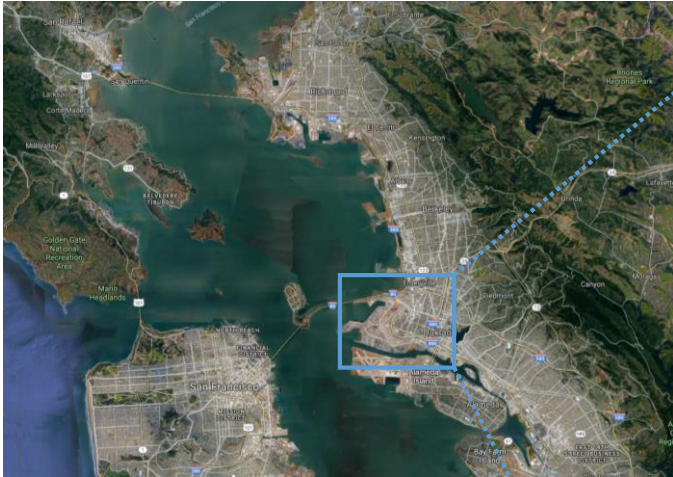


# Street-level air pollution, health disparities, and advocacy

Margaret Gordon, Brian Beveridge  
*West Oakland Environmental Indicators Project*

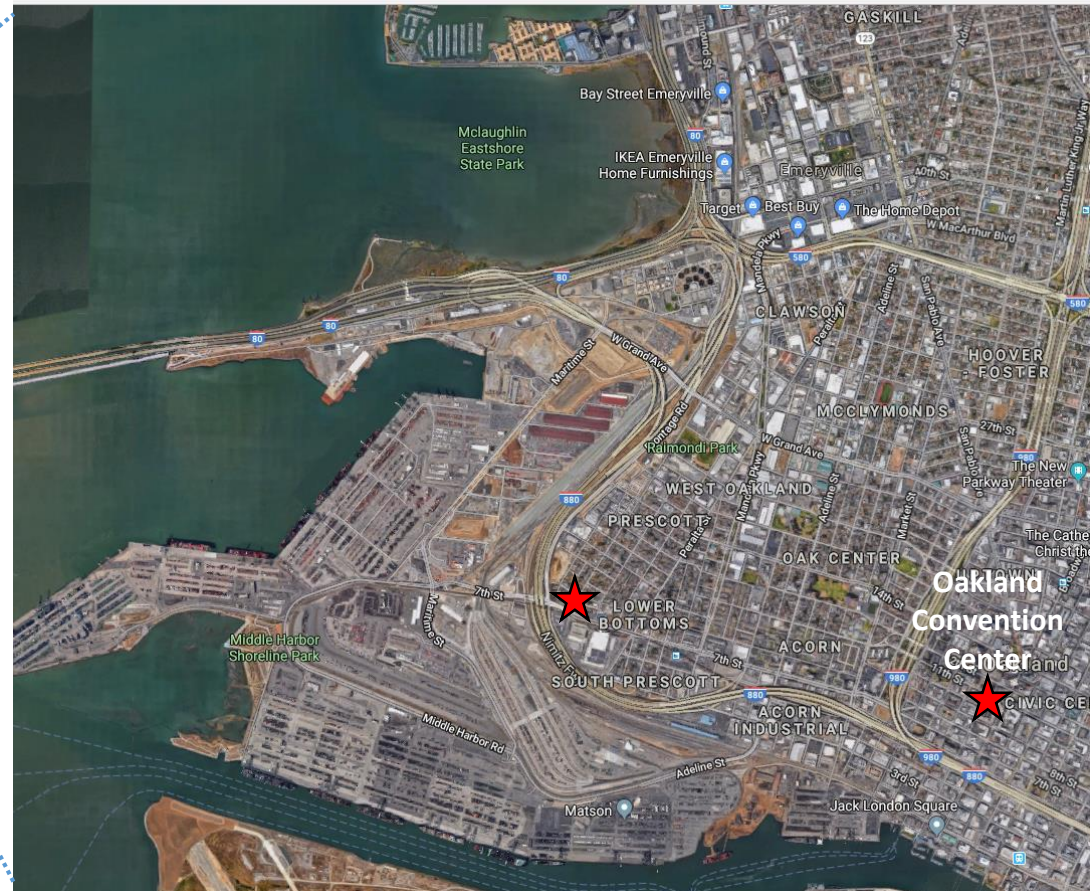
Maria Harris, Ananya Roy, Gabriela Zayas del Rio, Fern Uennatornwarangoon  
*Environmental Defense Fund*

