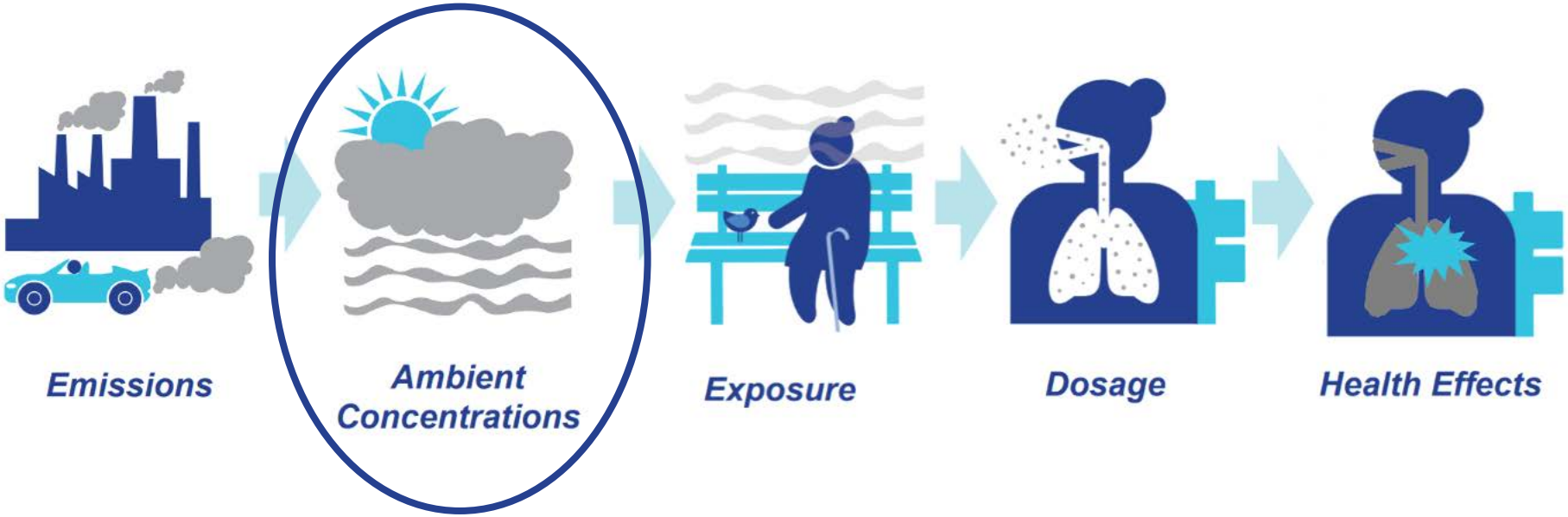
- Types of air monitoring
- Potential data accessibility improvements
- Using air monitoring data for different purposes

Presentation for Information Only

- No action required.

Air Pollution

Emissions to Health Effects



Types of Air Monitoring

- Many ways to collect air monitoring including:
  - Regulatory air monitoring
  - Source-oriented air monitoring (fenceline monitoring)
  - Targeted short-term air monitoring projects
  - Long-term air sensor networks
  - Publicly deployed air sensors
- Characterizes the total amount of an air pollutant in ambient air from all contributing sources
- Usefulness of data to answer a question depends on the sensor or monitor deployment (e.g. is it the right pollutant, with the right accuracy, in the right place, with the right averaging time)

Monitoring Approach Needs to Match Goal

- Are we measuring **emissions** or **ambient air concentrations**?
- Do we need **real-time preliminary data** or **reporting of final data**?
- There are still limitations on **what pollutants** can be measured well.
- **Sensitivity and range**: how low concentrations can you reliably report, do we want accurate data at low and very high levels?

Monitoring Approach Needs to Match Goal (cont.)

- **Selectivity**: Are we measuring specific compounds (e.g. naphthalene) or families of compounds, Polycyclic aromatic hydrocarbons (PAHs), are there possible interferences from other air pollutants or environmental conditions?
- **Deployment characteristics:** moving or stationary, outdoor conditions, logistics constraints (power, security, safety)

Regulatory Ambient Air Monitoring

Long-term air monitoring stations operated by air agencies according to Environmental Protection Agency (EPA) requirements

Use data to:

- Determine attainment with health-based National Ambient Air Quality Standards (NAAQS)
- Evaluate air quality trends over long time periods

Regulatory Ambient Air Monitoring (cont.)

