AGENDA: 4

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

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

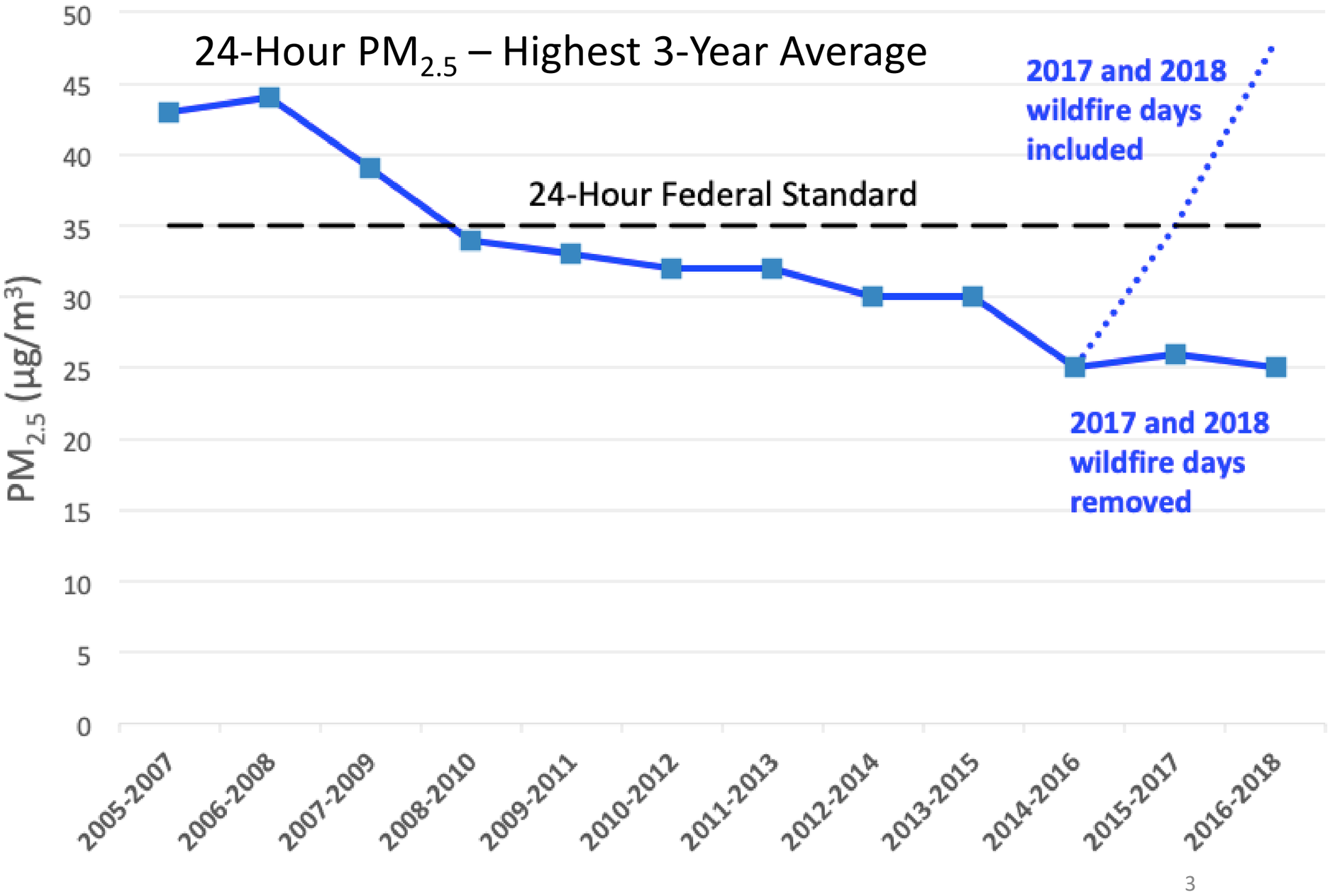
Phil Martien, PhD
Director of Assessment, Inventory, and Modeling Division
Advisory Council Meeting
July 29, 2019