# San Francisco Bay Area



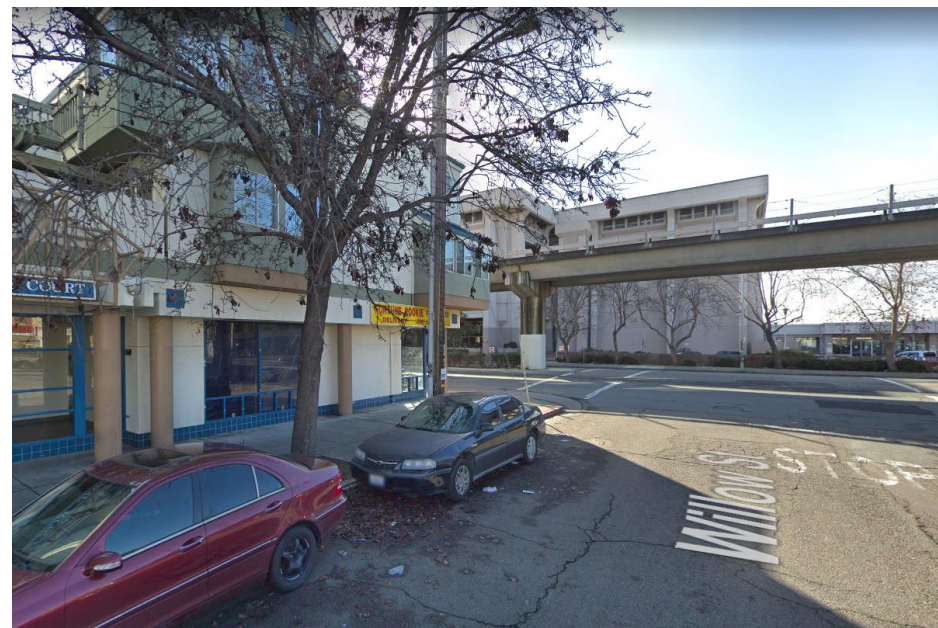
- Three major freeways
- Port of Oakland (5<sup>th</sup> largest in US)
- Daily truck volume = 7,200 on surface streets. More than 50% port trucks.
- Railyard
- Industrial land uses related to goods movement in close proximity to residences

# West Oakland





# Air pollution is a key public health concern





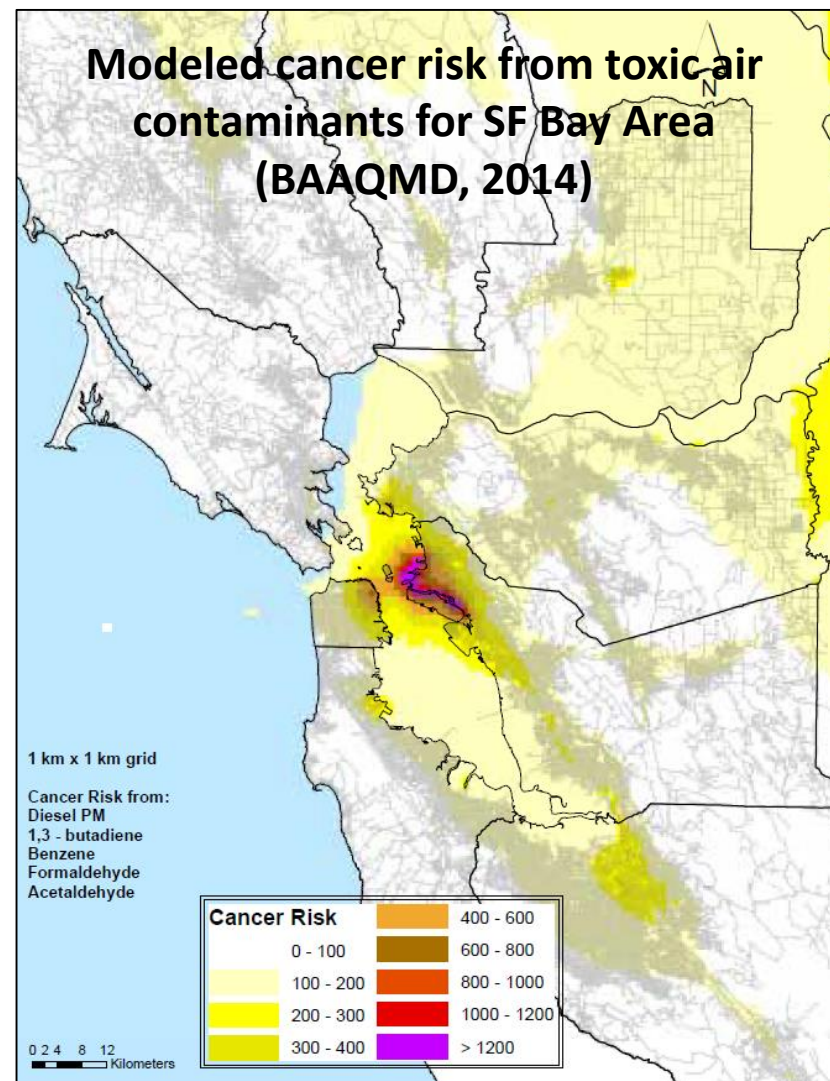
# West Oakland has worse health outcomes than region