- Provide real-time data on air pollution levels in overburdened communities and throughout jurisdiction
- Provide high quality anchor to air measurements in overburdened communities

Source-Oriented Air Monitoring

Long-term tracking of ambient air quality at the facility fenceline or in nearby communities

Operated by facilities, Air District, or community and non-profit organizations

Use data to:

- Characterize impacts of uncertain or fugitive emissions on nearby communities over time
- Demonstrate the effectiveness of emission limits in rules
- Inform emissions and exposure reduction strategies, including rule development and compliance investigations

Targeted Air Monitoring Projects

Short-duration air monitoring studies designed to answer specific questions

Use data to:

- Report snapshots of air pollution levels
- Identify local-scale differences in air quality
- Identify unknown emissions and potential impacts on nearby communities
- Inform emissions and exposure reduction strategies, including rule development and compliance investigations

Longer-Term Air Sensor Networks

Dense networks of air sensors

Use data to:

- Provide real-time data for overburdened communities
- Evaluate air quality trends in time, after emissions reductions, or other changes in conditions
- Identify local-scale differences in air quality
- Inform emissions and exposure reduction strategies, including rule development and compliance investigations

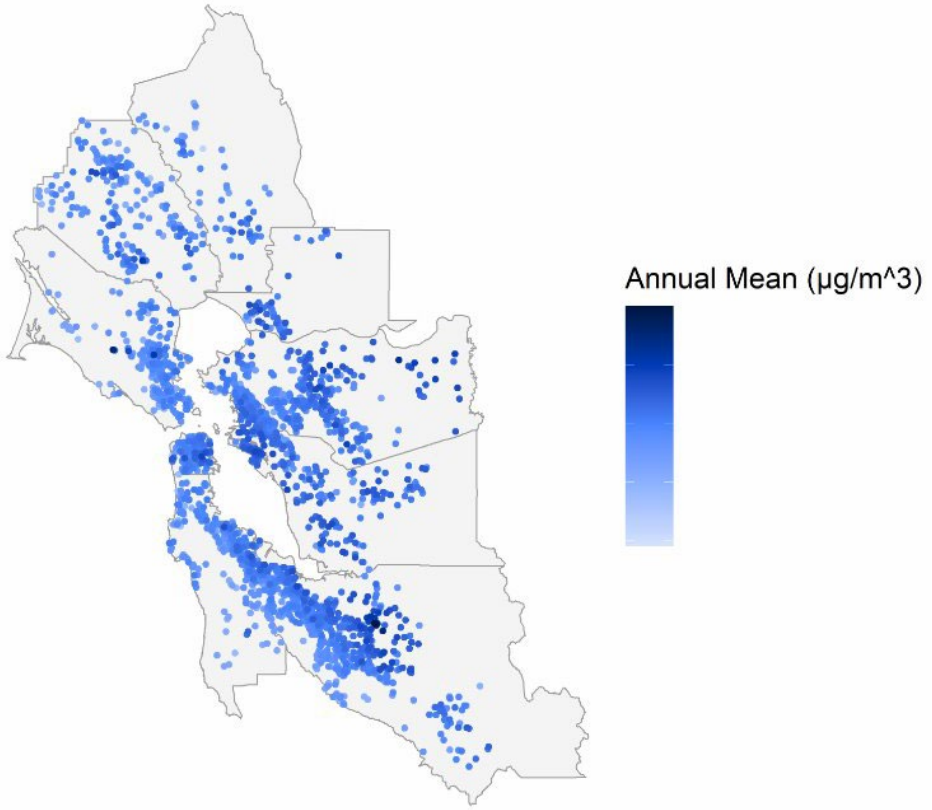
Publicly Available Air Sensor Data

Air sensors deployed by public individuals; data displayed on websites

Use data to:

- Provide real-time data on air pollution levels
- Evaluate air quality trends in time, after emissions reductions, or other changes in conditions (wildfires)
- Identify local-scale differences in air quality
- Inform emissions and exposure reduction strategies, including rule development and compliance investigations

Public Purple Air Sensors ($PM_{2.5}$)



Improving Data Accessibility

Work with community partners to develop a plan to improve data accessibility, including:

- Identify and consolidate existing air monitoring data, where possible
- Develop resources to help communities access and use air monitoring data for their objectives
- Identify gaps where new data collection, analysis, or consolidation is needed

Example: Air Monitoring Data Inventory

Develop inventories of existing air monitoring data so that community members can find and use existing data to support their work.

The Path to Clean Air Community Air Monitoring Plan (PTCA CAMP) included such a list of air and emissions monitoring efforts including information on who is conducting the monitoring, what pollutants are being measured and where, and a brief description of where the data can be viewed, downloaded, or requested.

Ambient Air Monitoring Reference Guide for the Richmond-North Richmond-San Pablo Area

This table provides information about different ambient air monitoring programs and projects. Air monitoring efforts are performed by different organizations, and datasets include different pollutants and have different purposes and uses. *Ambient* data refers to data collected in-community where people live and work, representing the outdoor air we normally breathe.

