



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

Discussion on Election of Officers

Advisory Council Meeting
July 29, 2019

Jack P. Broadbent
Executive Officer/APCO



Policy for Election of Advisory Council Officers

- Per Health and Safety Code Section 40267, the Council shall select a Chairperson and Vice Chairperson and such other officers as it deems necessary.
- The Advisory Council has the authority to implement a policy for election of officers, including frequency of election, and duration of office.

Policy for Election of Advisory Council Officers (cont.)

Suggested Policy

- The Advisory Council shall elect a Chairperson and Vice Chairperson.
- Elections shall occur annually as the first item in the second meeting of the year.
- Election requires a majority vote of a quorum of the Advisory Council.

Community-Scale Assessments of Air Pollution Impacts to Support Assembly Bill (AB) 617



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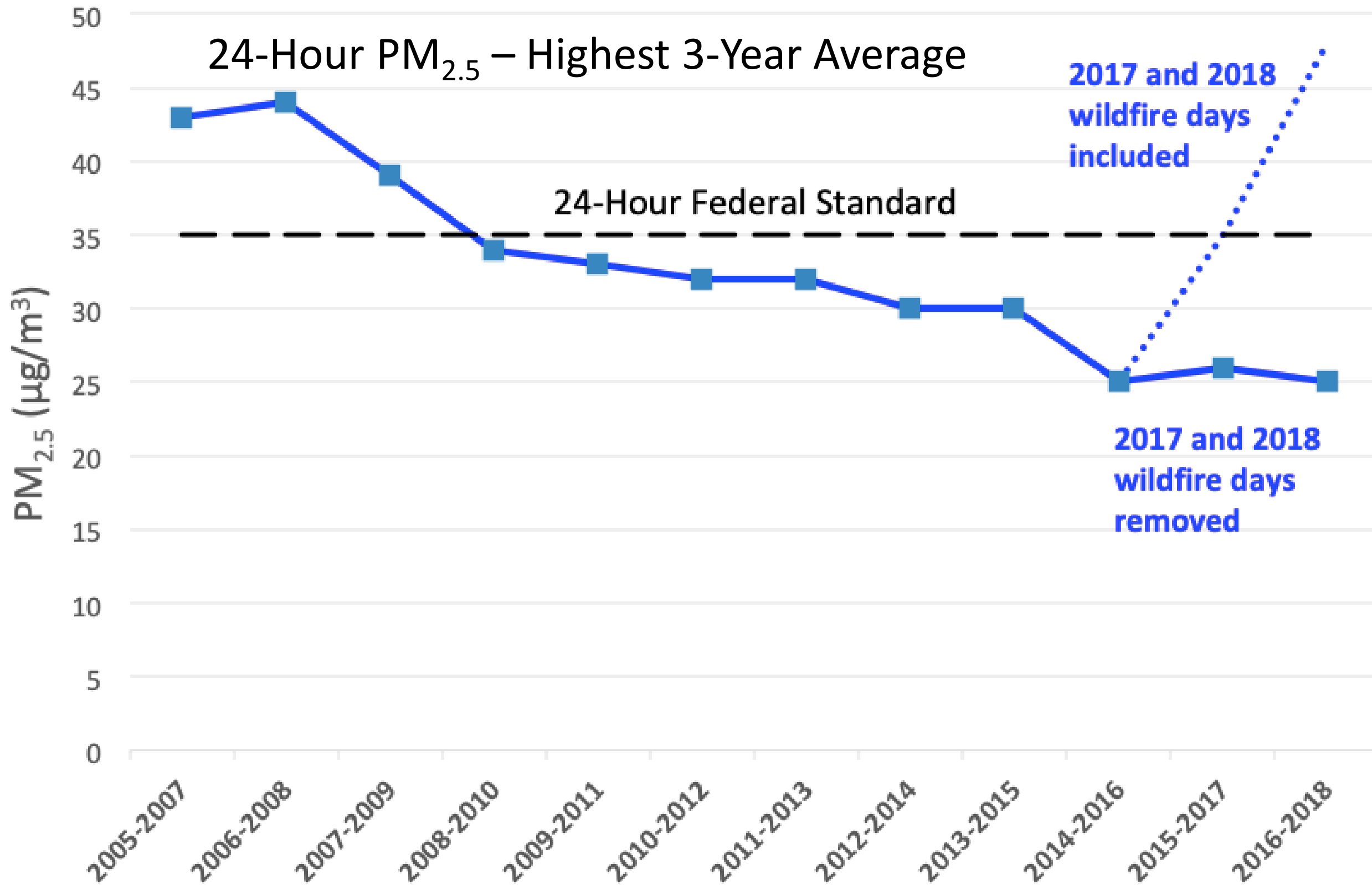
Phil Martien, PhD
Director of Assessment, Inventory, and Modeling Division
Advisory Council Meeting
July 29, 2019

Overview

- October 2018 Advisory Council Meeting: Questions about metrics and targets
 - How to set equity-based targets for AB 617 assessments?
 - How can we relate $PM_{2.5}$ concentration to a risk?
 - What level of $PM_{2.5}$ is health protective?
- Progress on new approach for equity based-targets: Working with community partners on AB 617
- Draft ideas for $PM_{2.5}$ risk assessment

Bay Area PM_{2.5} Trending Down, BUT

- Health benefits below standard
- Health impacts from near-source exposures
- Population & vehicle miles increasing
- Wildfires projected to continue



AB 617 Communities

Year 1

West Oakland - action plan

Richmond - monitoring



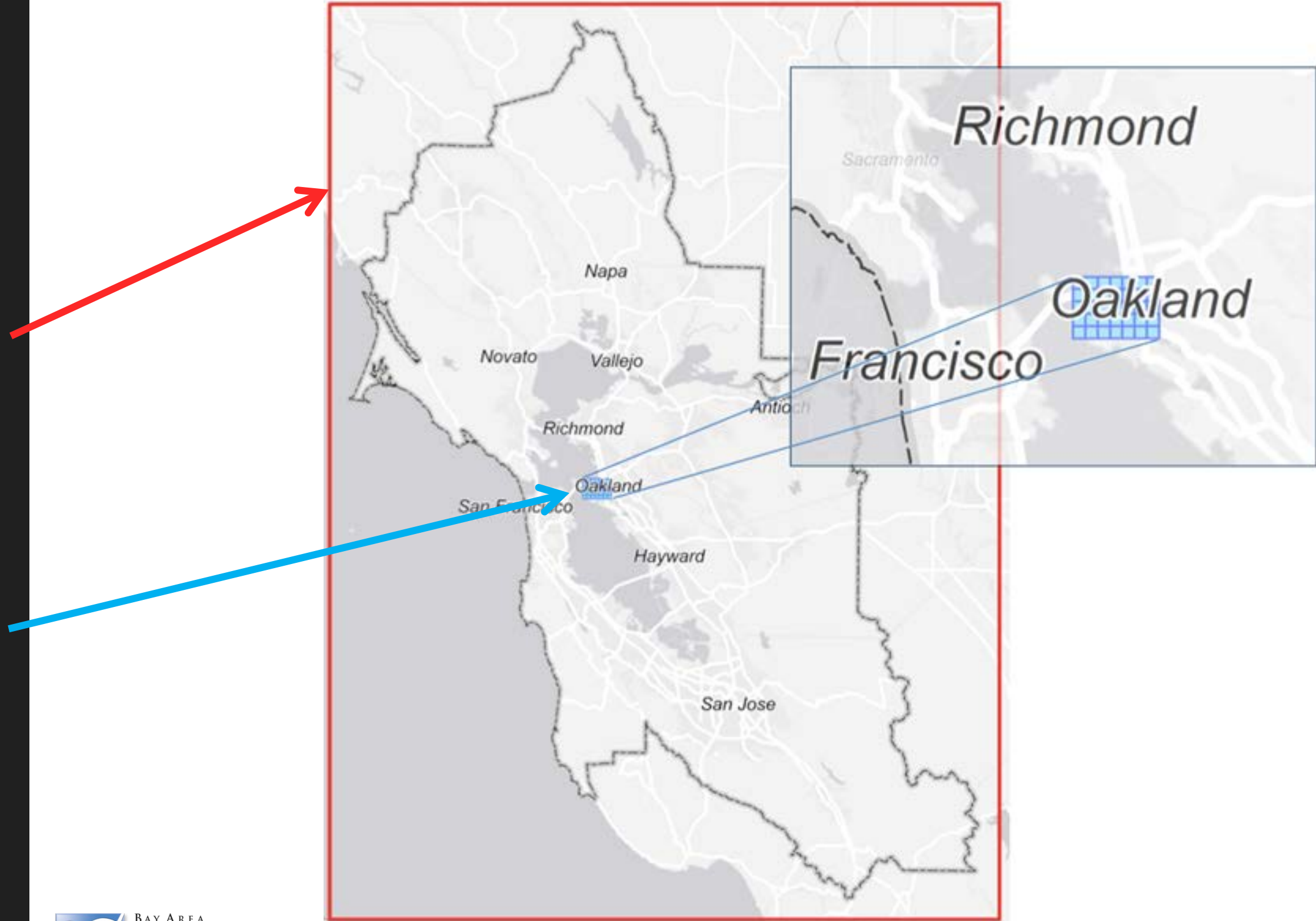
Why West Oakland?



- West Oakland Indicators Project strong community partner to lead effort
- Very high mobile source emissions
 - Port of Oakland largest single source of diesel particulate matter (DPM)
 - Roadways contribute significantly to $PM_{2.5}$
- High health burdens and socio-economic vulnerabilities
- Previous studies: truck survey, measurements, emissions inventories, and modeling

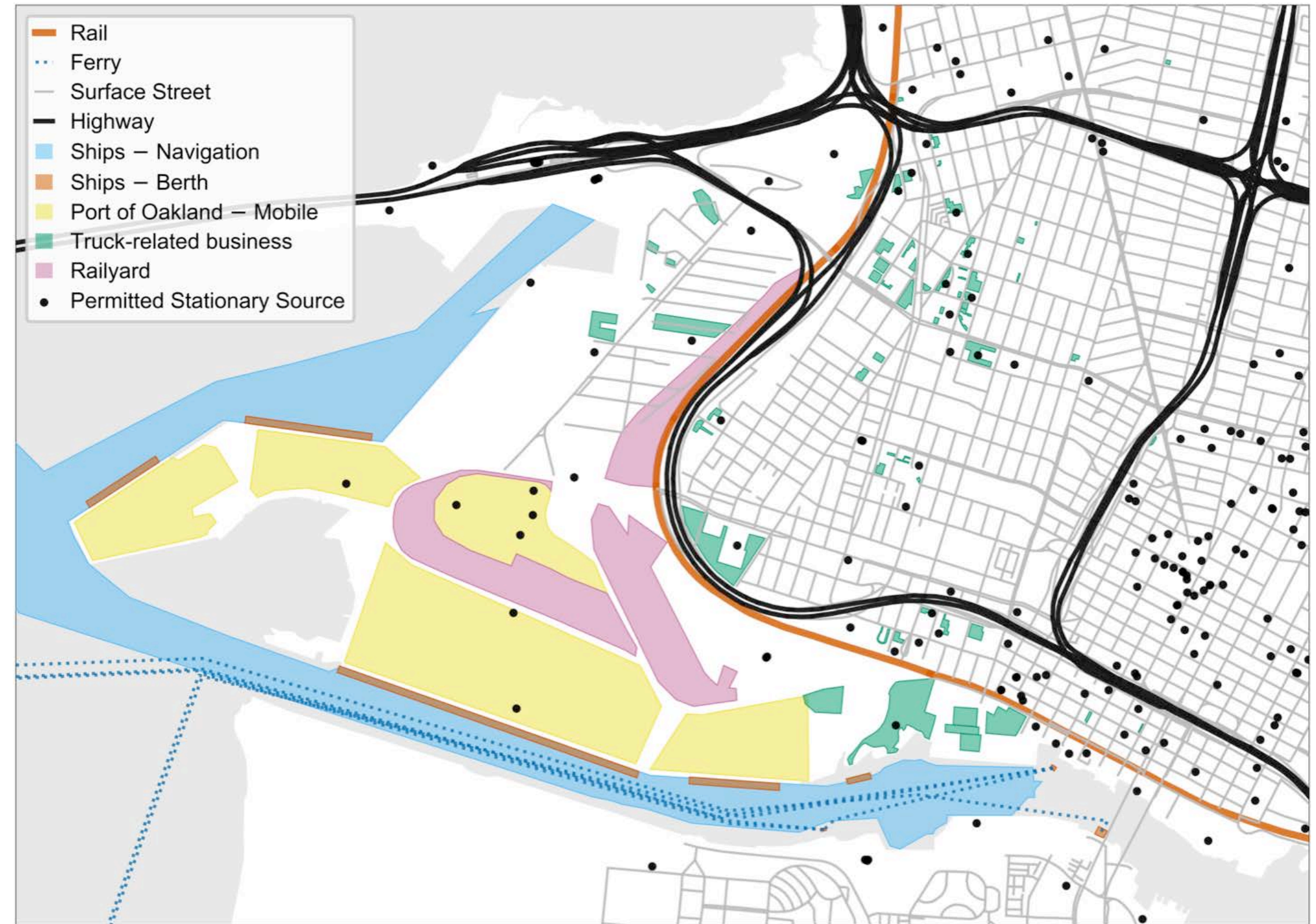
Modeling- Based Technical Assessment

- Regional-scale, grid-based modeling for Bay Area
- Community-scale, plume dispersion-based modeling for West Oakland
- Regional modeling emissions “zeroed out” in community-scale modeling area