Higher rates of stroke and congestive heart failure

Life expectancy 7 years shorter than more affluent neighborhoods in nearby Oakland hills

Child asthma hospitalization rate ~2x higher than Alameda County (ACPHD, 2015)

- 10:1 ratio for asthma hospitalization rate of black versus white children in Oakland (2018 Oakland Equity Indicators Report)



# West Oakland Environmental Indicators Project

## Our Mission



- Increase environmental justice, public health, air quality and land-use awareness
- Encourage environmental justice education and solutions to problems facing West Oakland residents who bear the brunt of disproportionate exposure
- Provide motivational leadership development to West Oakland residents
- Inform the neighborhood of advocacy tools, help set priorities, foster political education, and make research and data available

# Air Quality

## Common Sense Project- with Intel Labs Berkeley

Provides opportunity to:

- Engage citizens in air quality monitoring and management practices
- Fill in the gaps in state monitoring networks, and
- Use new data sources for scientific research.





# Collaborative Model

Sharing the process and the power

Everyone is welcome at the table:

- Community residents
- City of Oakland
- Port of Oakland
- Local Businesses
- Other NGOs
- Regulatory Agencies:
  - Federal – US EPA
  - Regional – Bay Area Air Quality Management District
  - Local – Alameda County Department of Public Health

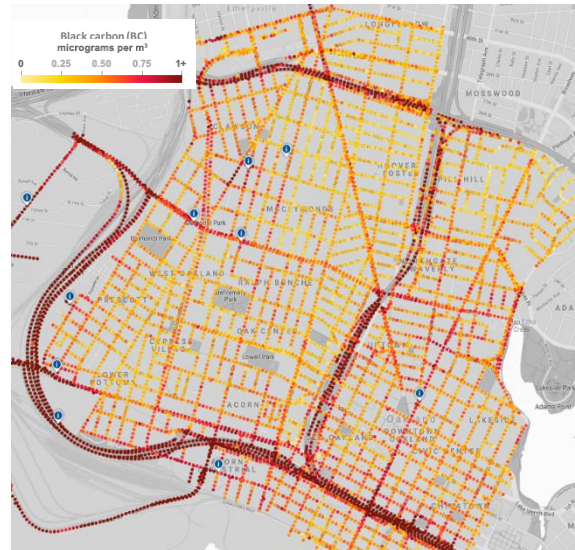
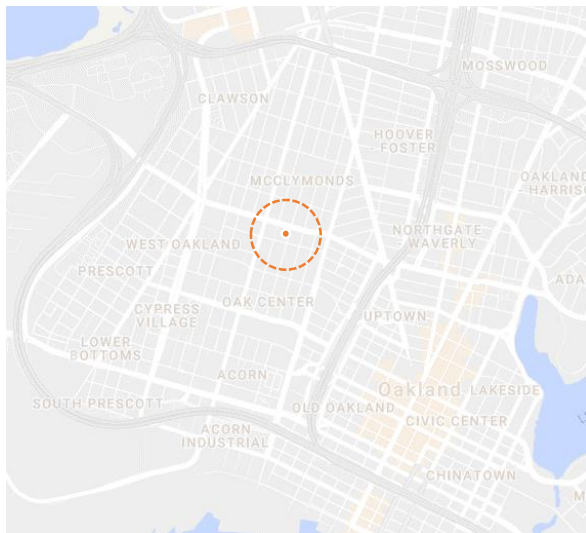