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

Bay Area Air Quality Management District

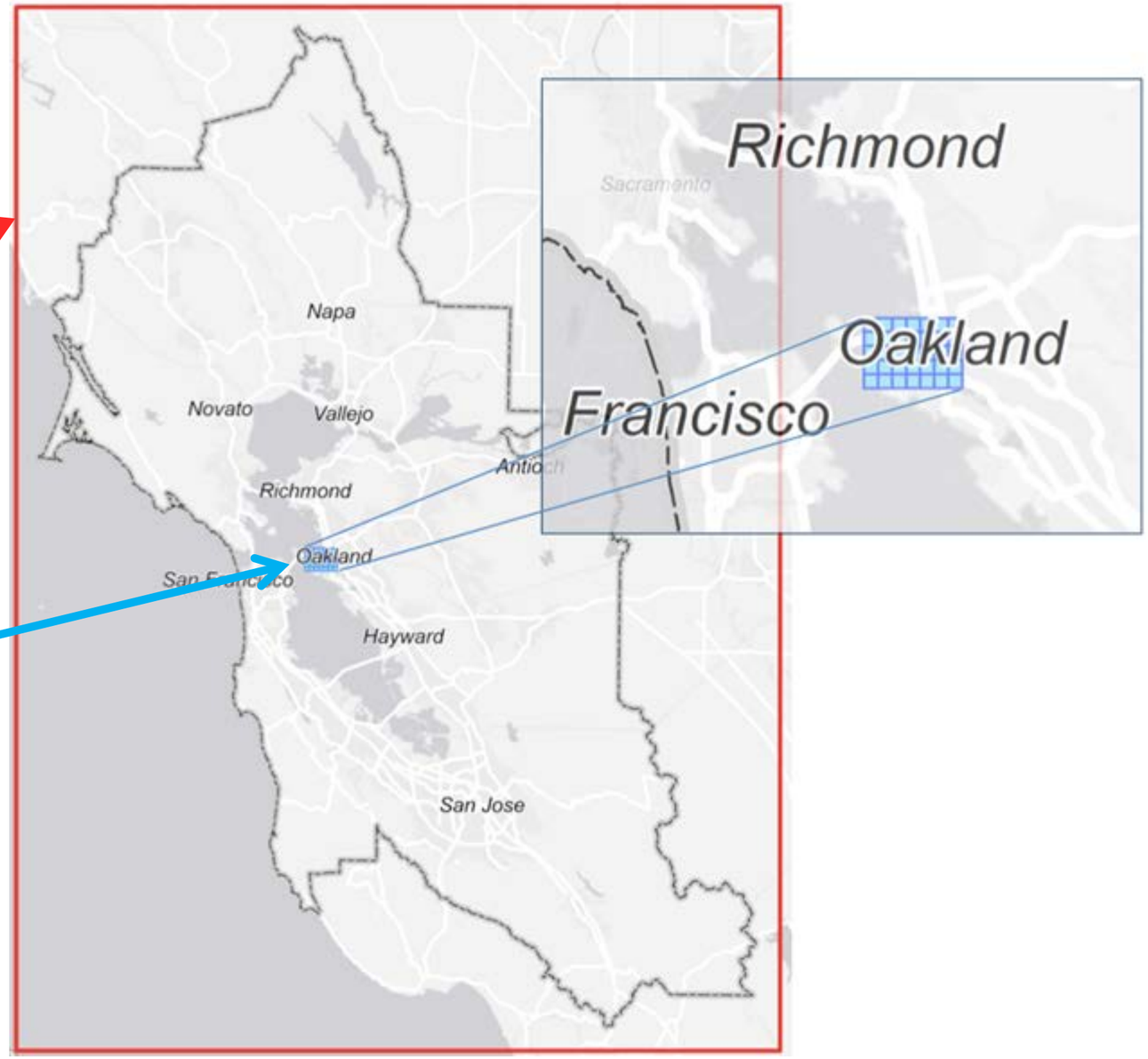
Why West Oakland?