West Oakland detailed emissions inventory

- Each source modeled individually to support source apportionment

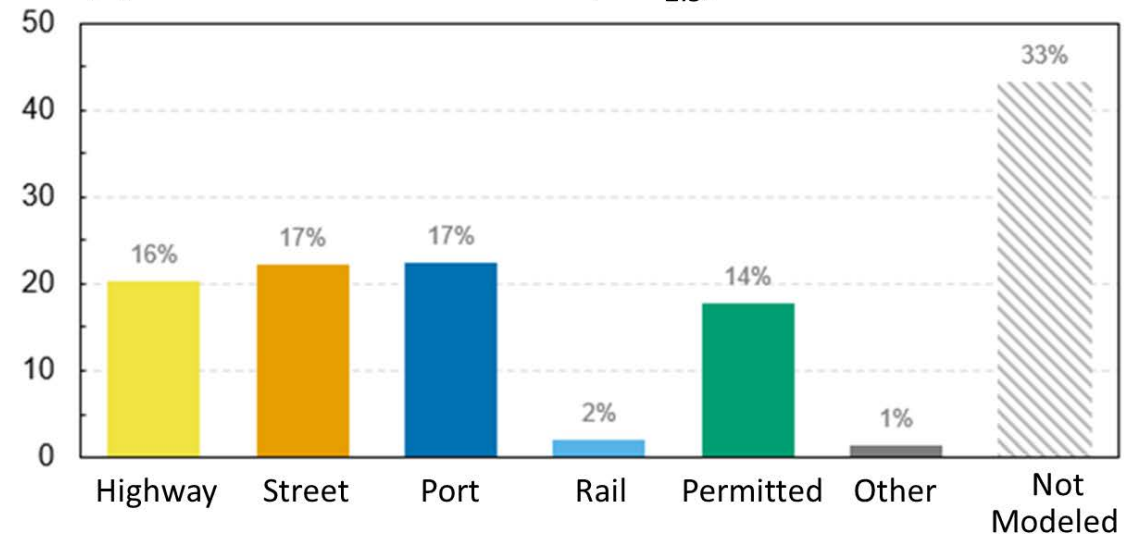


Community-Scale Emissions Inventory

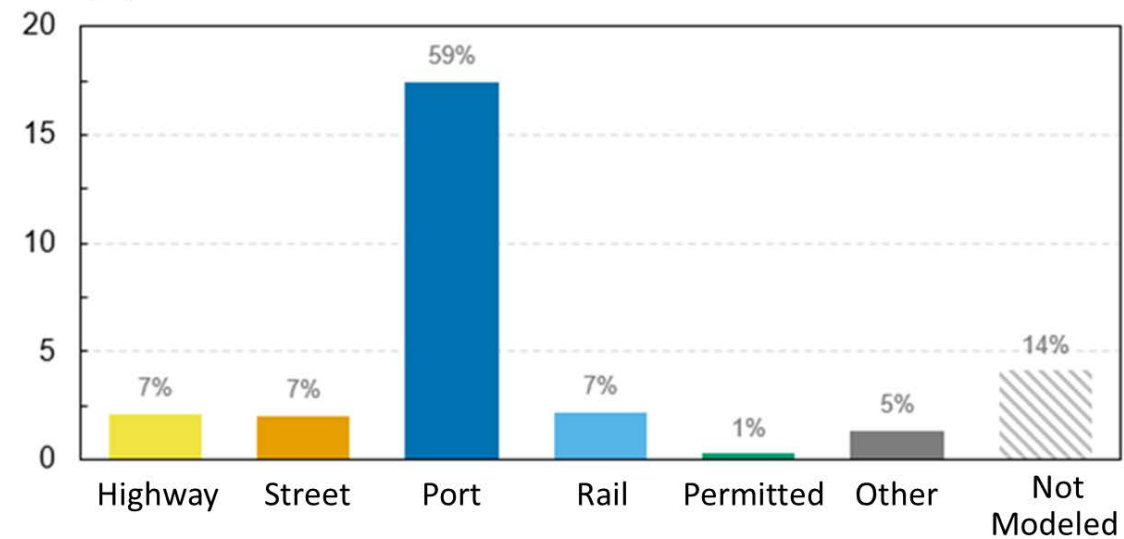
- Community-scale modeling for sources with known locations
- Not included:
 - construction
 - wood burning
 - restaurants



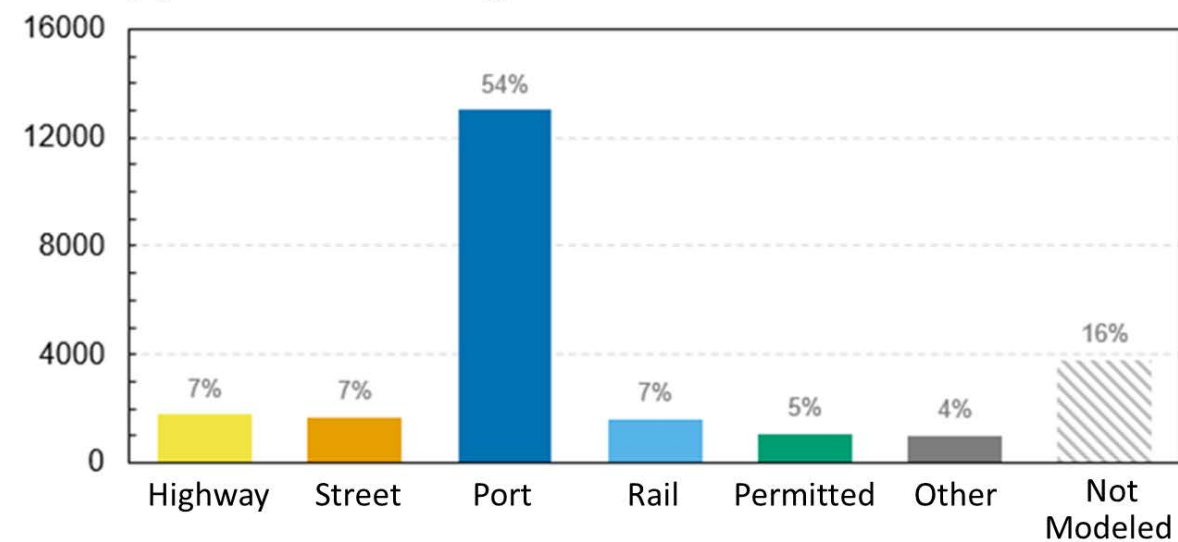
(a) Fine Particulate Matter (PM_{2.5})