# Mapping hyperlocal air pollution & health risks

**Regulatory air pollution monitoring for West Oakland, CA: 1 stationary site**

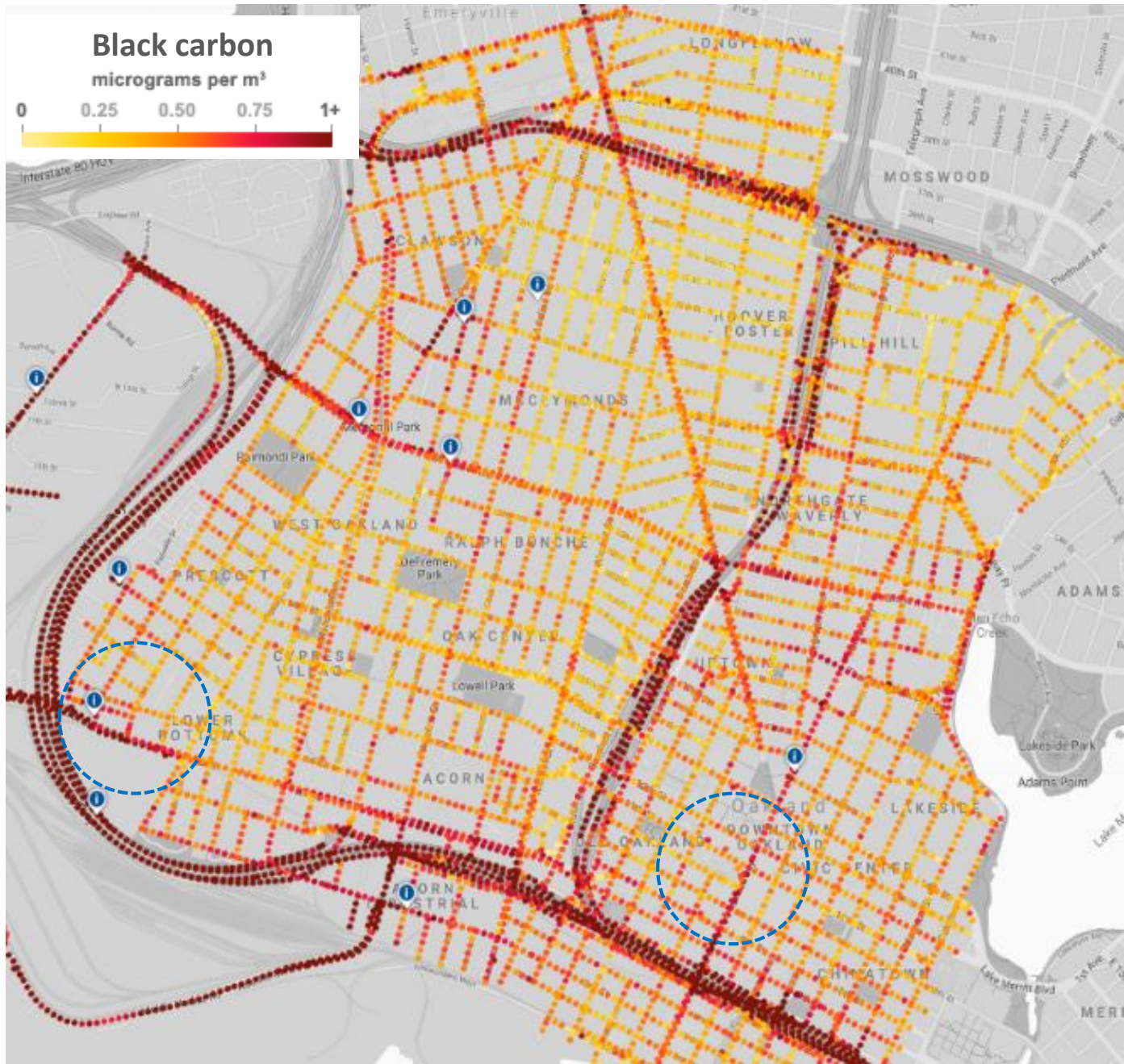


**Data:** 1 year of air pollution measurements (BC, NO, NO<sub>2</sub>) using fast response sensors on Google Street View cars.



**Finding:** Within West Oakland, some areas had **5-8 times** higher median pollution levels than others. Many parts of the neighborhood had higher air pollution than levels measured at the central regulatory monitor.





# Mapping hyperlocal air pollution & health risks

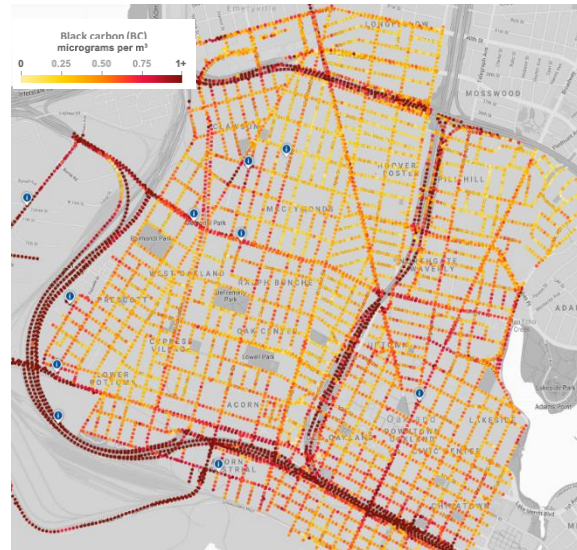
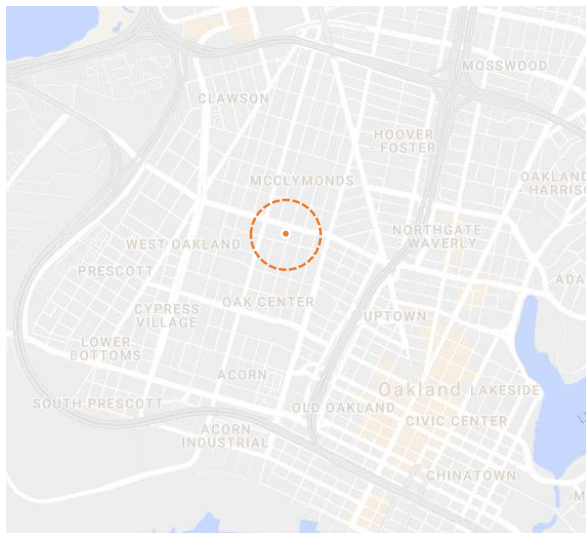
**Regulatory air pollution monitoring for West Oakland, CA: 1 stationary site**