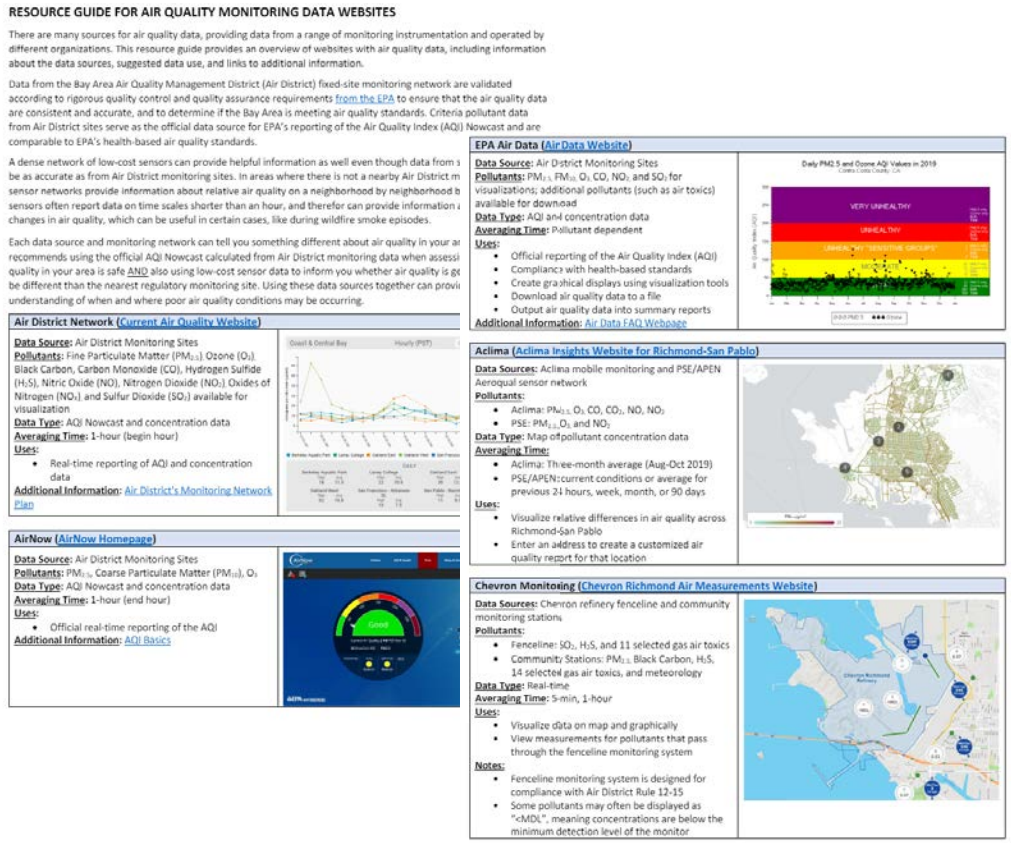
	Air Monitoring Program or Project	Data Description	Monitoring Locations	Pollutants or parameters measured	Links to data and information
Air District	Air District-operated long-term sites	Regulatory ambient data; required for Air District, CARB, and U.S. EPA programs; some data available in real-time	San Pablo (Rumrill Blvd.)	O_3, CO, NO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, gas air toxics	Real-time data (except PM_{10} and air toxics) Historical data on EPA's AirData page Air District Monitoring Network Information
			Richmond (7th Street)	SO_2, H_2S, gas air toxics	
			Point Richmond	H_2S	
	Air District-operated mobile monitoring	Short-term monitoring project focused on gas air toxics; project selected by the AB 617 Monitoring Plan Steering Committee	Targeted areas in Richmond-North-Richmond-San Pablo	Selected gas air toxics such as BTEX and 1,3-butadiene	StoryMap with project information and findings
Chevron	Chevron-operated Community Monitoring Stations	Non-regulatory ambient data, required by the City of Richmond and not subject to Air District regulations; data available in real-time	Atchison Village North Richmond Point Richmond	Black Carbon, $PM_{2.5}$, H_2S, BTEX and other gas air toxics, meteorology	Chevron real-time monitoring data page
Sensor Networks	PSE Healthy Energy & APEN	CARB AB 617 grantee; network of Aeroqual sensors; additional short-term monitoring for black carbon and volatile organic compounds	50 sensors installed across the area	$PM_{2.5}$, NO_2, O_3, temperature, relative humidity, and dew point	Project information page
	Groundwork Richmond & Ramboll	CARB AB 617 grantee; network of Clarity sensors with real-time data; additional short-term monitoring for black carbon and PM metals	52 sensors installed across the area	$PM_{2.5}$, NO_2	Air Rangers Project Information Clarity Open Map (real-time data)
	BEACO$_2$N	School-based sensor network with real-time data, operated by UC Berkeley	15+ schools across the area	CO_2, CO, NO, NO_x, O_3, PM	Data, map, and information page
	PurpleAir	Public-operated sensors with real-time data	20+ locations across the area	$PM_{2.5}$, PM_{10}	Real-time data page
Additional Projects and Datasets	Aclima	Mobile monitoring conducted August-October 2019 – quarterly average concentrations	Throughout the Richmond-North Richmond-San Pablo area	$PM_{2.5}$, NO_2, O_3, CO, CO_2	Aclima Insights Website
		Annual baseline monitoring (data for Contra Costa County collected November 2019-October 2020)	Throughout the Bay Area	$PM_{2.5}$, NO_2, O_3, CO, CO_2	Aclima Air.Health Website
	Assessment of Coal Air Pollution Project	Short-term project focused on particulate matter from coal and petroleum coke operations; CARB AB 617 grantee	Around Levin Terminal and adjacent railways	Particulate matter	Project background and status provided in Update on Air Monitoring Projects, Fall 2021
	AirNow Fire and Smoke Map	Real-time, interactive map for displaying data from government agency monitors and Purple Air sensors, designed for use during wildfire events	Data available from across the U.S.	$PM_{2.5}$	AirNow Fire and Smoke Map Website

https://www.baaqmd.gov/~/media/files/ab617-community-health/richmond/quarterly-report-documents/ptca-monitoring-data-inventory-pdf.pdf?rev=035218b4e730422fa5bee32b9259850b