(b) Diesel PM

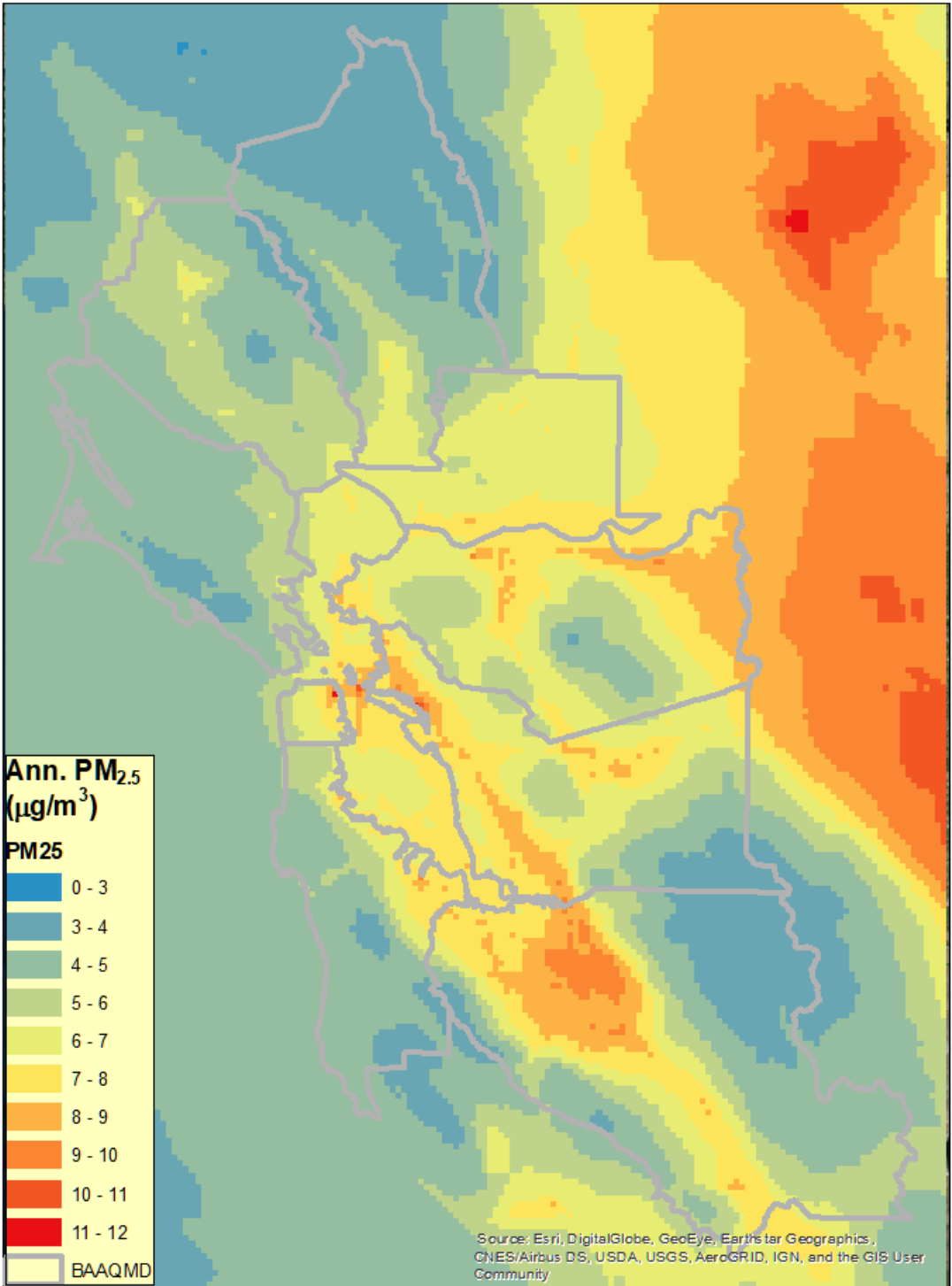


(c) Cancer Risk-Weighted Toxics

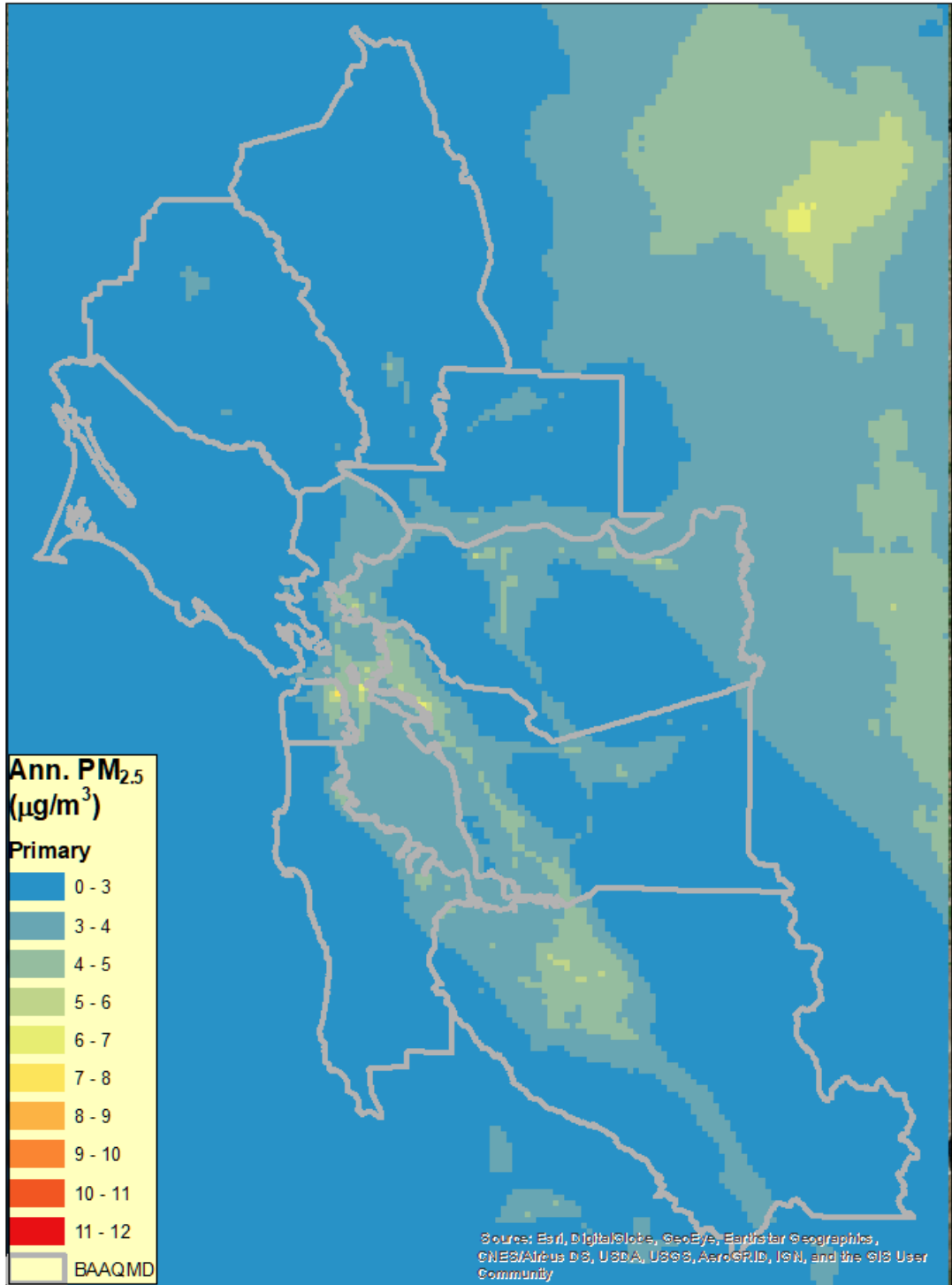


PM_{2.5} Regional Modeling: Primary & Secondary Contributions

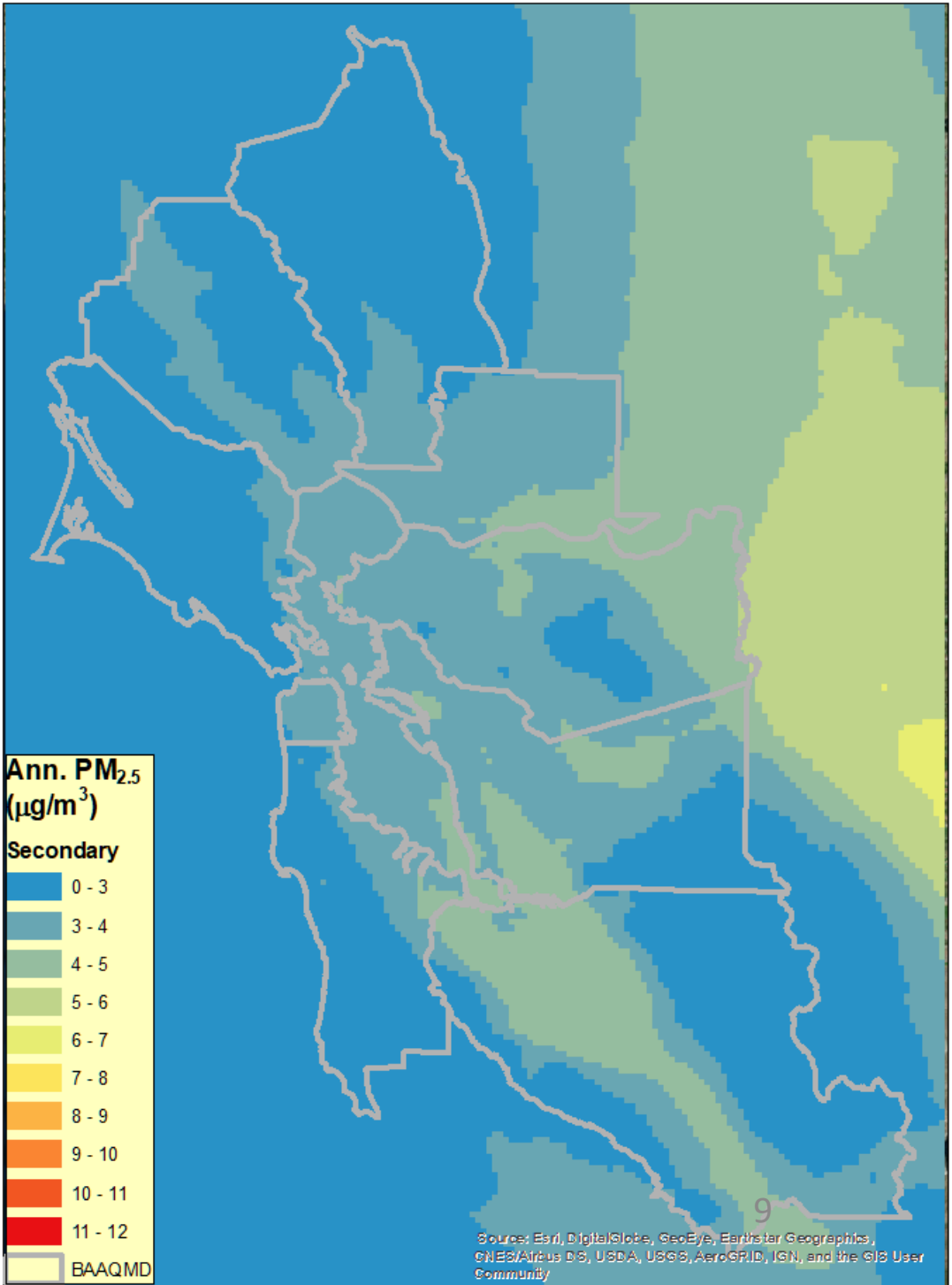
Total PM_{2.5}



Primary PM_{2.5} (about 53%)



Secondary PM_{2.5} (about 47%)



How Much is Local?

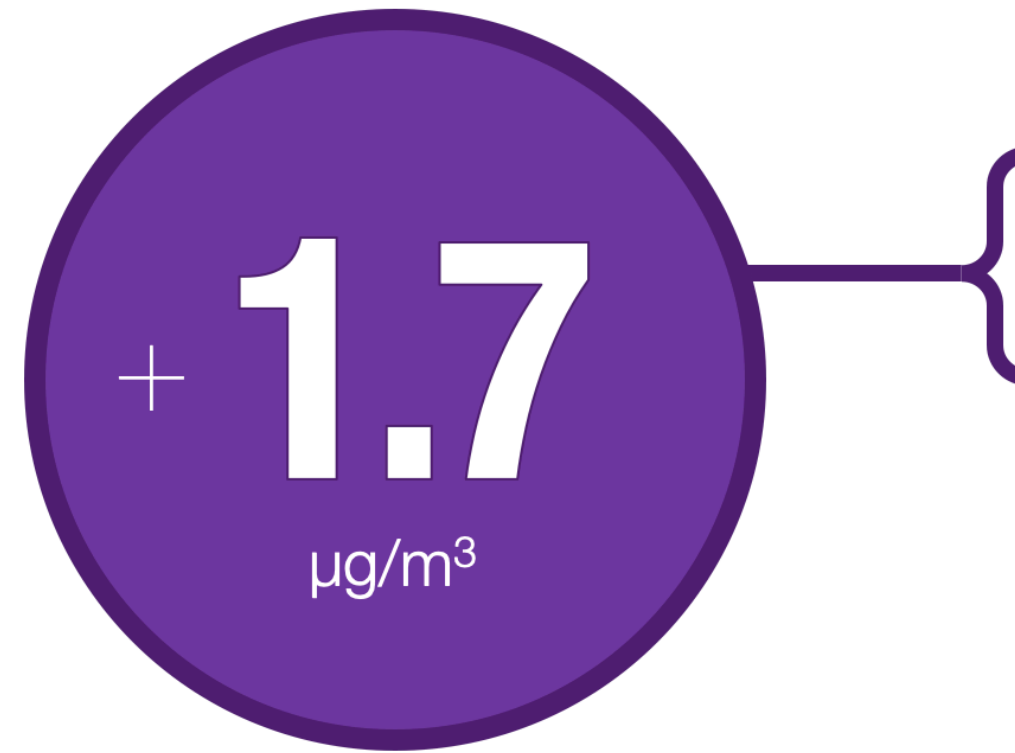
DRAFT 2019-06-21

Modeled Impact, on Residential $PM_{2.5}$, of Local (versus Regional) Emissions

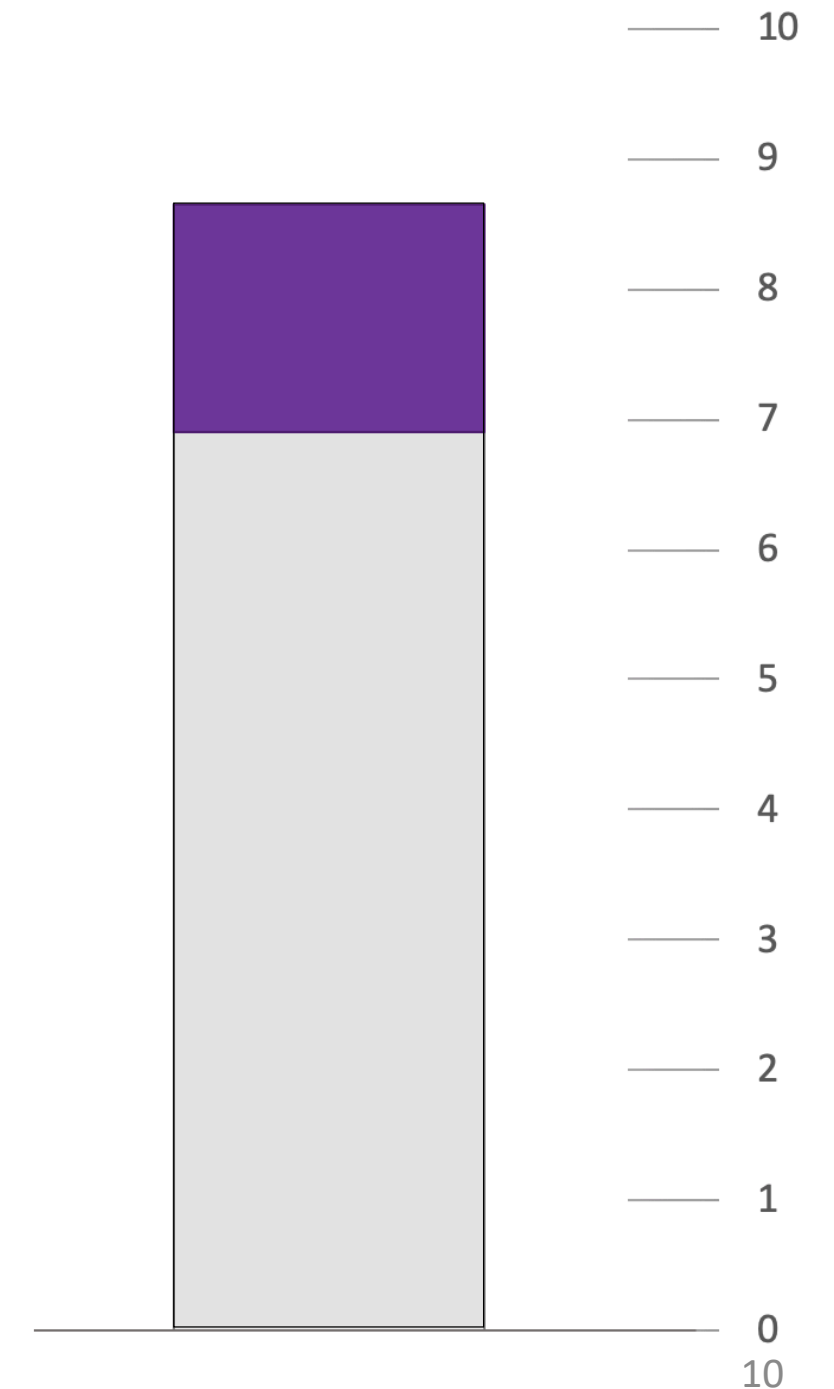
Top Local Contributors*

- Road Dust (38%)
- On-Road Vehicles (27%)
- Permitted (17%)

$PM_{2.5}$



■ Local model – mapped impacts
□ Regional model (minus West Oakland)



* $PM_{2.5}$ from cooking and construction not modeled

How Much is Local?

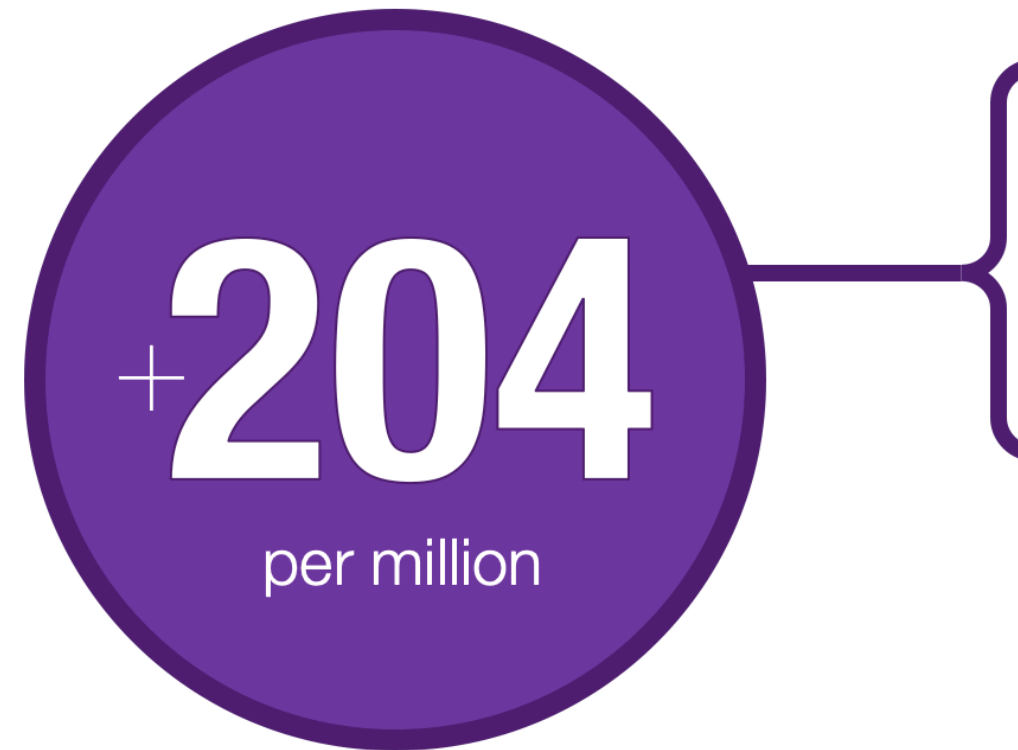
DRAFT 2019-05-31

Modeled Impact, on Residential Cancer Risk, of **Local (versus Regional)** Emissions of Toxic Air Contaminants