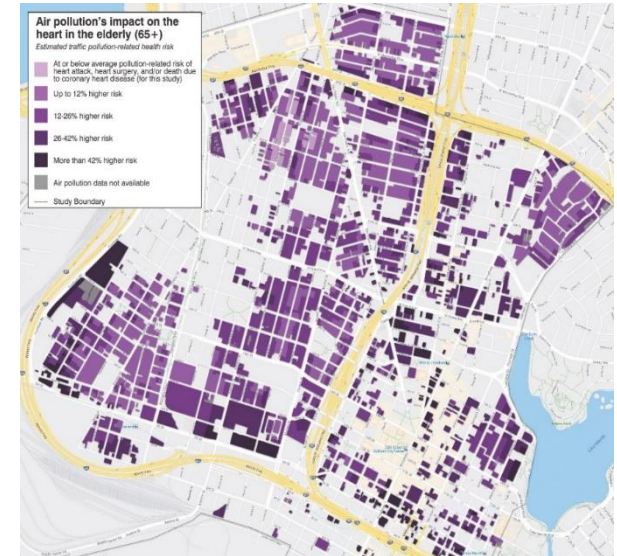
**Data:** 1 year of air pollution measurements (BC, NO, NO<sub>2</sub>) using fast response sensors on Google Street View cars.



**Data:** Electronic medical records of 41K people insured by Kaiser Permanente health care, linked with air pollution at residential address.