Example – Resource Guide for Data Websites

Publicly available air monitoring data are displayed on many websites

Developed a guide describing how air monitoring data is displayed, what it is useful for, and provide links.



RESOURCE GUIDE FOR AIR QUALITY MONITORING DATA WEBSITES

There are many sources for air quality data, providing data from a range of monitoring instrumentation and operated by different organizations. This resource guide provides an overview of websites with air quality data, including information about the data sources, suggested data use, and links to additional information.

Data from the Bay Area Air Quality Management District (Air District) fixed-site monitoring network are validated according to rigorous quality control and quality assurance requirements from the EPA to ensure that the air quality data are consistent and accurate, and to determine if the Bay Area is meeting air quality standards. Criteria pollutant data from Air District sites serve as the official data source for EPA's reporting of the Air Quality Index (AQI) Nowcast and are comparable to EPA's health-based air quality standards.

A dense network of low-cost sensors can provide helpful information as well even though data from s be as accurate as from Air District monitoring sites. In areas where there is not a nearby Air District m sensor networks provide information about relative air quality on a neighborhood by neighborhood b sensors often report data on time scales shorter than an hour, and therefor can provide information changes in air quality, which can be useful in certain cases, like during wildfire smoke episodes.

Each data source and monitoring network can tell you something different about air quality in your a recommends using the official AQI Nowcast calculated from Air District monitoring data when assessi quality in your area is safe AND also using low-cost sensor data to inform you whether air quality is g be different than the nearest regulatory monitoring site. Using these data sources together can provi understanding of when and where poor air quality conditions may be occurring.

Air District Network (Current Air Quality Website)

Data Source: Air District Monitoring Sites
Pollutants: Fine Particulate Matter ($PM_{2.5}$), Ozone (O_3), Black Carbon, Carbon Monoxide (CO), Hydrogen Sulfide (H_2S), Nitric Oxide (NO), Nitrogen Dioxide (NO_2), Oxides of Nitrogen (NO_x) and Sulfur Dioxide (SO_2) available for visualization
Data Type: AQI Nowcast and concentration data
Averaging Time: 1-hour (begin hour)
Uses:
- Real-time reporting of AQI and concentration data

Additional Information: Air District's Monitoring Network Plan

AirNow (AirNow Homepage)

Data Source: Air District Monitoring Sites
Pollutants: $PM_{2.5}$, Coarse Particulate Matter (PM_{10}), O_3
Data Type: AQI Nowcast and concentration data
Averaging Time: 1-hour (end hour)
Uses:
- Official real-time reporting of the AQI

Additional Information: AQI Basics

EPA Air Data (Air Data Website)

Data Source: Air District Monitoring Sites
Pollutants: $PM_{2.5}$, PM_{10}, O_3, CO, NO_2 and SO_2 for visualizations; additional pollutants (such as air toxics) available for download
Data Type: AQI and concentration data
Averaging Time: Pollutant dependent
Uses:
- Official reporting of the Air Quality Index (AQI)
- Compliance with health-based standards
- Create graphical displays using visualization tools
- Download air quality data to a file
- Output air quality data into summary reports

Additional Information: Air Data FAQ Webpage

Aclima (Aclima Insights Website for Richmond-San Pablo)

Data Sources: Aclima mobile monitoring and PSE/APEN Aeroqual sensor network
Pollutants:
- Aclima: $PM_{2.5}$, O_3, CO, CO_2, NO, NO_2
- PSE: $PM_{2.5}$, O_3 and NO_2

Data Type: Map of pollutant concentration data
Averaging Time:
- Aclima: Three-month average (Aug-Oct 2019)
- PSE/APEN: current conditions or average for previous 24 hours, week, month, or 90 days

Uses:
- Visualize relative differences in air quality across Richmond-San Pablo
- Enter an address to create a customized air quality report for that location

Chevron Monitoring (Chevron Richmond Air Measurements Website)

Data Sources: Chevron refinery fenceline and community monitoring stations
Pollutants:
- Fenceline: SO_2, H_2S, and 11 selected gas air toxics
- Community Stations: $PM_{2.5}$, Black Carbon, H_2S, 14 selected gas air toxics, and meteorology

Data Type: Real-time
Averaging Time: 5-min, 1-hour
Uses:
- Visualize data on map and graphically
- View measurements for pollutants that pass through the fenceline monitoring system