- 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

Bay Area Air Quality Management District

Modeling-Based Technical Assessment

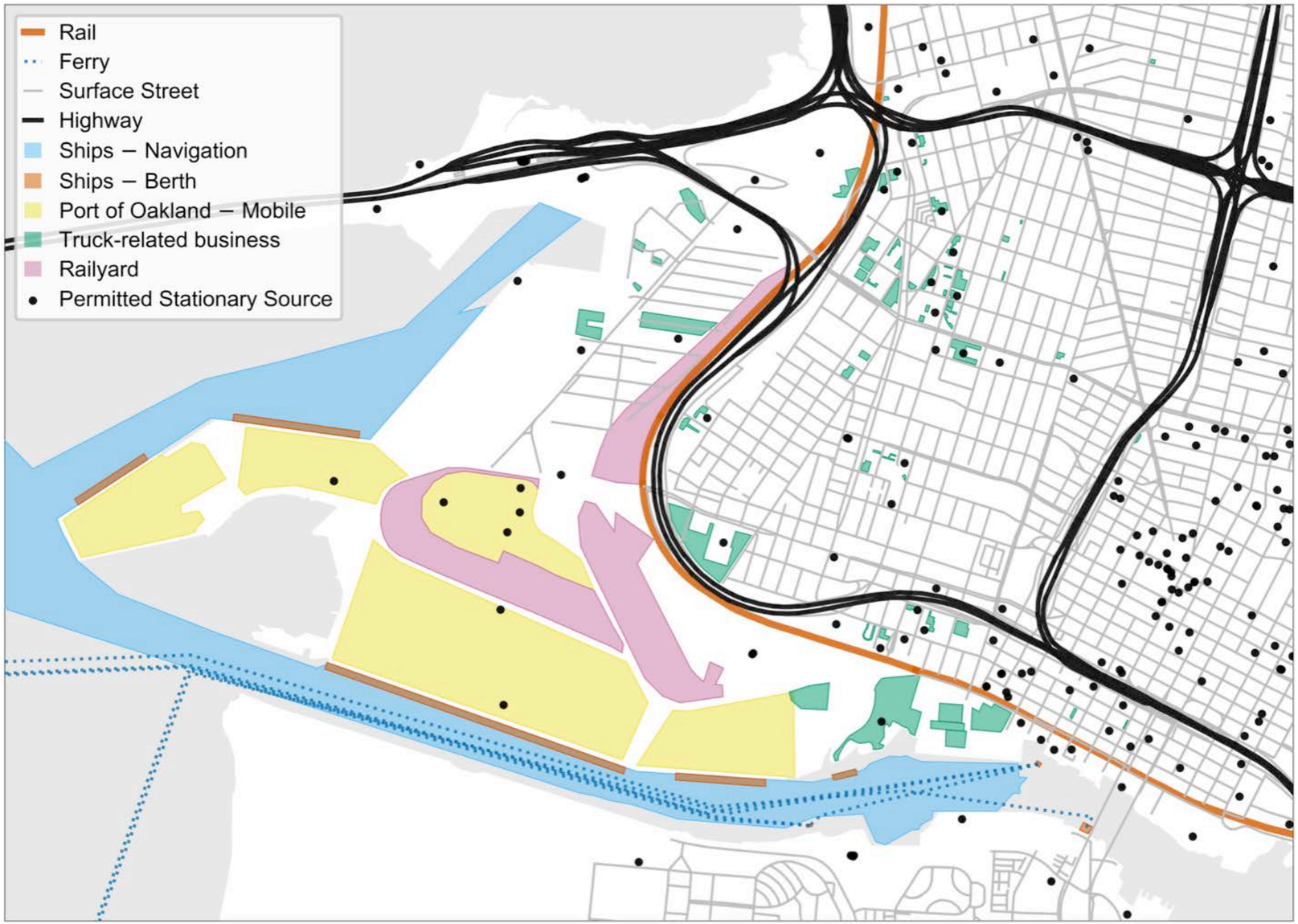
- Regional-scale, grid-based modeling for Bay Area
- Community-scale, plume dispersion-based modeling for West Oakland
- Regional modeling emissions “zeroed out” in community-scale modeling area



BAY AREA AIR QUALITY MANAGEMENT DISTRICT

West Oakland detailed emissions inventory

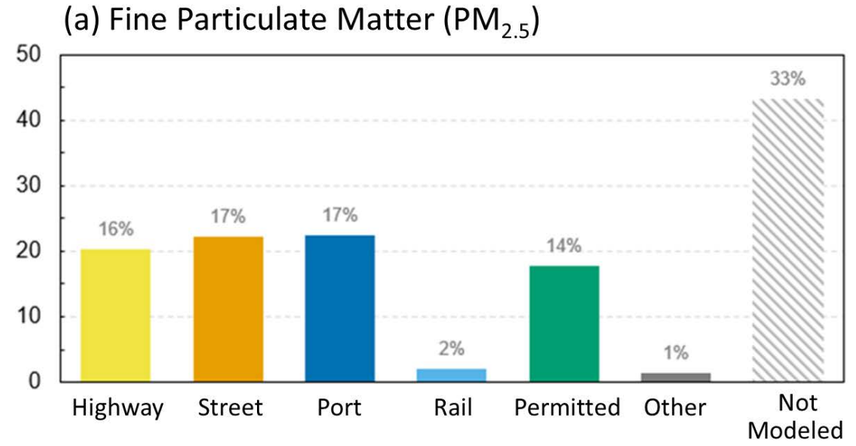
- Each source modeled individually to support source apportionment