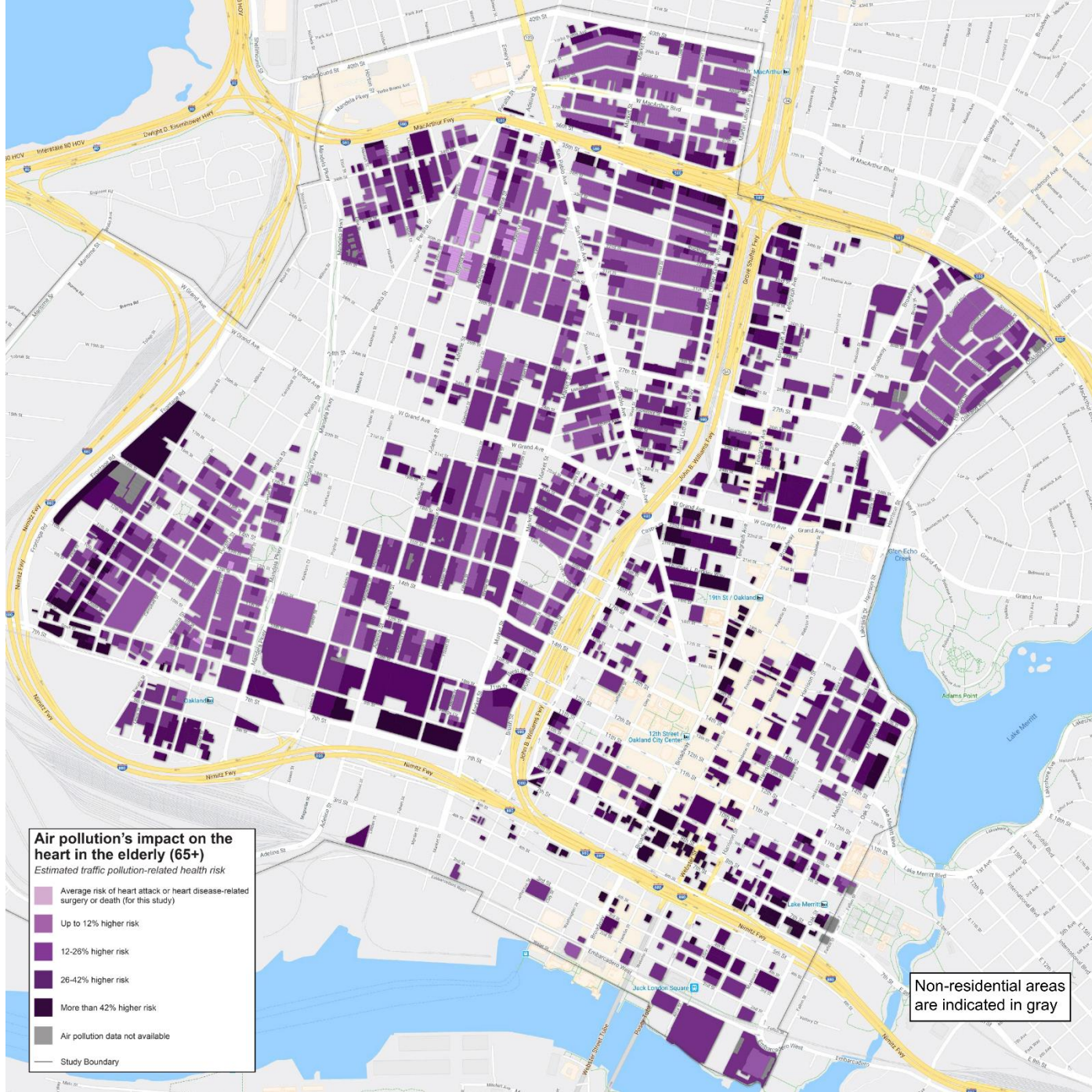


**Finding:** Within West Oakland, some areas had **5-8 times** higher median pollution levels than others. Many parts of the neighborhood had higher air pollution than levels measured at the central regulatory monitor.



**Finding:** Elderly residents (age 65+) living in areas of West Oakland with the highest concentrations of NO<sub>2</sub> would have **>40% greater risk** of a cardiovascular disease event than those in less polluted areas of the neighborhood.





**How do we enable  
translation of hyperlocal air  
pollution data to action?**



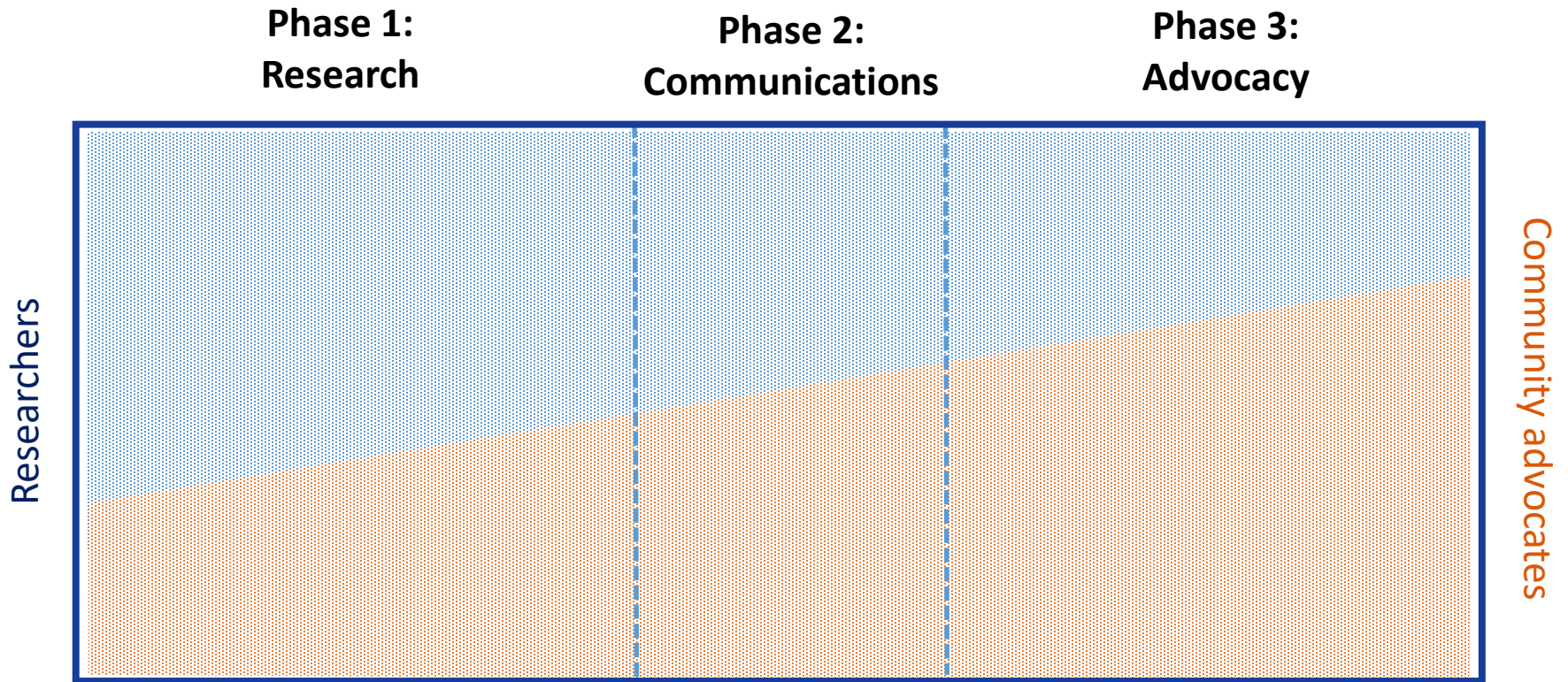
# Trust-based partnership between researchers and community advocates