Notes:
- Fenceline monitoring system is designed for compliance with Air District Rule 12-15
- Some pollutants may often be displayed as "<MDL", meaning concentrations are below the minimum detection level of the monitor

https://www.baaqmd.gov/~/media/files/ab617-community-health/richmond/quarterly-report-documents/guide-to-air-quality-data-websites-pdf.pdf?rev=739ed95f8c0a438a80f7458e85193b52

Example: Bay Air Center Resource Library

https://bayaircenter.org/

Resource Library includes links to websites and documents on many topics

- Air Pollution Foundations
- Designing a Community Scale Air Monitoring Project
- Understanding Air Quality Data
- Educational and Training Materials

Using Air Monitoring Data

Examples of using all types of existing air monitoring data to help

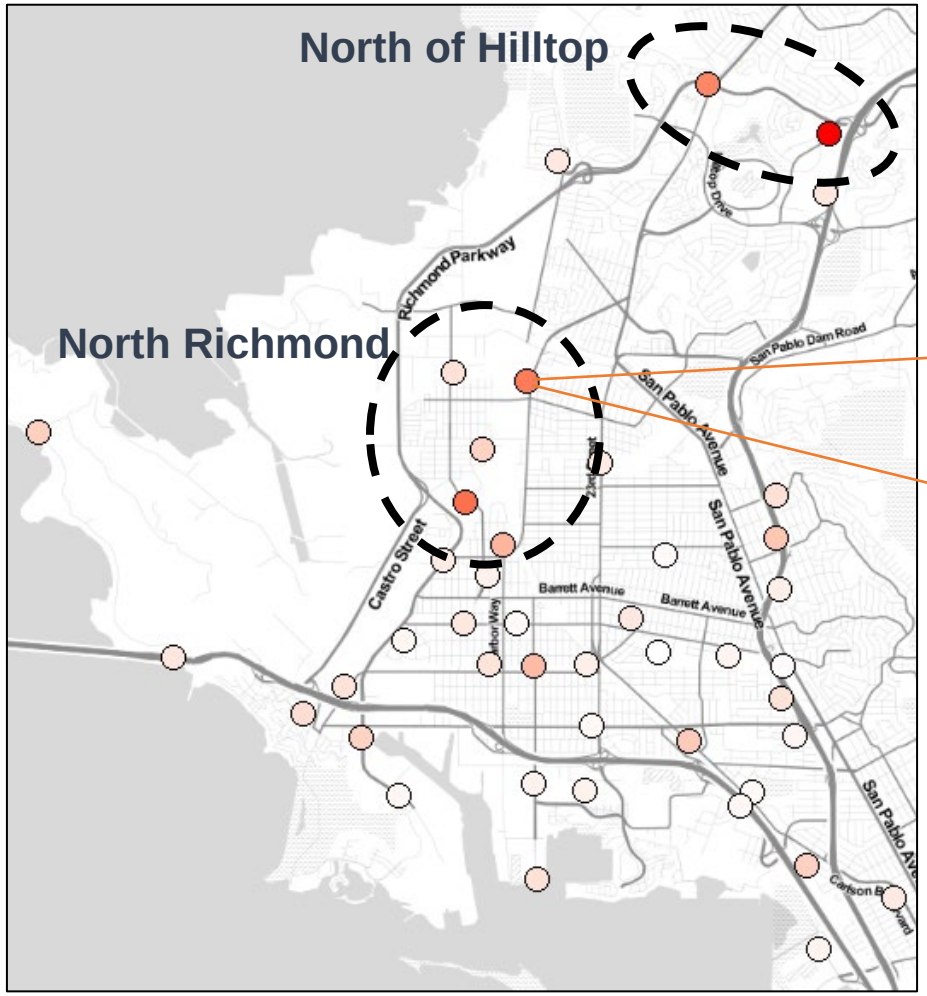
- Analysis of community sensor network data to identify locations with higher Particulate Matter ($PM_{2.5}$)
- Use real-time data to assess air quality impacts during a facility incident

Example: Community $PM_{2.5}$ Sensor Network

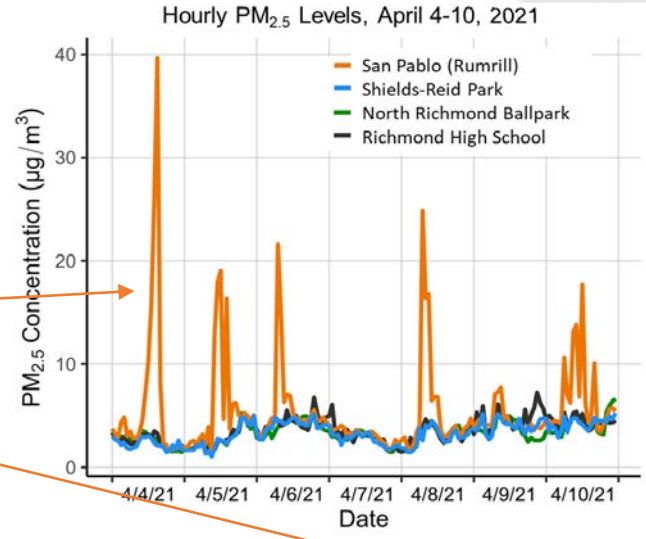
Identify areas with higher hourly $PM_{2.5}$ levels