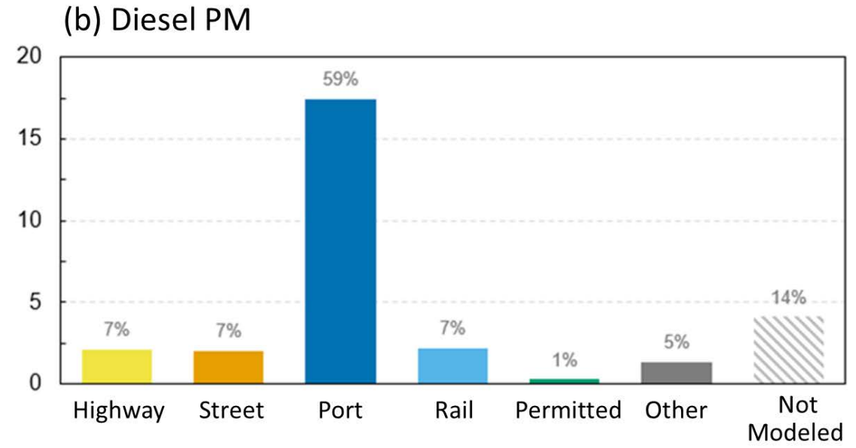


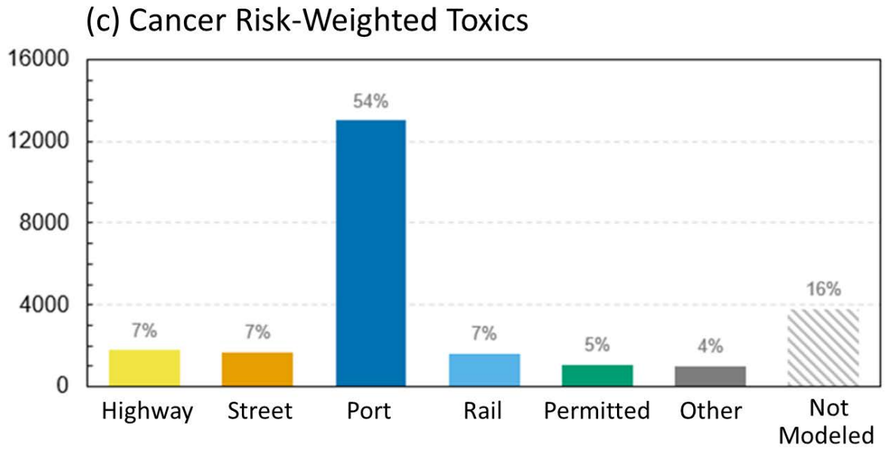
Bay Area Air Quality Management District