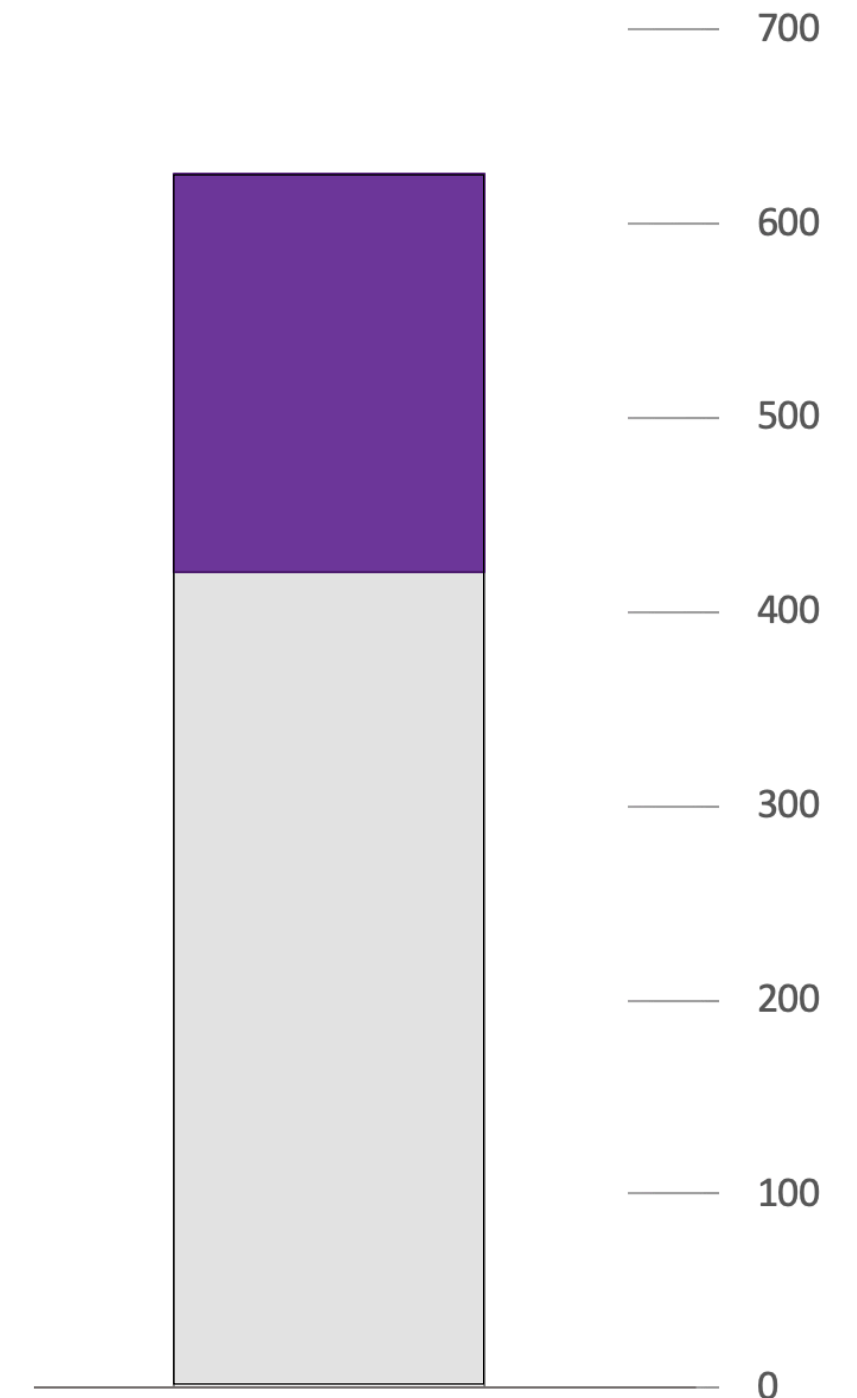
Top Local Contributors*

- Trucks (**39%**)
- Marine Vessels (**31%**)
- Rail (**17%**)

Cancer Risk



■ Local model – mapped impacts
□ Regional model (minus West Oakland)



* cancer risk from construction was not modeled

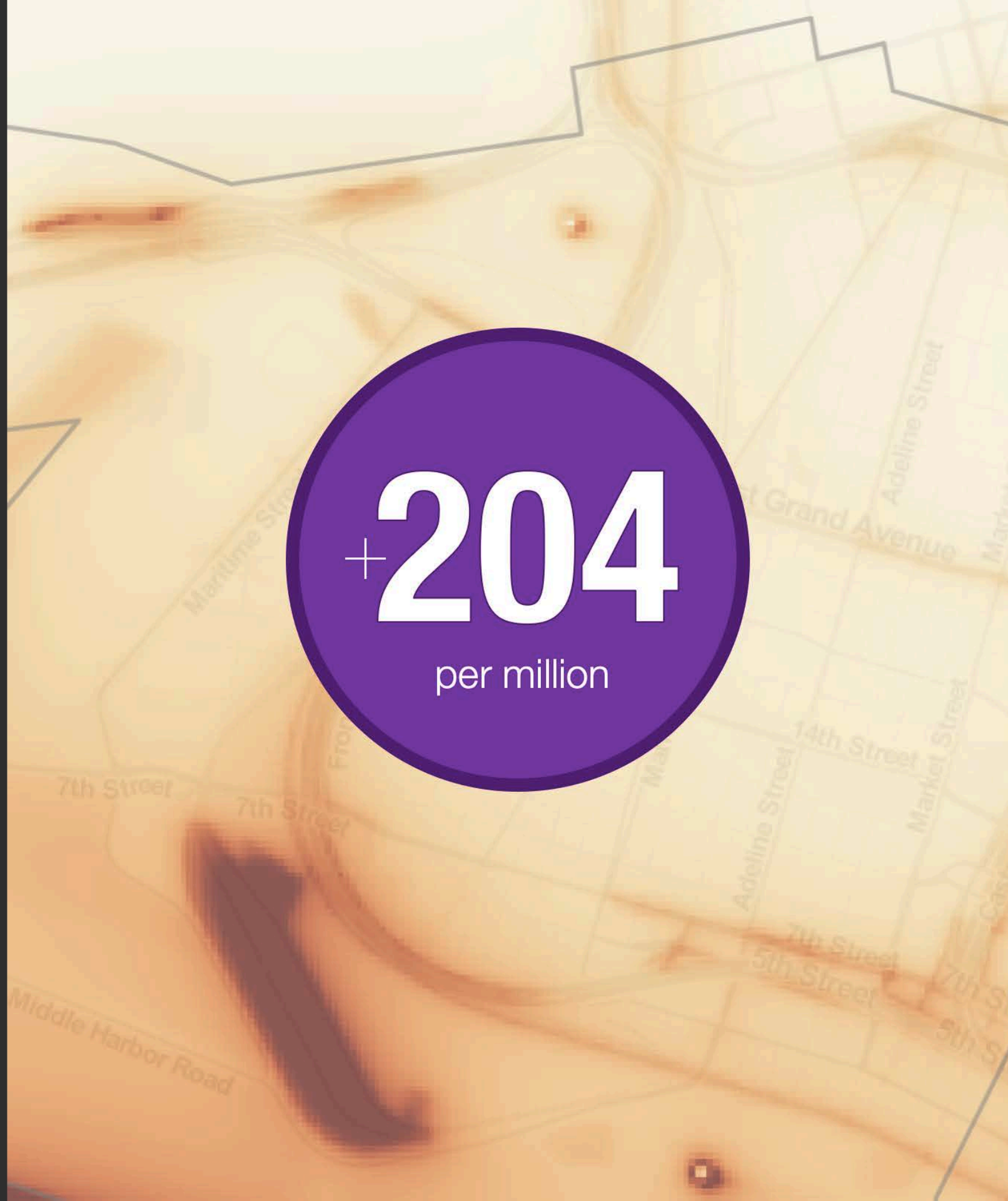
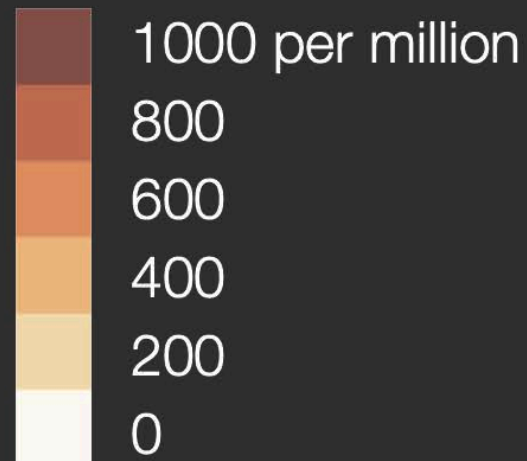
Modeled Impact of Local Sources on Residential

Cancer Risk

Top Local Contributors*

- Trucks (**39%**)
- Marine Vessels (**31%**)
- Rail (**17%**)

* cancer risk from construction was not modeled



Impacts on Cancer Risk (30-yr, per million)

Highway		
Heavy/Medium HD trucks	32.2	16%
Non-truck vehicles	7.3	4%
Light HD trucks	1.6	1%
Street		
Heavy/Medium HD trucks	39.3	19%
Non-truck vehicles	7.5	4%
Light HD trucks	1.9	1%
Port		
Harbor craft	24.3	12%
OGV (berthing)	16.5	8%
OGV (maneuvering)	10.5	5%
Dredging	6.1	3%
Drayage trucks*	4.6	2%
Cargo handling	3.4	2%
Railyard (OGRE)	2.2	1%
Railyard (BNSF)	1.6	1%
Bunkering (tugs + pumps)	1.0	0%
Non-truck vehicles	0.1	0%
Rail		
Railyard (UP)	15.5	8%
Rail lines	14.9	7%
Permitted		
Schnitzer (stationary)	4.1	2%
Other facilities	2.2	1%
EBMUD	1.6	1%
Other		
Ferries	3.7	2%
Schnitzer (ships)	1.3	1%
Truck-related businesses	0.7	0%
Schnitzer (trucks)	0.1	0%
Total	204.2	100%

DRAFT 2019-05-31.
Residential impacts from modeled local sources only.
* Drayage trucks at any location (Port, street, or highway).

Impact Zones

- Community partners used black carbon (BC) measurements to identify impact zones
- From West Oakland Google/EDF driving study

Black carbon levels above Oakland study area median

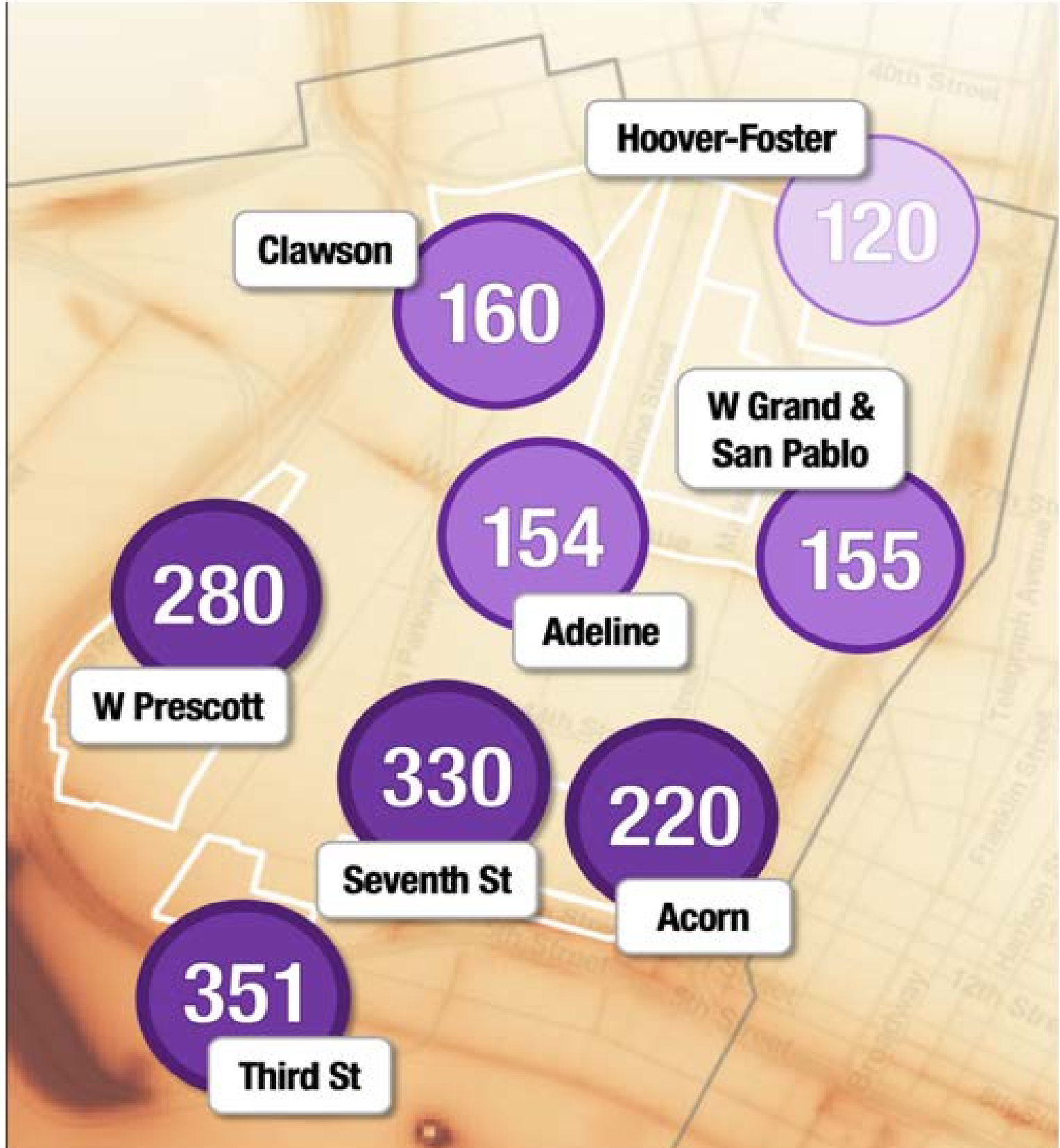


● BC > 0.5 micrograms/m³
■ Residential parcels

Plan Goals: Remove Air Quality Disparities

By 2025: All neighborhoods to reach levels of the “average” West Oakland neighborhood today

By 2030: All neighborhoods to reach levels of the “cleanest” West Oakland neighborhood today