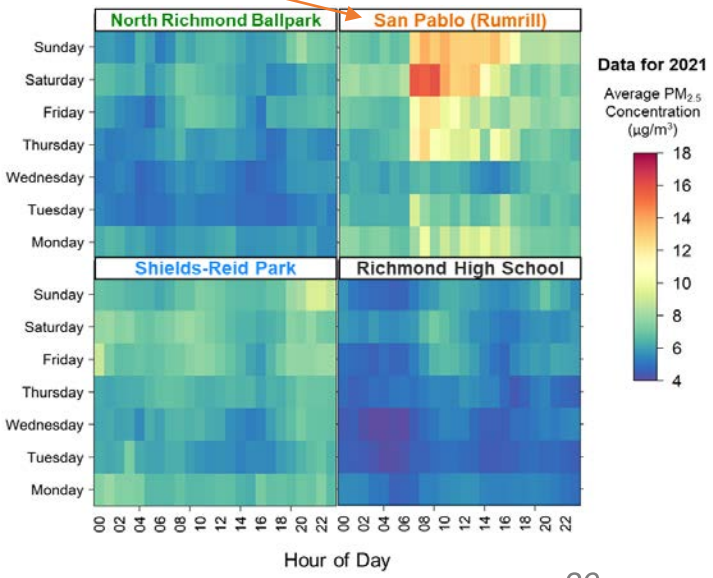
Continue to provide community-scale assessments of air quality like this

https://www.baaqmd.gov/community-health/community-health-protection-program/richmond-area-community-health-protection-program/community-air-monitoring