## IV. Principles for Partnership

To achieve the goals of the Partnership, Partners are expected to:

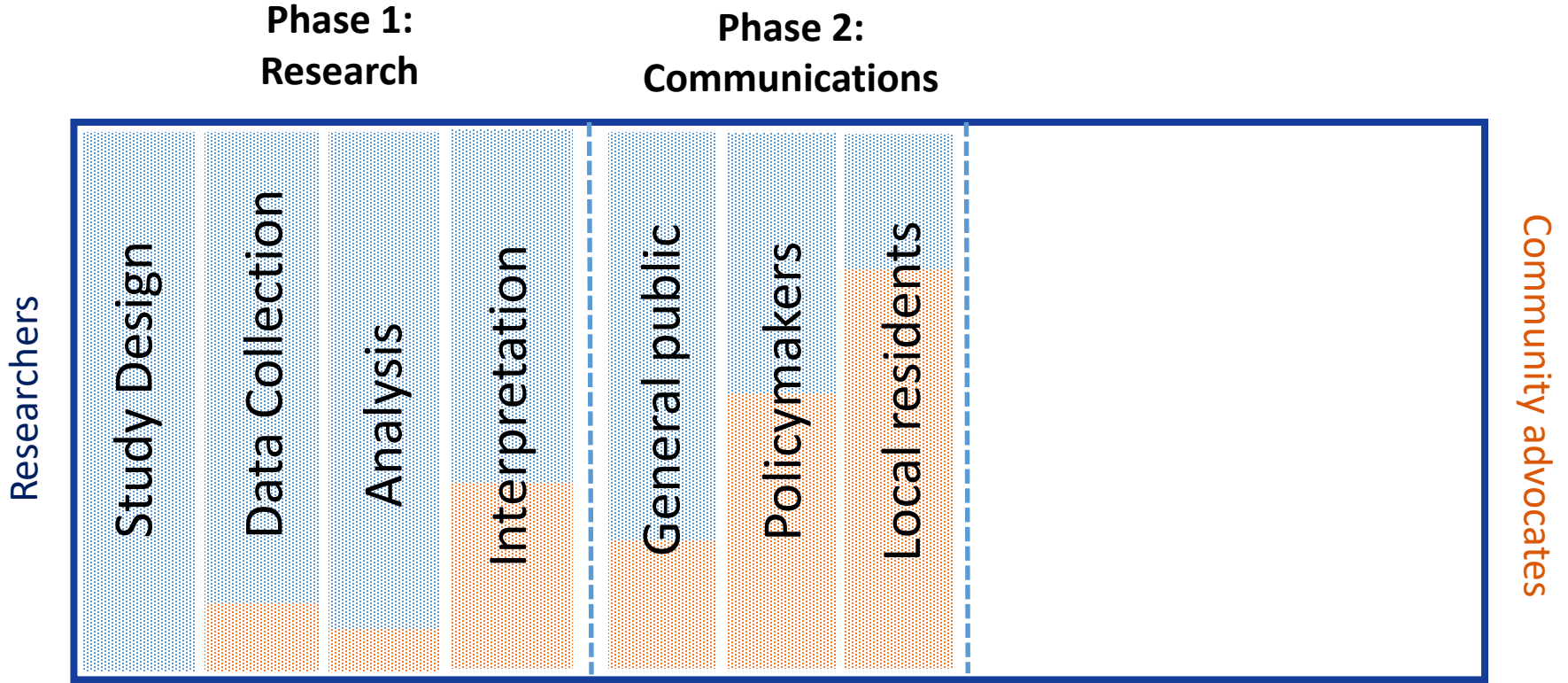
- Share data and information about their own mission and activities in order to assist each other and the Collaborative as a whole in meeting its goals.
- Keep each other informed of actions, initiatives and legislation/regulation that may contribute to or detract from the goals.
- Coordinate activities that have the potential to complement or conflict with each other.
- Identify existing and additional technical/scientific resources that could be applied to the goals, and assist each other in obtaining or utilizing those resources.
- Identify and participate in joint activities that could benefit the goals.
- Identify obstacles to achieving the goals and develop solutions to overcoming them.
- Think creatively about how Partners can work together to utilize scientific evidence to make a difference in the wellbeing of the West Oakland community.
- Respect each other's individual roles and contributions and any limitations a Collaborator may have with regard to resources.

# Long term commitment and investment





# Long term commitment and investment



# Compelling and accessible communications

## Interactive online maps

Explore: Interactive map and points of interest

Black carbon Nitric oxide Nitrogen dioxide

Black carbon particles come from burning fuel, especially diesel, wood and coal. High exposure is associated with heart attacks, stroke and some forms of cancer.