Community-Scale Emissions Inventory

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

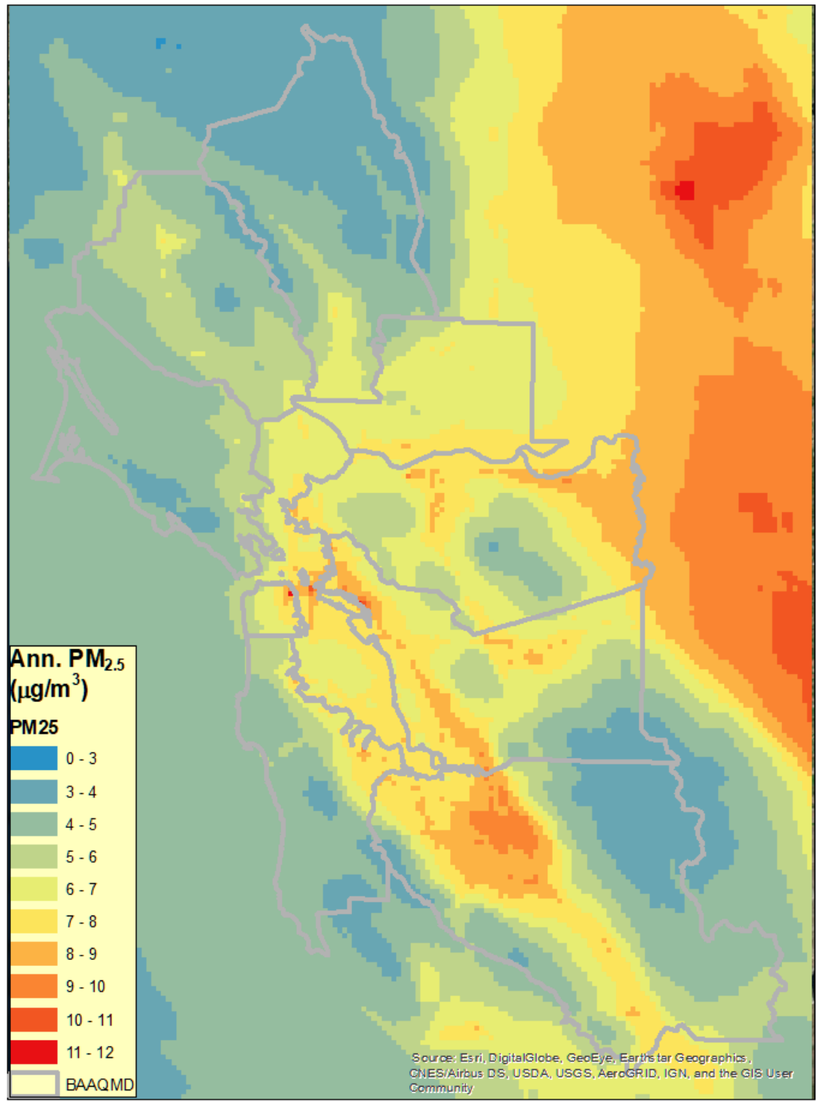




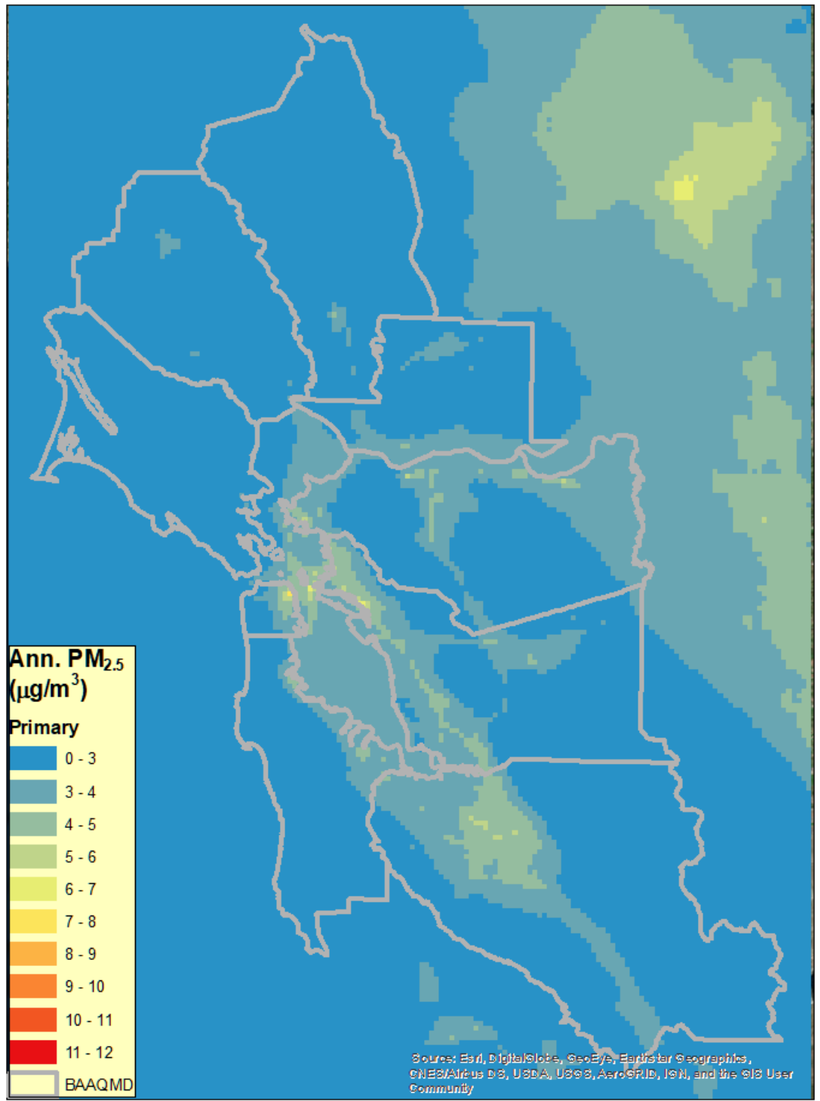


$PM_{2.5}$ Regional Modeling: Primary & Secondary Contributions

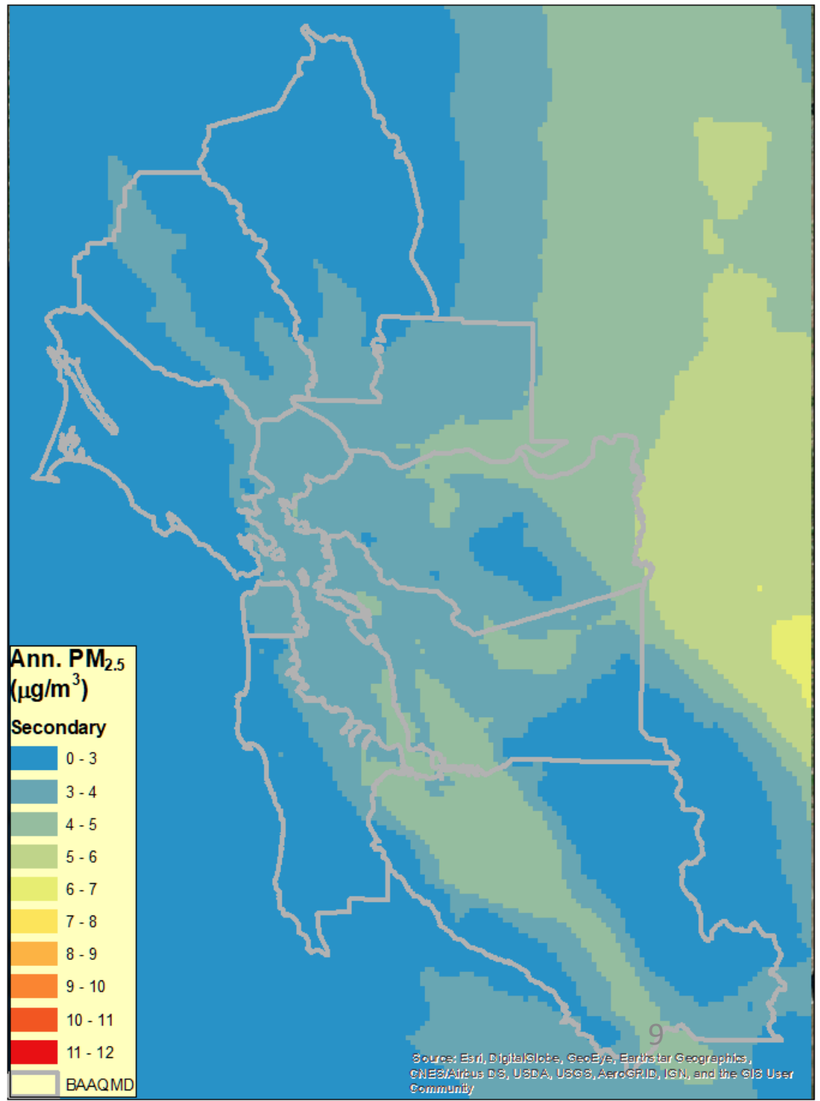