Percent of Hours at least 5 µg/m³ Above Sensor Network Average, 2020-2021

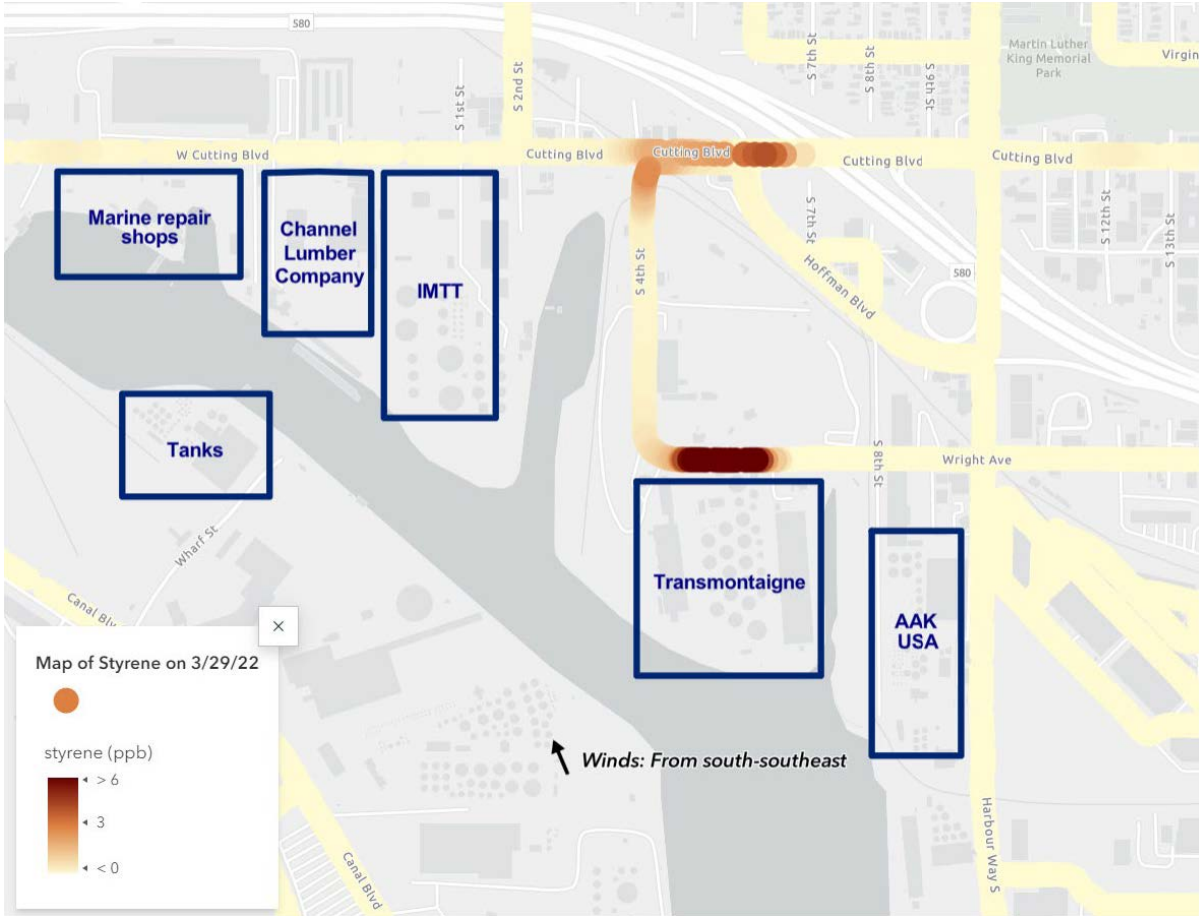




Example: StoryMap for PTCA CAMP

Air toxics monitoring project

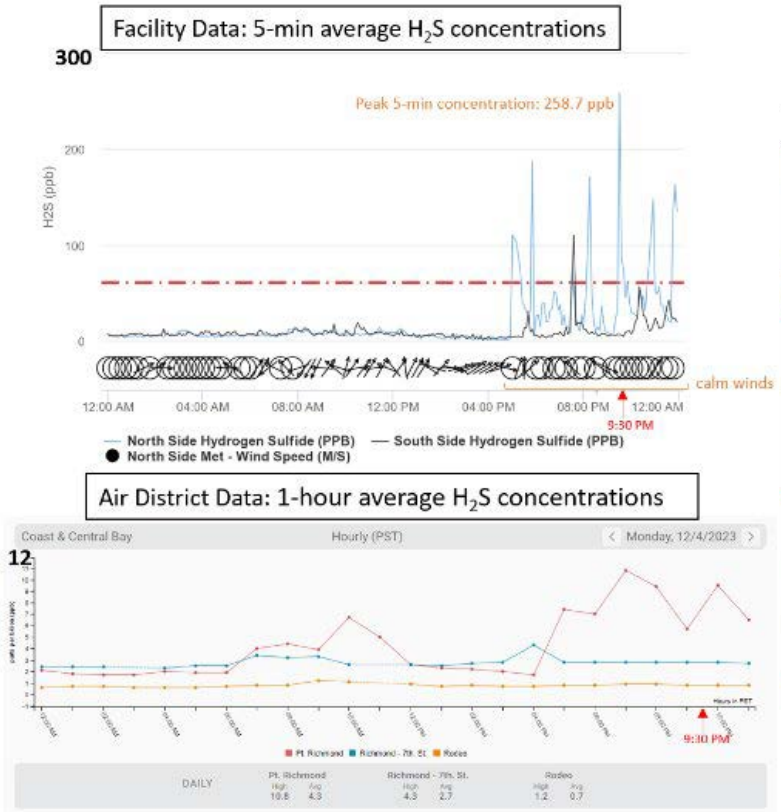
- Air District air monitoring van surveyed target areas for certain air toxics
- Higher levels of different air toxics were detected in near specific facilities and operations in the study area
- Key findings were summarized and displayed in an interactive Geographic Information System (GIS)-based StoryMap

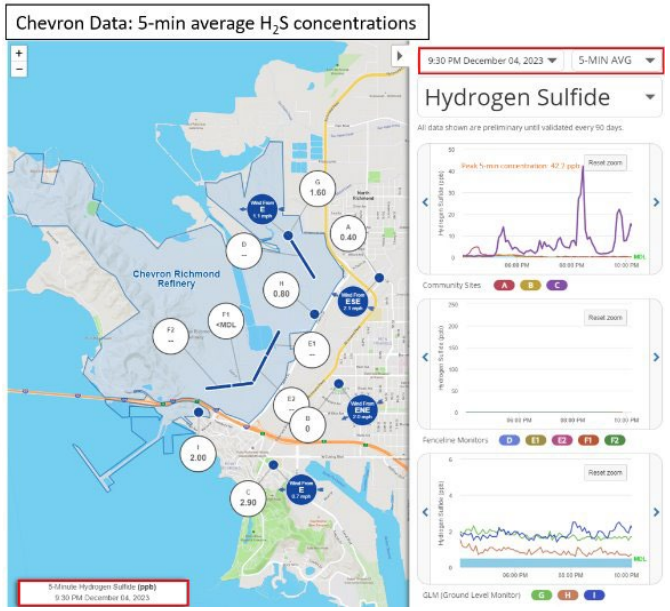


Example: Real-time Data During Incidents

Incident at City of Richmond Wastewater Treatment Plant (Veolia) – December 4-6, 2023

- High readings of Hydrogen Sulfide (H_2S) higher
- at Veolia's two fenceline monitors
- Some peak concentrations at Veolia coincided with elevated readings at other nearby monitors