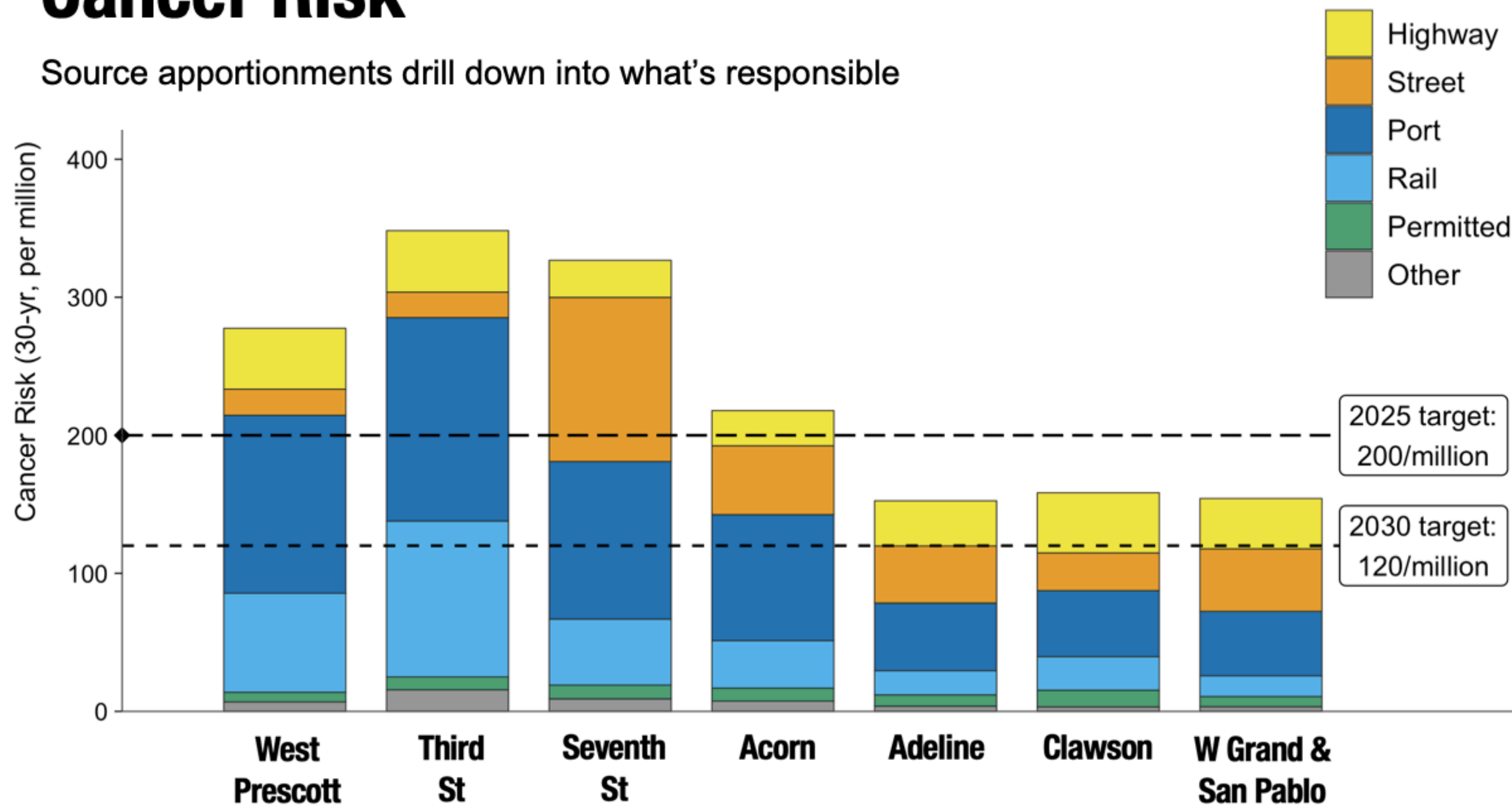


Most Impacted Neighborhoods

- W Prescott**
46% Port, 26% Rail, 23% Truck
- Third St**
42% Port, 33% Rail, 18% Truck
- Seventh St**
35% Port, 15% Rail, 44% Truck
- Acorn**
42% Port, 16% Rail, 35% Truck

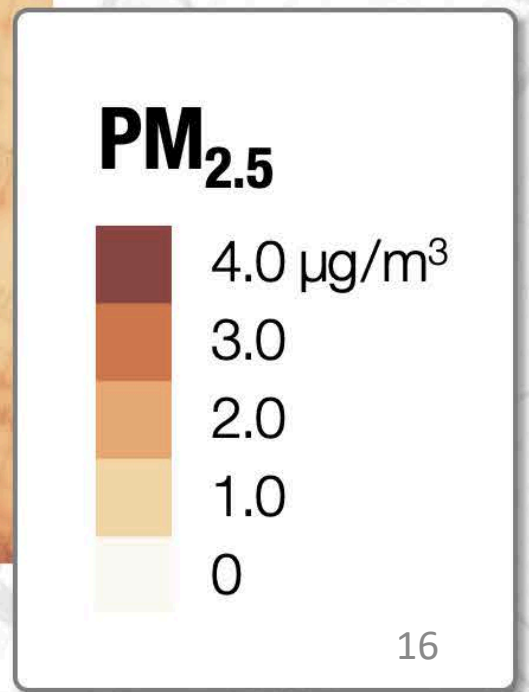
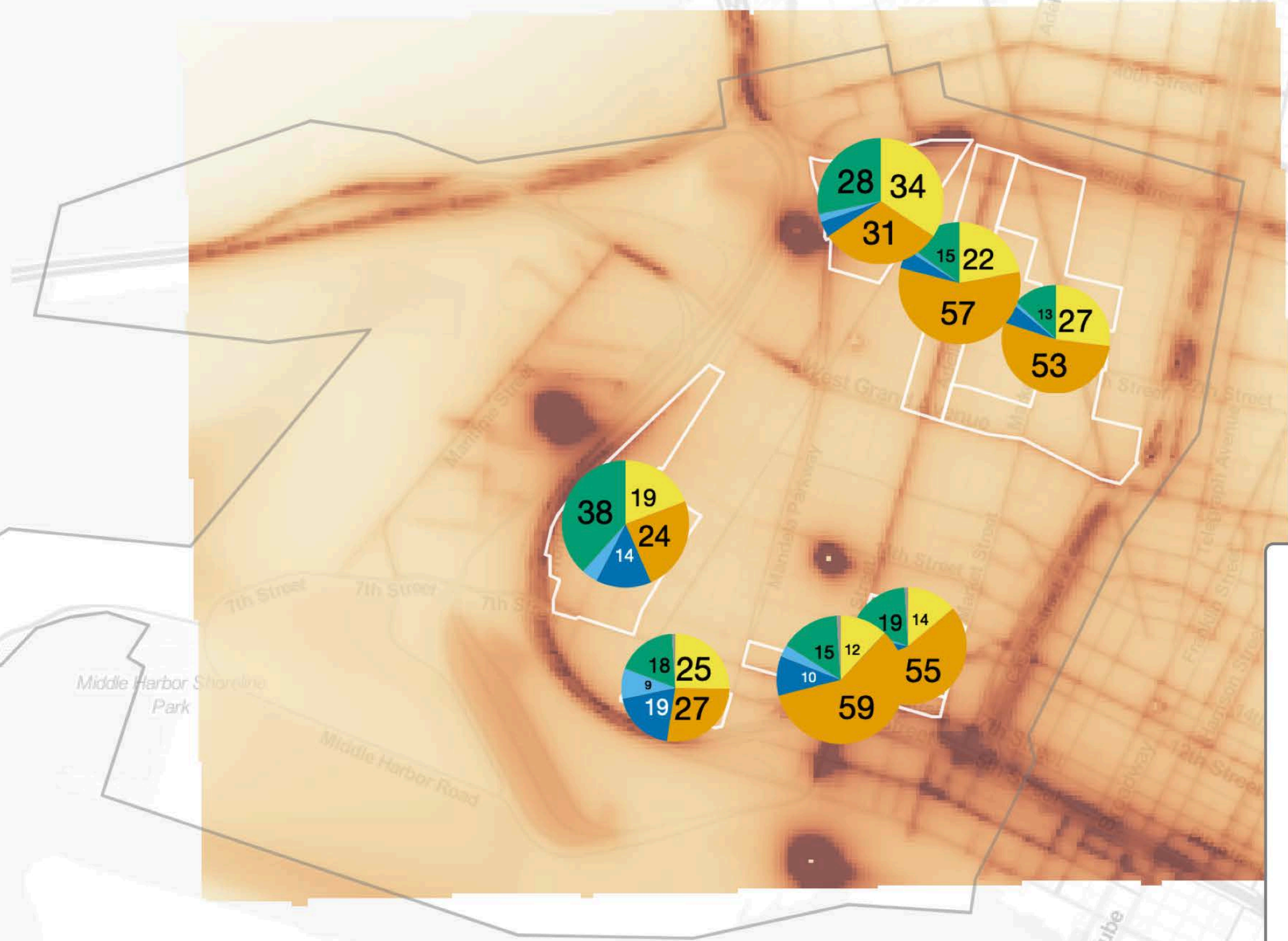
Cancer Risk