Total $PM_{2.5}$



Primary $PM_{2.5}$ (about 53%)



Secondary $PM_{2.5}$ (about 47%)



How Much is Local?

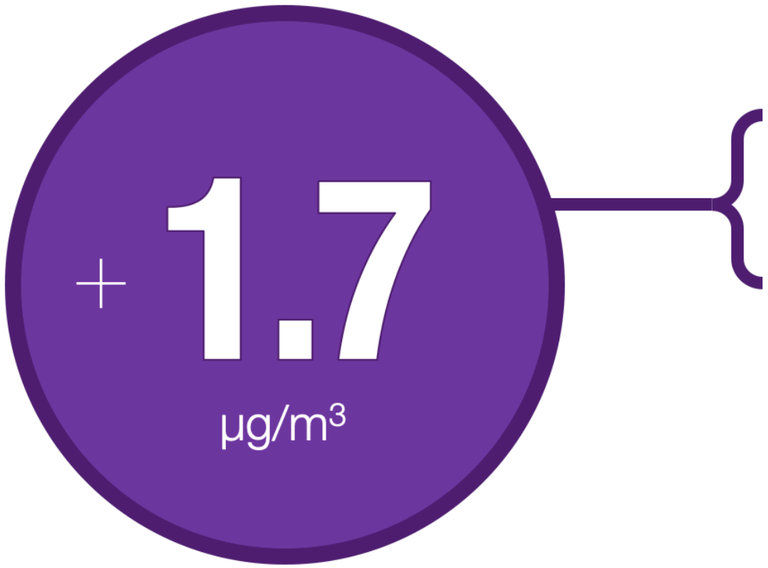
DRAFT 2019-06-21

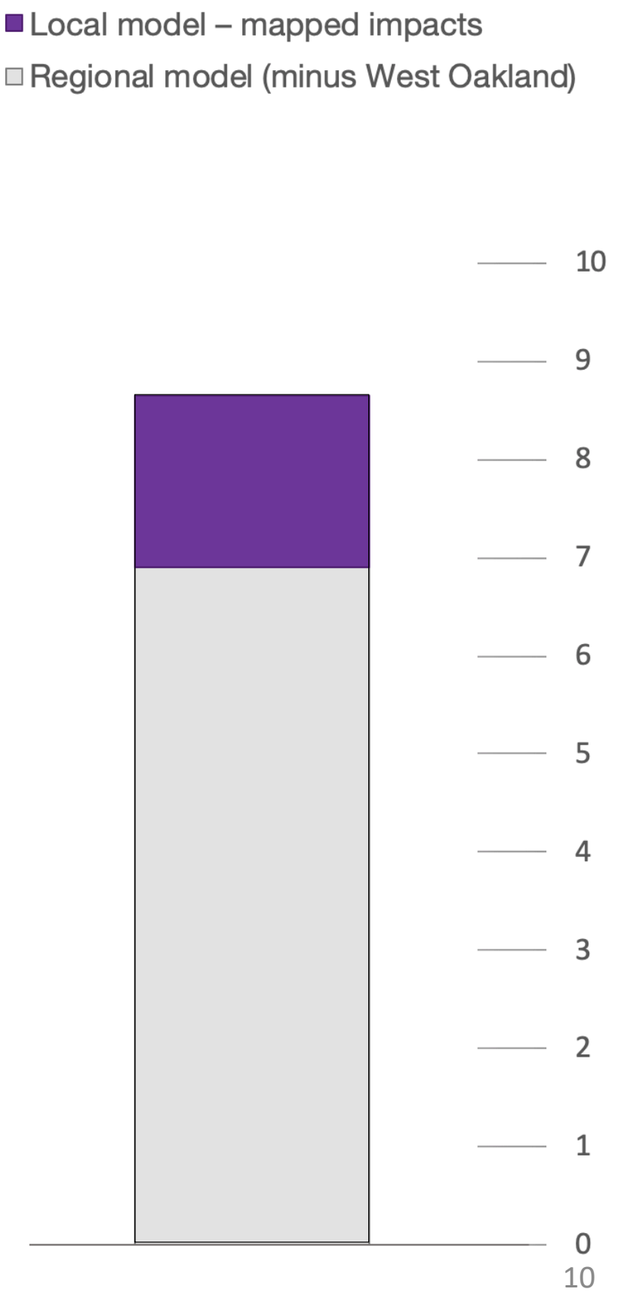
Modeled Impact, on Residential $PM_{2.5}$, of **Local (versus Regional)** Emissions