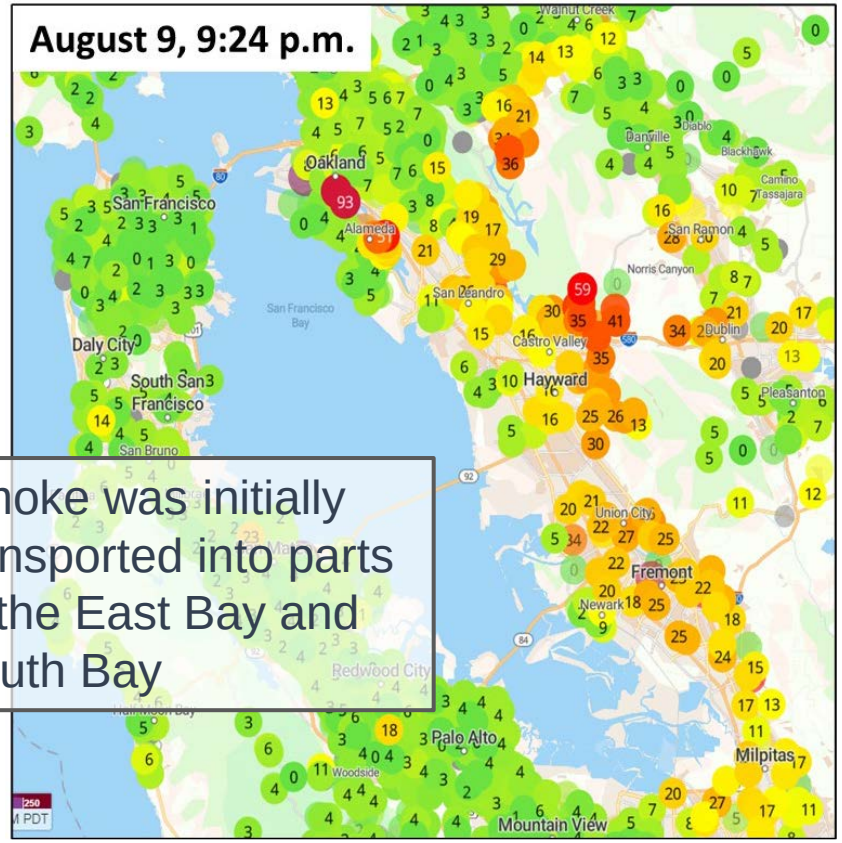


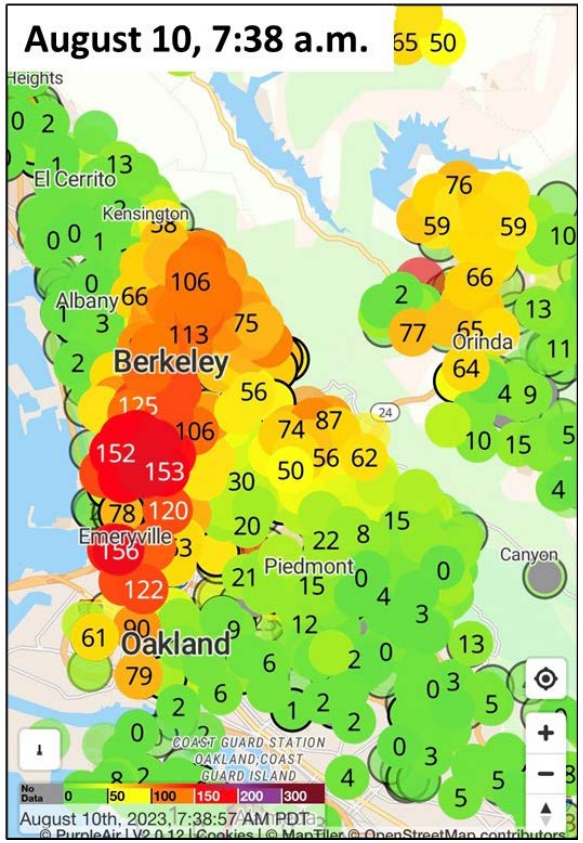


Example: Real Time Data During Incidents

Fire at Schnitzer Steel in West Oakland

$PM_{2.5}$ data from lower-cost sensors helped illustrate the spatial extent of the smoke plume





Some of the peak impacts were experienced in overburdened communities, including East and West Oakland and along I-880

Winds shifted overnight and transported smoke northward

Smoke was initially transported into parts of the East Bay and South Bay

Screenshots from the PurpleAir website (map.purpleair.com) of $PM_{2.5}$ 10-min averages

Included information about the location of in air quality advisories and presentations to other agencies and community organizations

Upcoming Data Accessibility Work

Refinery emissions and air monitoring data consolidation

- Work with Community Advisory Council, upcoming Refinery Corridor Community Workgroup, and PTCA Community Emissions Reduction Plan (CERP) Implementation Community Steering Committee (CSC)
- Consolidate all refinery-related data, making data easier to find or download and providing additional information and context so data is more meaningful

Future Directions

- Continue working with community partners to develop air monitoring data resources and community-scale air quality assessments
- Continue to increase transparency and accessibility of existing data
- Strengthen requirements for facility-conducted air monitoring to increase availability of real-time data
- Track other efforts and new legislation aimed at increasing availability of air monitoring data and share new information

Feedback Requested/Questions

Questions and Comments?