Source apportionments drill down into what's responsible



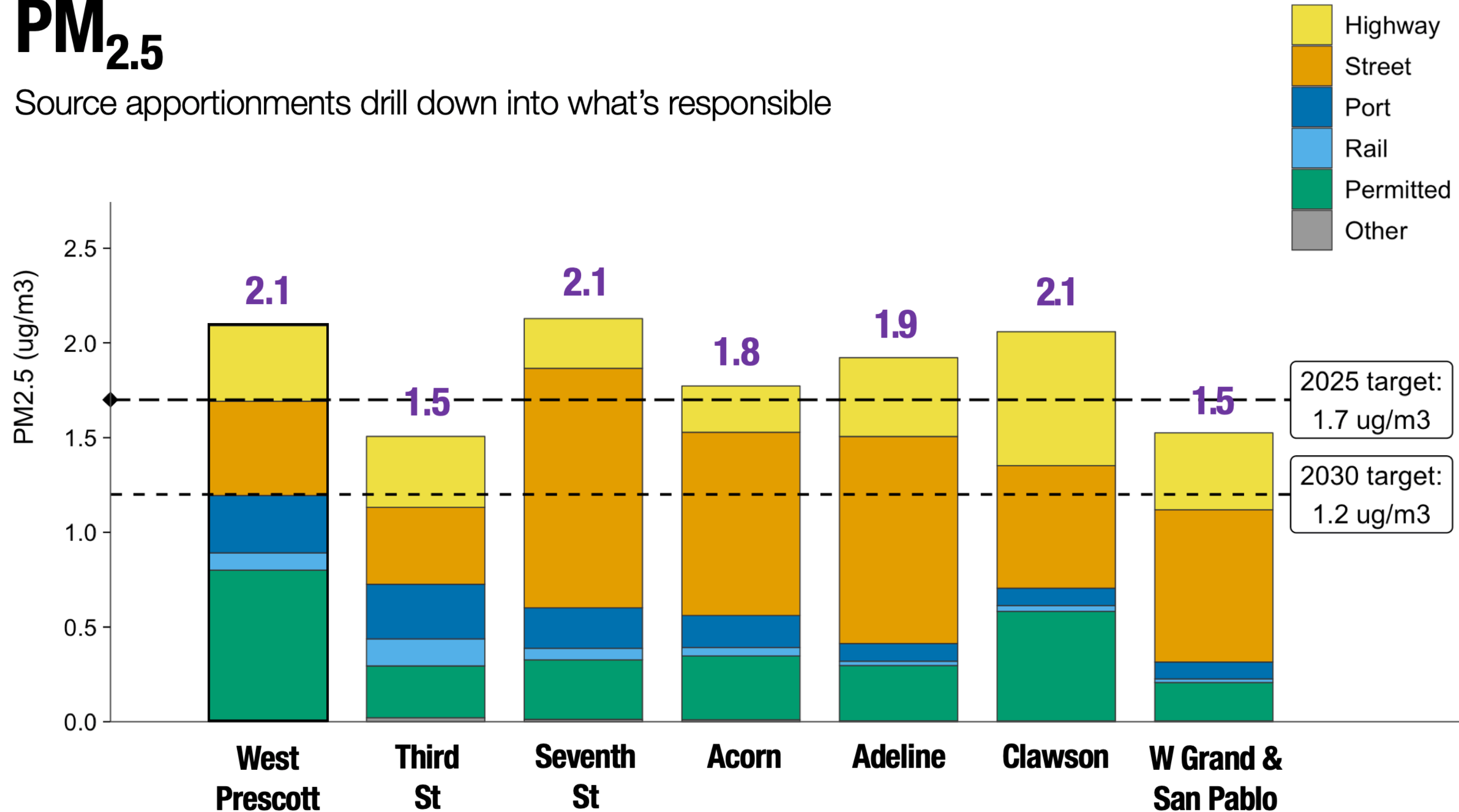
Local Impacts

Source apportionments
drill down into what's responsible, block by block



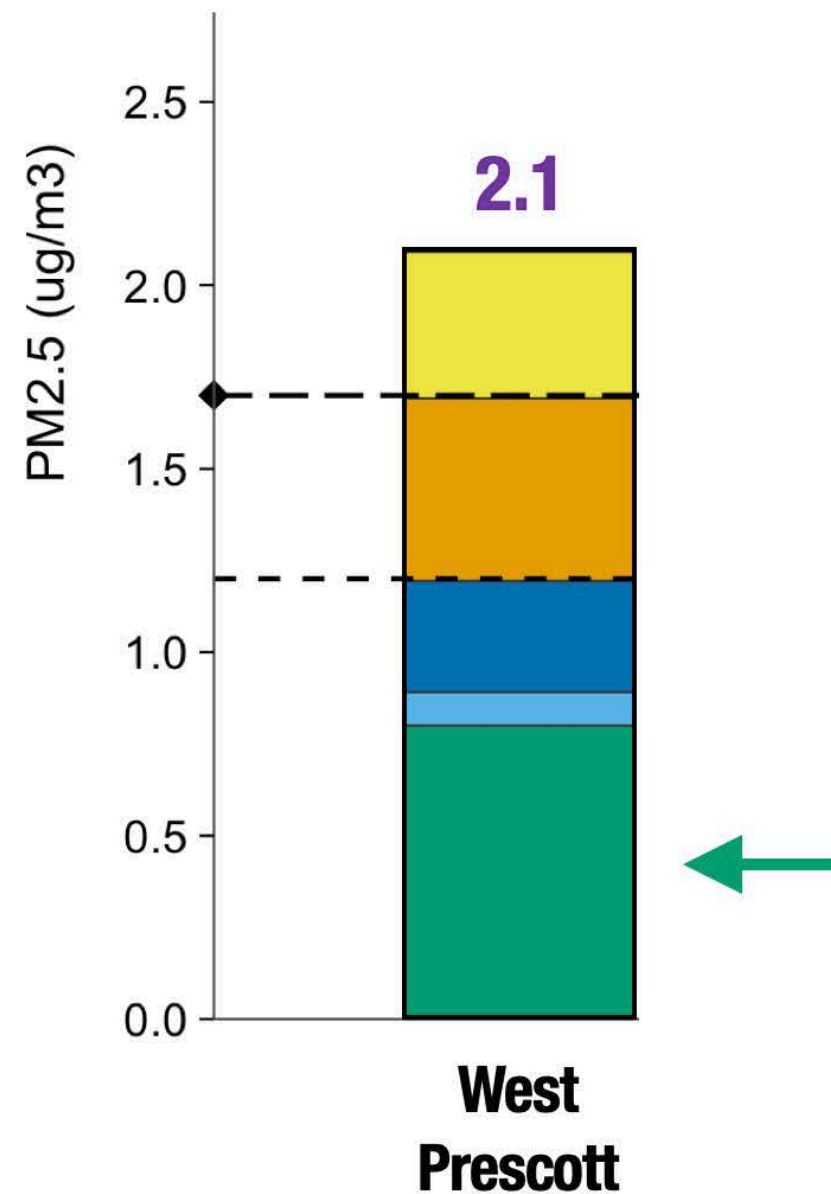
PM_{2.5}

Source apportionments drill down into what's responsible



PM_{2.5}

Source apportionments drill down into what's responsible

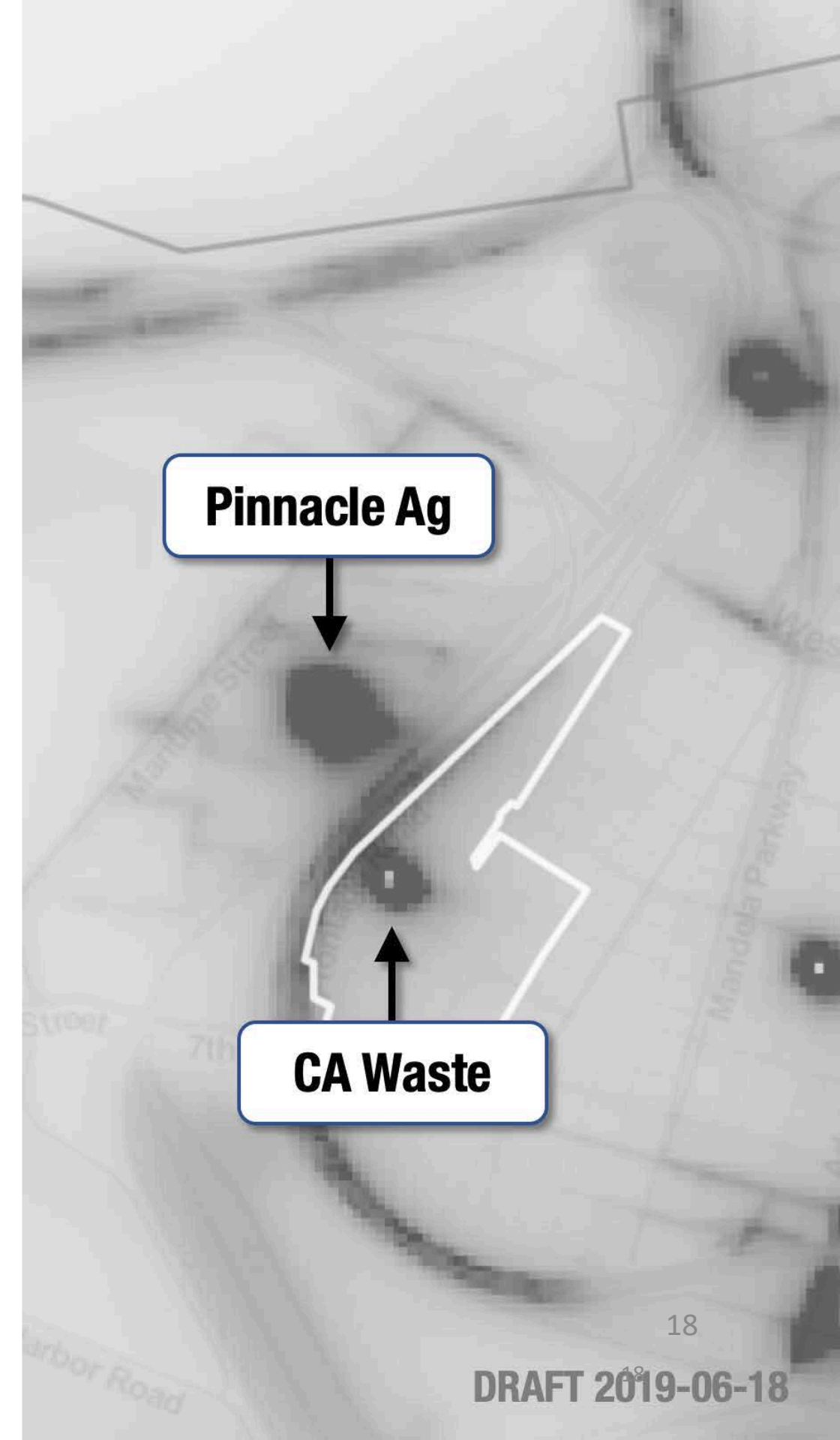


38%

... of these* PM_{2.5} impacts on **West Prescott** are attributed to **stationary sources**.

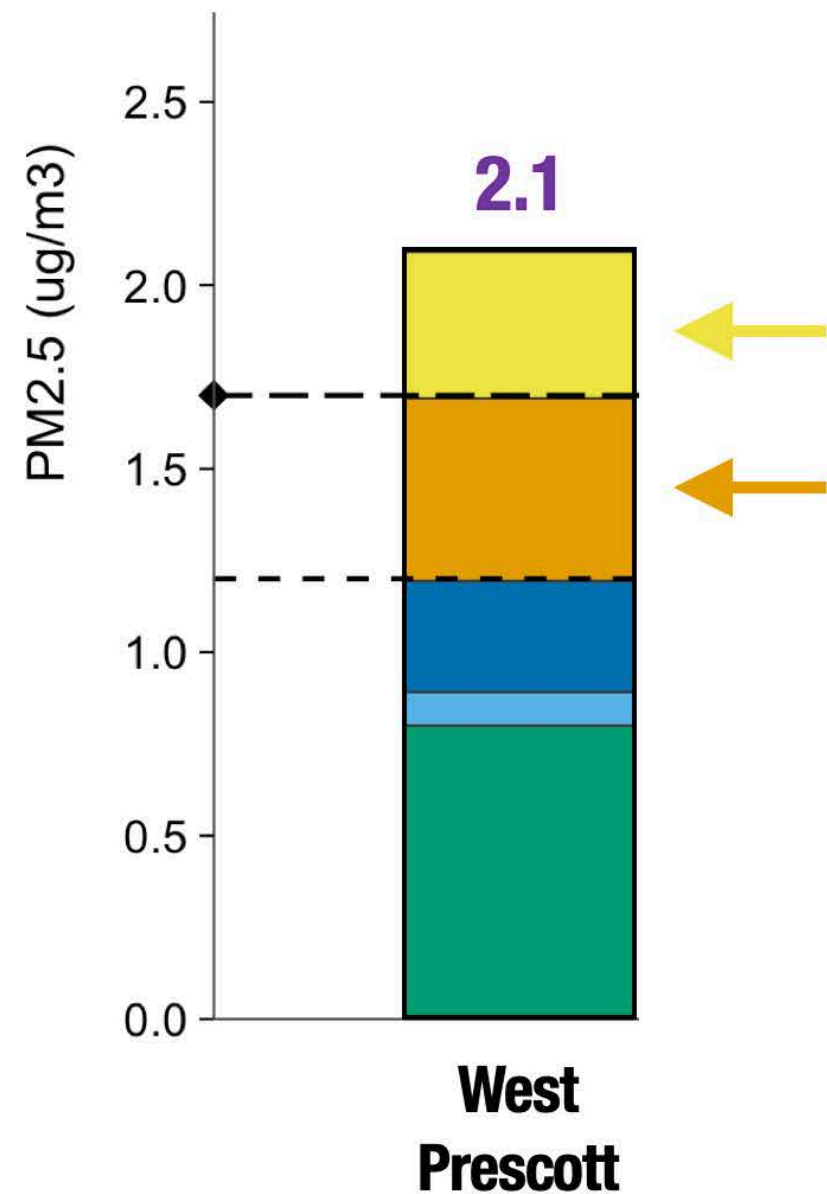
CA Waste and **Pinnacle Ag** (indicated on the map at right) account for four-fifths of that.

* PM_{2.5} impacts from “modeled local sources”, as depicted in maps. Excludes construction dust and commercial cooking. (See Draft Plan for details.)



PM_{2.5}

Source apportionments drill down into what's responsible



43%

... of these* PM_{2.5} impacts on **West Prescott** are attributed to **highways** and **streets**.

Road dust accounts for half of that. (The rest is from tailpipe exhaust, brake wear, and tire wear.)

* PM_{2.5} impacts from “modeled local sources”, as depicted in maps. Excludes construction dust and commercial cooking. (See Draft Plan for details.)



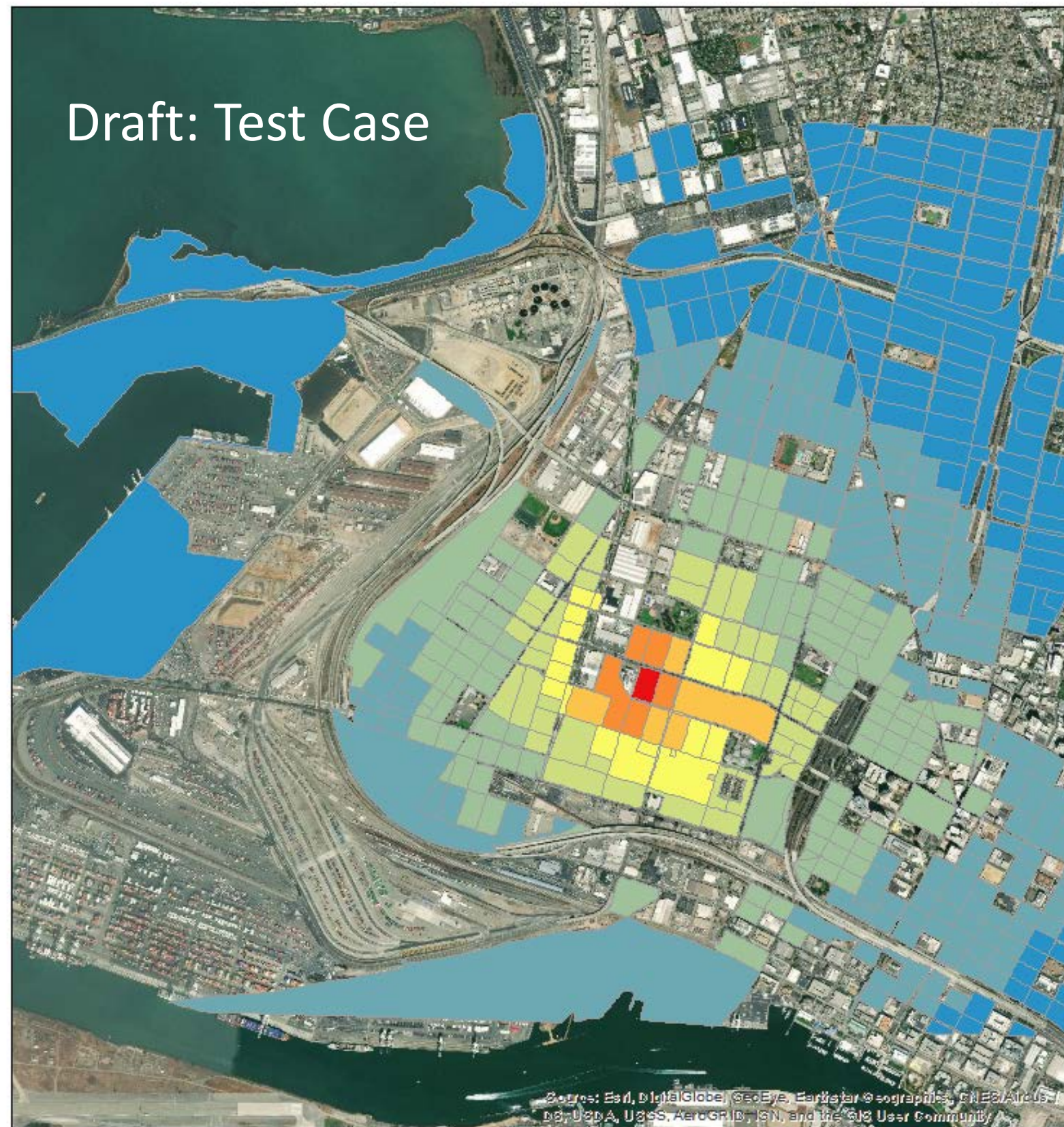
Risk-Assessment Approach for PM_{2.5}

- The Air District is working with the US EPA and the Office of Environmental Health Hazard Assessment (OEHHA) to assess health risks from facility PM_{2.5} releases
 - Similar to health risk assessments from toxic air contaminants conducted for facilities
- Approach to account for *existing community health* records and *PM_{2.5} levels* to assess
 - Increased risk of death
 - Increase risk of heart attack