Top Local Contributors*

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

$PM_{2.5}$





*** $PM_{2.5}$ 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

*** cancer risk from construction was not modeled**

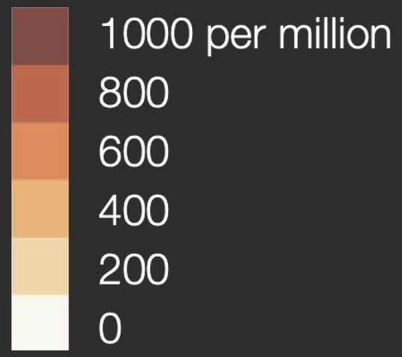
Modeled Impact of Local Sources on Residential

Cancer Risk

Top Local Contributors*

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

* cancer risk from construction was not modeled



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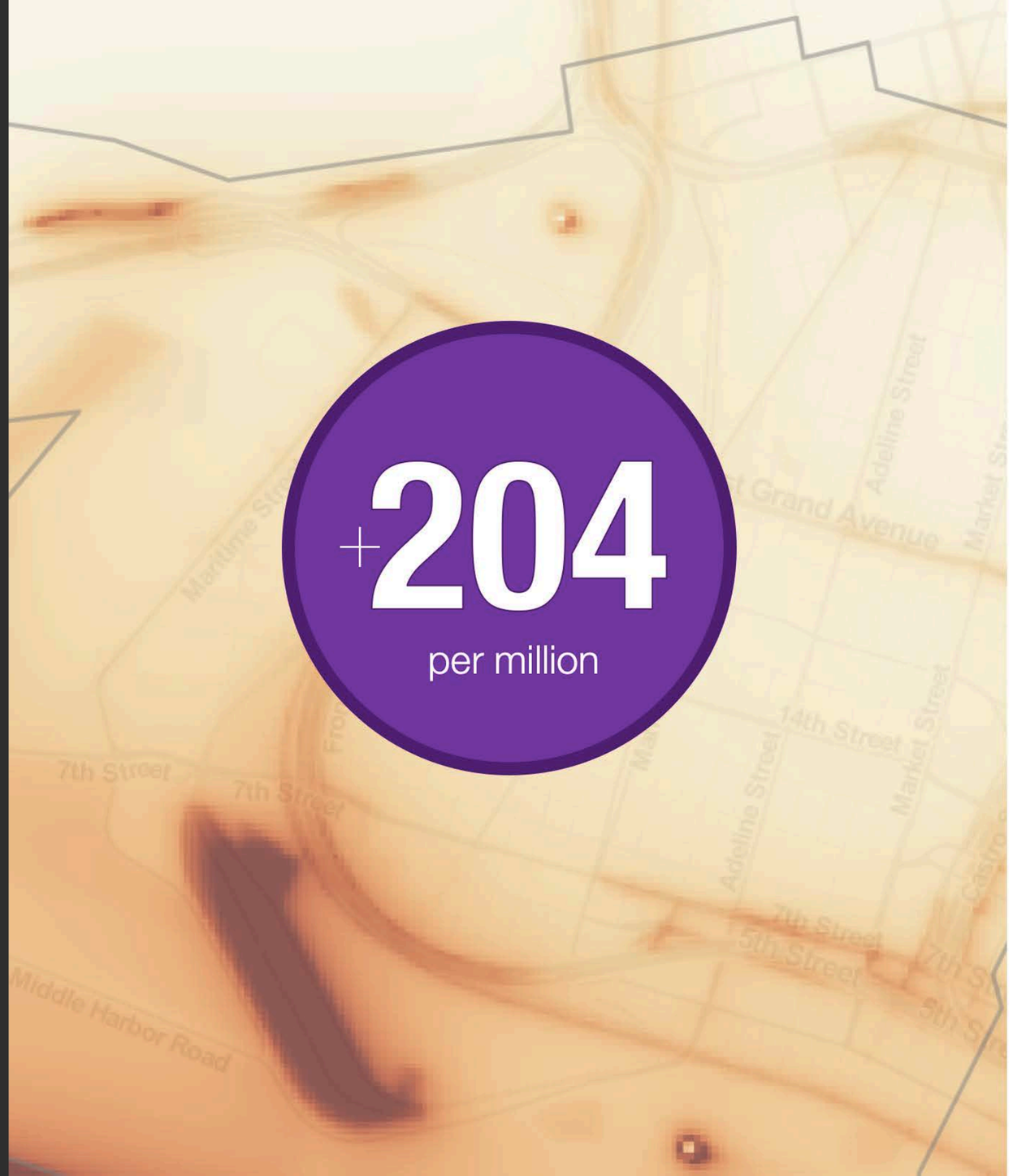