## Educational events at local schools



## Information sessions for residents

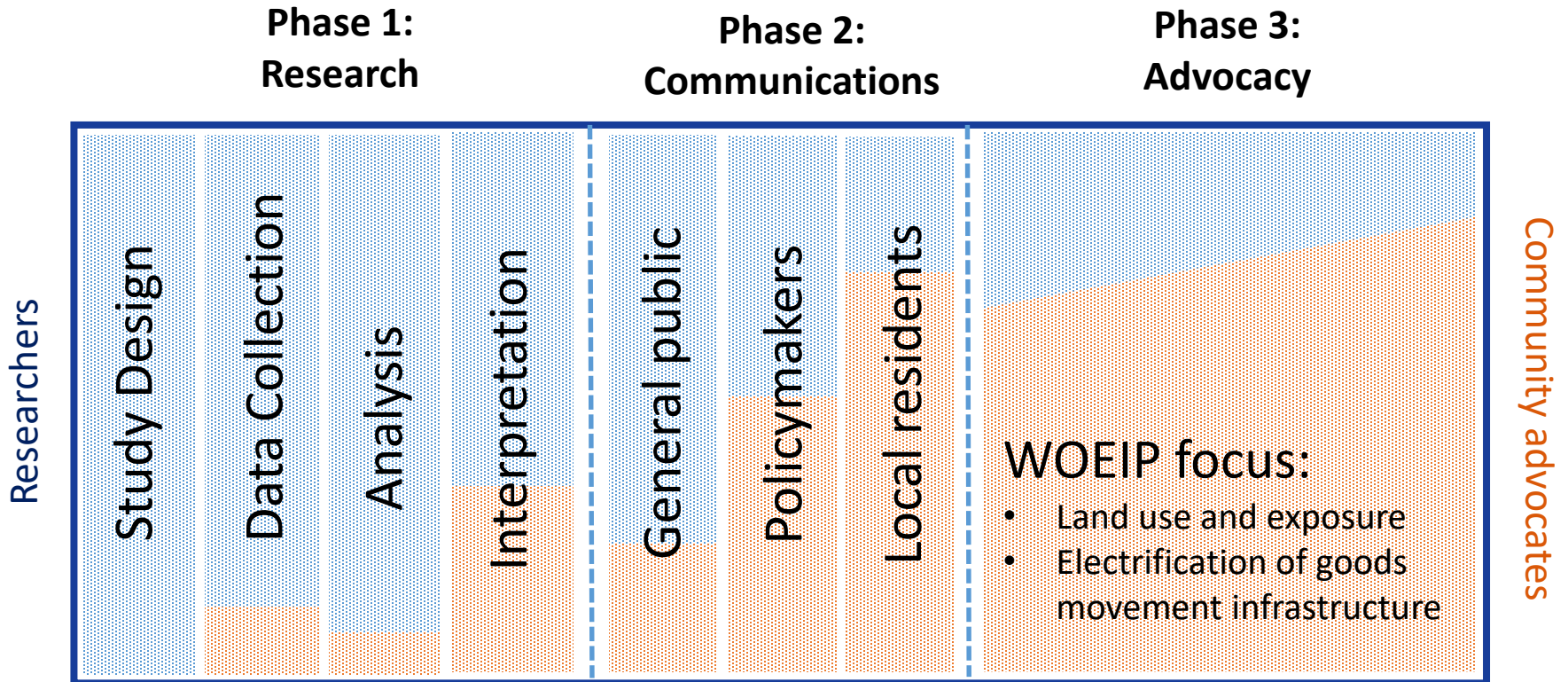


Briefings for legislators and policymakers (local, regional, and state)





# Long term commitment and investment



# Data to Action



- West Oakland selected as first Bay Area community to develop a community air plan under California's new air quality management legislation, AB617, which calls for exposure reductions in communities most impacted by air pollution.
- WOEIP leading steering committee to develop plan incorporating learnings from hyperlocal pollution and health studies.



# Thank you



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[www.woeip.org](http://www.woeip.org)



Maria Harris, PhD  
[mharris@edf.org](mailto:mharris@edf.org)  
<https://www.edf.org/airqualitymaps>

Additional Slides



# West Oakland Community Air Plan

## Port of Oakland

- Reduce emissions from existing technologies
- Adopt cleaner technologies; invest in zero emission equipment & infrastructure

## Truck Management

- More enforcement officers; training
- Truck signage; truck driver education
- Improved truck routes

## City Planning

- Conditional Use Permits: sunset industrial uses near residential areas
- Provide incentives/support for relocation
- Exposure mitigation (pollution barriers, air filtration etc.)

## Point Source Permitting

- Address cumulative impacts as a factor in local emissions permitting
- Limit permits near residential areas and in areas with already elevated air pollution