DRAFT Risk- Assessment Approach for PM_{2.5}

Test Facility:

- Use modeling setup for West Oakland
- Relatively simple winds in West Oakland

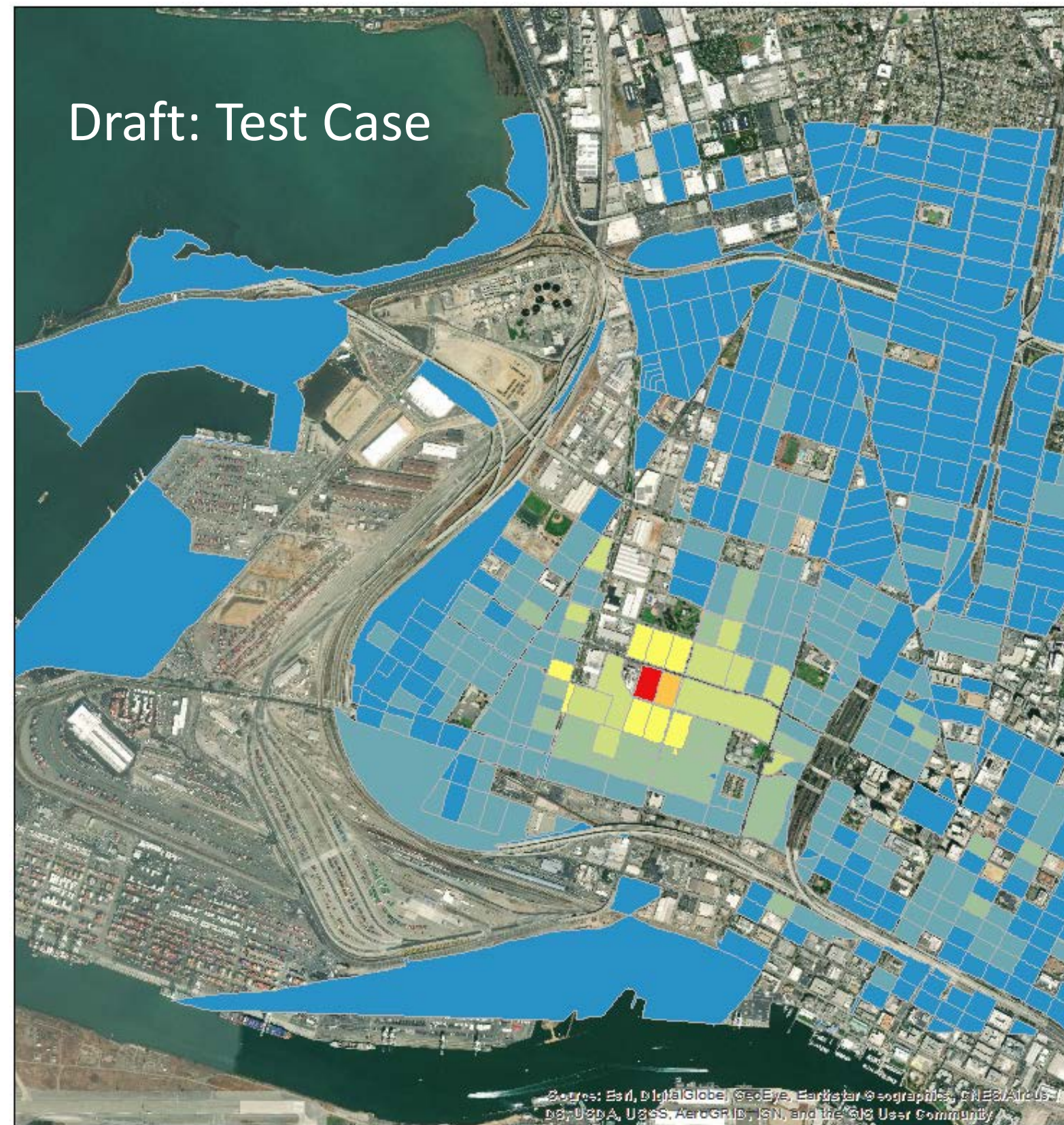


DRAFT Risk- Assessment Approach for PM_{2.5}

Approach similar to
US EPA's BenMAP
model

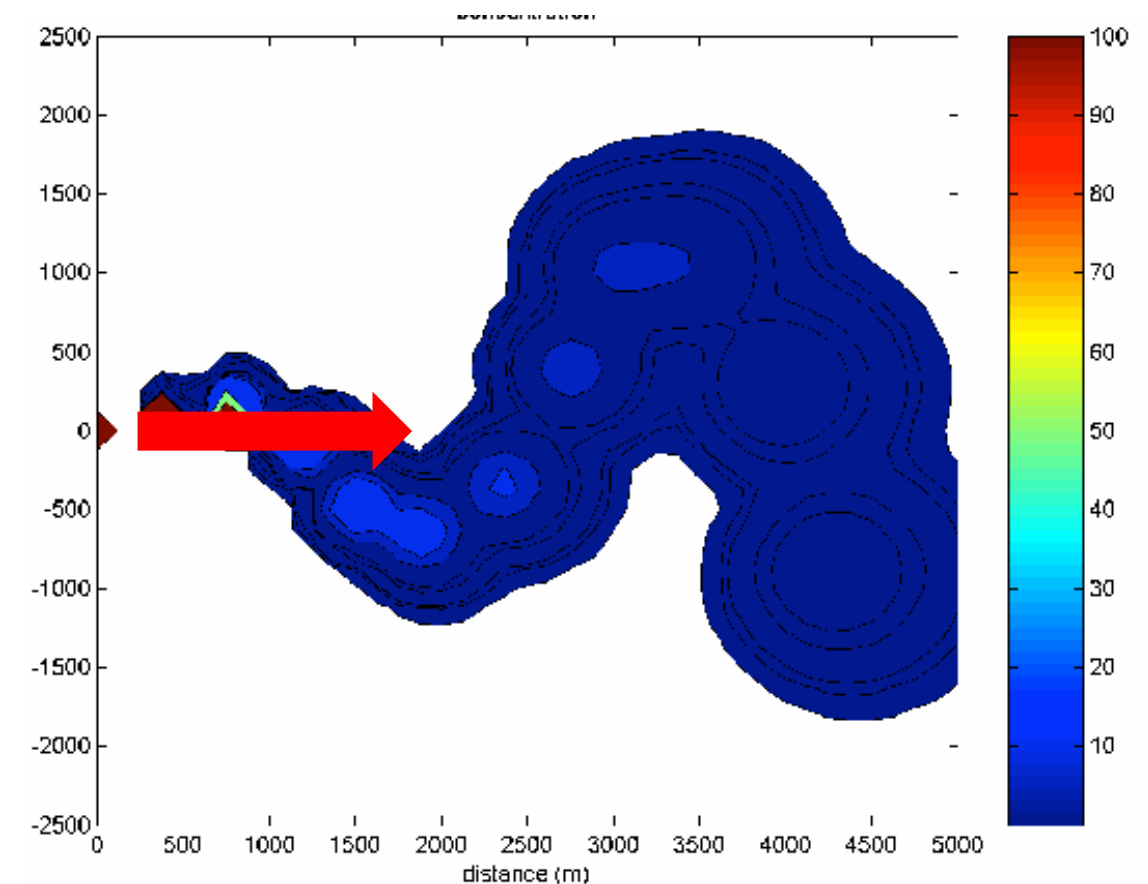
PM Mortality "Risk"
from

- County baseline mortality rate
- Increment in PM_{2.5} concentrations
- Census block population characteristics



Assessing Impacts from Large Stationary Sources

- Standard regional-scale models cannot track near-field impacts from individual sources - not fine-grained enough
- Standard dispersion models cannot track emissions in areas with complex wind patterns from hilly terrain or wind shear
 - Sub-grid plume tracking or puff models
- District staff are currently evaluating alternative modeling approaches:



Examples:

- Refineries
- Large cement plant

Next Steps

- Use community-scale modeling - with enhanced emission estimates - to assess potential impacts on nearby residents
- Use relative air pollution levels within the community to set equity-based targets
- Continue to develop a risk assessment approach for PM_{2.5}
- Investigate approaches to assess potential near-source impacts from large permitted sources with tall stacks in areas with complex winds



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Update on Wildfire Response Efforts

- Tracy Lee, Compliance & Enforcement Manager
 - Alan Abbs, Legislative Officer
- Lisa Fasano, Communications Officer
- Judy Cutino, DO, PE, Health Officer



Presentation Overview

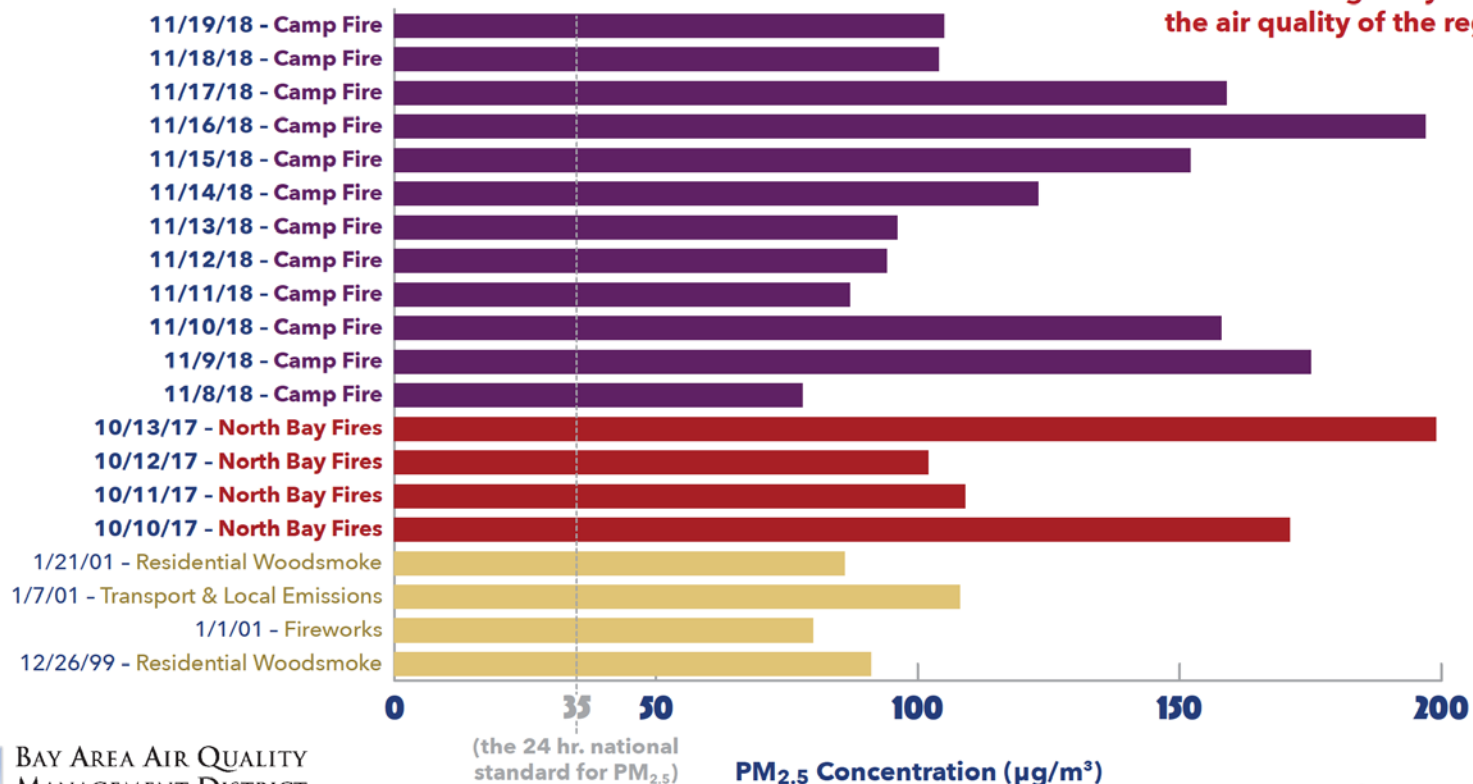
- Local and Regional Particulate Matter (PM) from Wildfires
- Wildfire Air Quality Response Program
 - Rule Development
 - Legislative Initiatives
 - Grants and Incentives
 - Partnership and Regional Alliance
 - Community Information and Resources
- Health Effects - PM and Wildfire Smoke



Local and Regional PM from Wildfires

20 HIGHEST BAY AREA PARTICULATE POLLUTION DAYS SINCE 1999

WILDFIRES
are increasingly devastating for our communities and greatly impact the air quality of the region.



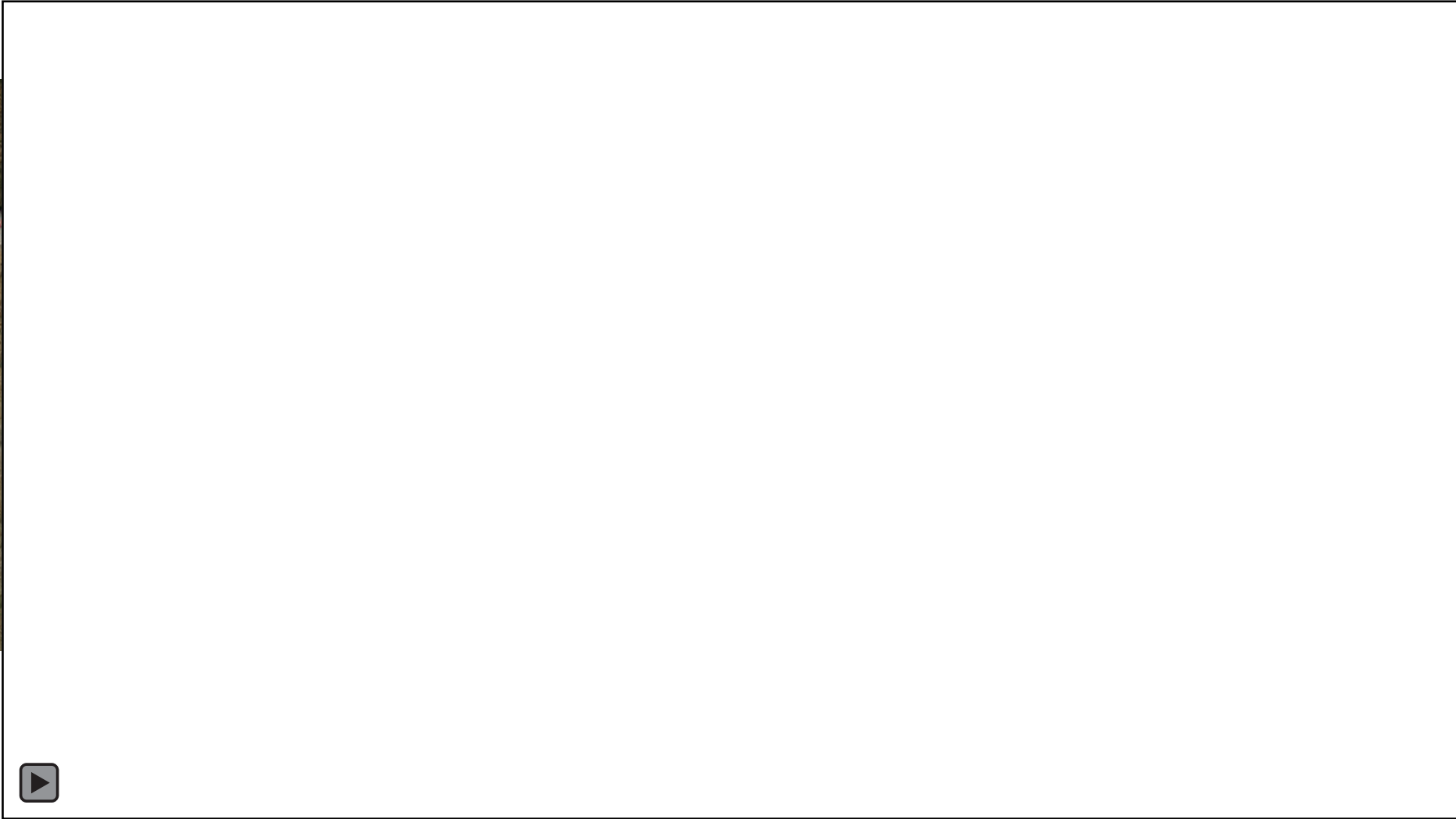


2017 North Bay Fires



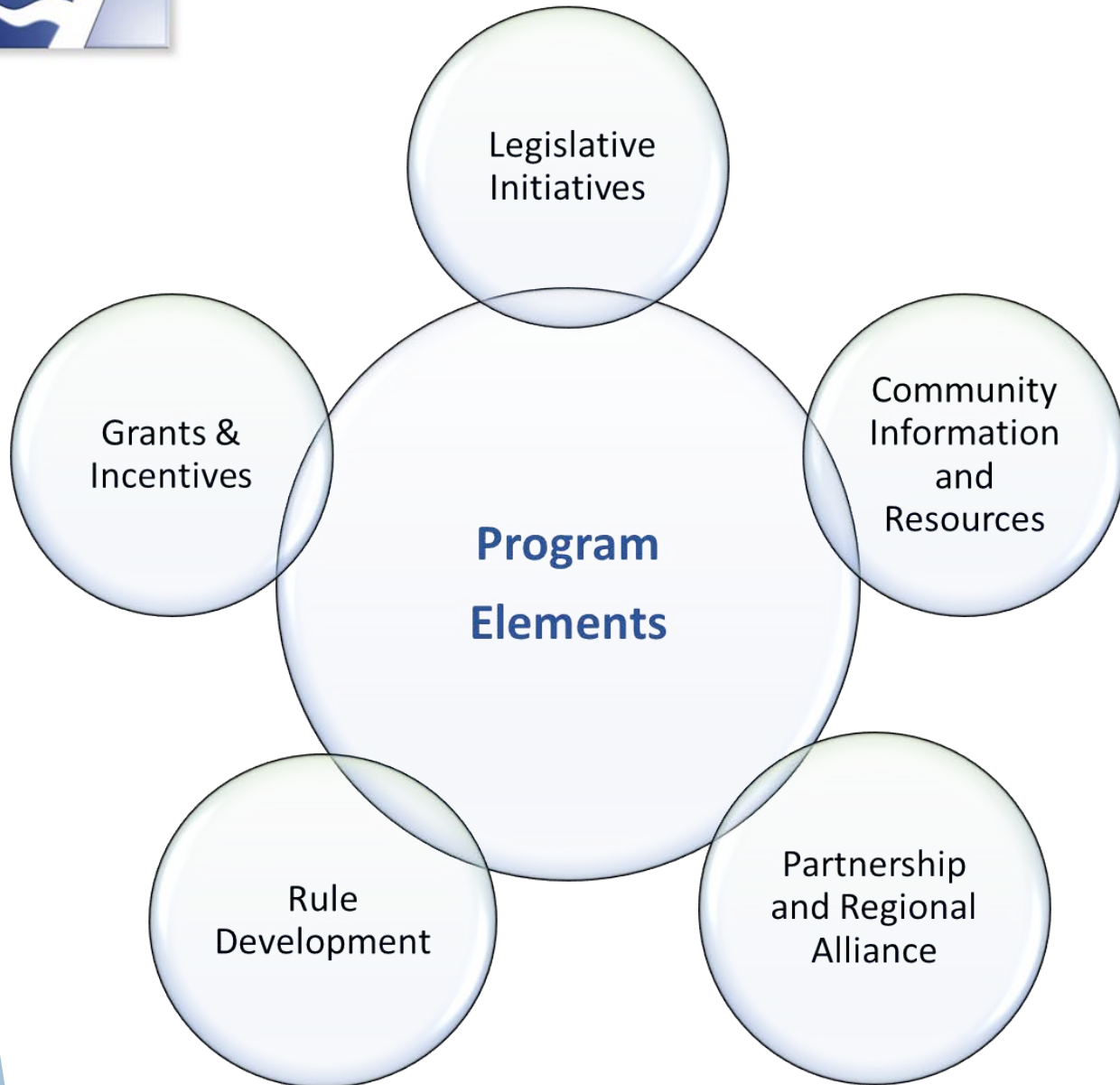


2018 Camp Fire





Wildfire Air Quality Response Program



Program intended to prepare, prevent, and respond to future wildfire smoke, and ensure health-protective measures and strategies are in place.



Rule Development

2019

- *Regulation 5: Open Burning*
 - Remove cost barriers to public agencies to encourage prescribed burning
- *Rule 6-3: Wood-Burning Devices*
 - A year-round, mandatory burn ban when the federal PM_{2.5} health standard is forecast to be exceeded

2020

- *Regulation 15: Wildfire Episode Plan*



Legislative Initiatives

Assembly Bill (AB) 836, Wildfire Smoke Clean Air Center Incentive Program for Vulnerable Populations

- Introduced by Assemblymember Buffy Wicks (Oakland)
- Create incentive program to fund ventilation retrofit programs
- State guidelines would be developed in consultation with air districts, cities, counties, public health agencies, school districts and other stakeholders
- State board to prioritize applications in areas with high cumulative exposure burden



Legislative Initiatives (cont.)

- Funding would be subject to appropriation by Legislature
- Current Bill Status
 - Passed Assembly Natural Resources Committee and Assembly Floor without a single no vote
 - Passed Senate Environmental Quality unanimously
 - Currently assigned to Senate Appropriations Committee
 - If bill makes it out of Appropriations, it would go to Senate Floor for vote, and then to Governor
- Currently working with Author's staff, California Air Resources Board (CARB), and DOF to identify potential funding



Grants and Incentives

Wildfire Recovery Assistance Program

- \$3 million to support rebuild efforts in the North Bay
- Encourage and incentivize building energy-efficient homes

Additional grant development aimed to:

- Establish **clean air centers** across Bay Area
- Provide cleaner air at **sheltering facilities** and **evacuation centers** during emergencies



Partnership with American Red Cross

Red Cross' mission, vision and fundamental principles align with Air District's Wildfire Air Quality Response Program goals



**American
Red Cross**

- Approximately 1100 existing Red Cross affiliated facilities across nine Bay Area counties
 - Schools (i.e. elementary, middle, high schools, colleges)
 - Community spaces (i.e. community centers, recreation centers, government buildings, commercial and event centers)
 - Faith-based organizations



Partnership Goals

Ensure health-protective actions are taken to prepare for future wildfire disasters and regional smoke impacts



**American
Red Cross**

- Provide funding to purchase portable air filtration units
- Enhance new Red Cross' *National Shelter System* database
- Improve how sheltering and evacuation centers are prioritized to open
- Target funding to Red Cross affiliated facilities to encourage other local partnerships with Red Cross



Regional Partnerships

2017 North Bay wildfires messaging challenges

- Different messages from different agencies
- Coordinated during the emergency, but not prior to fires
- Coordinated closely with Napa and Sonoma Health Officers



2018 Camp Fire new messaging challenges

- Not enough cleaner air shelters
- Counties quickly trying to develop a response for homeless, outdoor workers, and schools



Regional Partnerships (cont.)

Beginning in 2019 Regional Partnership development

- Association of Bay Area Health Officers
- SF Department of Emergency Management, Bay Area UASI
- Created Air Quality Communications Alliance (AQCA)
- Working to align messaging with all applicable agencies
- Developed preparedness messaging
- Reviewing public messaging plan
- Public announcement when completed
- Share with all Bay Area regional agencies





Community Information and Resources

- Developing Wildfire Information on Air District Website
- Will incorporate guidance for schools
- Wildfire Air Quality Response Program
- Messages before and during smoke
- Informational materials will be developed and available at events
- Further guidance about preparing home and family





Health Effects of PM



DRAFT PM ISA Health Effects: Causality Determinations

HUMAN HEALTH EFFECTS						
		ISA	Current PM Draft ISA			
		Indicator	PM _{2.5}	PM _{10-2.5}	UFP	
Health Outcome	Respiratory	Short-term exposure				
		Long-term exposure				
	Cardiovascular	Short-term exposure				
		Long-term exposure	*			
	Metabolic	Short-term exposure	*	*	*	
		Long-term exposure	*	*	*	
	Nervous System	Short-term exposure	*		*	
		Long-term exposure	*	*	*	
	Reproductive	Male/Female Reproduction and Fertility	Long-term exposure			
		Pregnancy and Birth Outcomes				
	Cancer	Long-term exposure	*	*		
	Mortality	Short-term exposure				
		Long-term exposure		*		

Causal
 Likely causal
 Suggestive
 Inadequate

* = new determination or change in causality determination from 2009 PM ISA



Health Effects - PM and Wildfire Smoke

Gaps in Understanding

- Differentiating between health impacts due to the wildfire smoke vs long term PM exposure risks
- Long-term health effects of repeated exposures:
 - Acute versus chronic
 - Short-term, hourly to daily exposures, of high concentrations of PM
- Tools needed to assess health risk above and below the current standards
- What further actions to consider?



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Discussion Regarding Particulate Matter (PM) Symposia

Advisory Council Meeting
July 29, 2019

Jack P. Broadbent
Executive Officer/APCO

Proposed PM Symposia: Goals

- **“Beyond attainment”**: Achieve additional health benefits, even after attainment of standards
- Identify measures that would most move public health needle, especially in most impacted communities
- Recognize PM as principal health risk driver both for criteria pollutants and toxics
- Identify gaps in knowledge, or current policy, and address
- Provide national leadership

Proposed PM Symposia

Overview

- Convened by Advisory Council as series of meetings
- Identify health-focused guidelines based on latest science, setting target beyond standards already in effect
- Engage nationally-recognized experts, including leading experts previously engaged at the Federal level
- Include local stakeholders

Proposed PM Symposia: Meetings

- **October 2019:** PM Health Effects and Impacts
 - Keynote Speaker
- **December 2019:** PM Policy and Stakeholder Issues
- **February 2020:** Draft PM Recommendations
- **April 2020:** District Response
 - Keynote Speaker
 - Large, offsite venue

Proposed PM Symposia: October 2019

October 2019: PM Health Effects and Impacts

- **PM Health Effects**
 - Updated assessment, latest science
 - Biological mechanisms and observed effects
- **PM Impacts**
 - Emissions, sources, air quality
 - Exposure and health risk
 - Local-scale impact assessment
- **Advisory Council Discussion**
 - Findings

Proposed PM Symposia: December 2019

December 2019: PM Policy and Stakeholder Issues

- **Stakeholders**
 - Assembly Bill (AB) 617 Community
 - Nonprofit organizations (NGOs)
 - Regulated community, etc.
- **Policy (Air District Staff)**
 - Air District current efforts
 - Air District discussion of gaps
 - Cost/benefit framework – maximizing health improvement
- **Advisory Council Discussion**
 - Findings

Proposed PM Symposia: February 2020

February 2020: Draft PM Recommendations

- **Presentation of Draft Findings**
 - Air District summary of draft symposia findings
- **Advisory Council Discussion**
 - Review and revision of draft findings
 - Recommendations to Air District Board and Staff

Proposed PM Symposia: April 2020

April 2020: District Response (Large, offsite venue)

- **Health effects overview**
- **PM impacts overview**
- **Advisory Council recommendations**
- **Air District response**
 - Both acute and chronic effects targeted
 - Cost/Benefit of response
 - Equity effects of response
 - Timeline of response