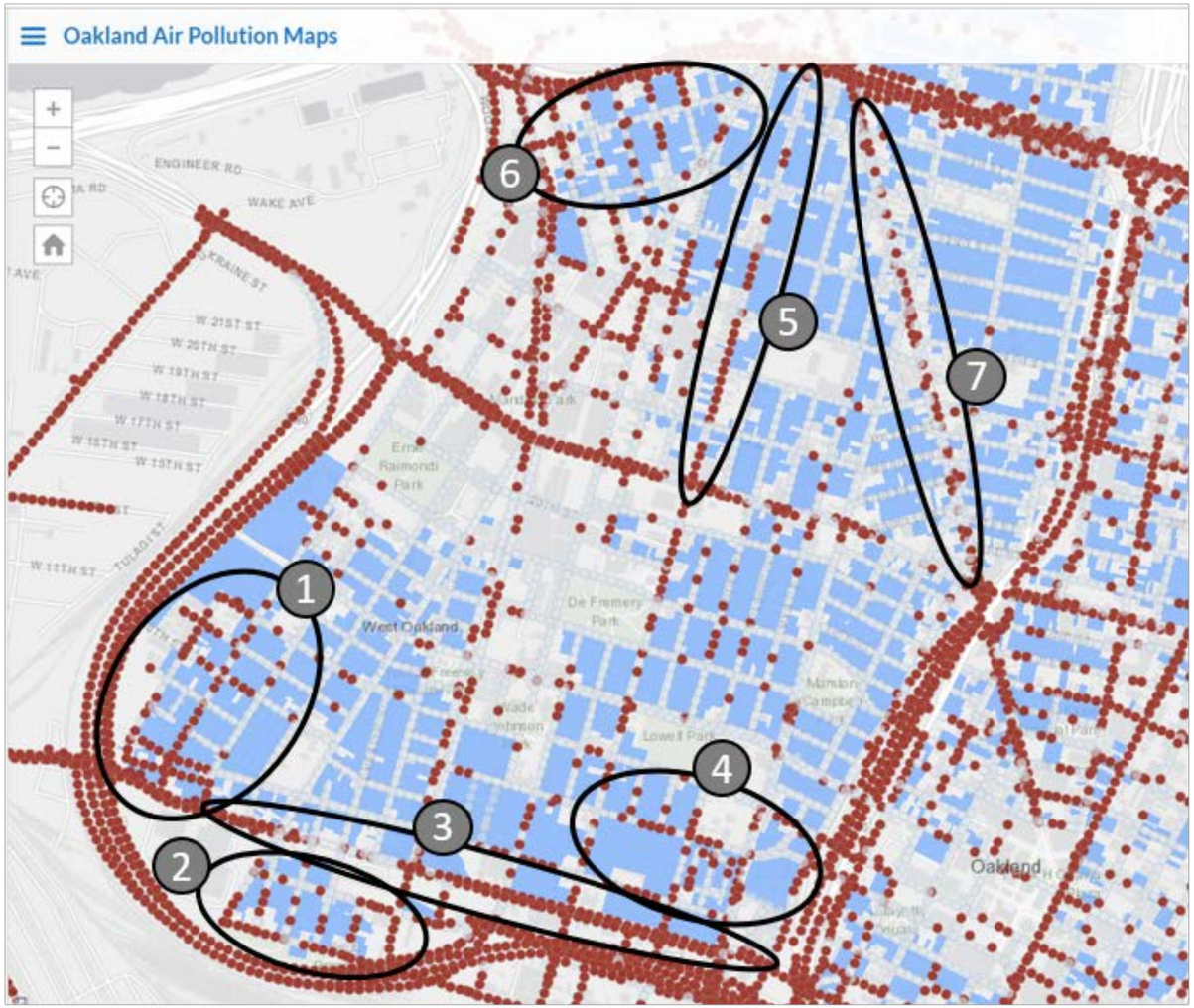
Impacts on Cancer Risk (30-yr, per million)		
Highway		
Heavy/Medium HD trucks	32.2	16%
Non-truck vehicles	7.3	4%
Light HD trucks	1.6	1%
Street		
Heavy/Medium HD trucks	39.3	19%
Non-truck vehicles	7.5	4%
Light HD trucks	1.9	1%
Port		
Harbor craft	24.3	12%
OGV (berthing)	16.5	8%
OGV (maneuvering)	10.5	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%
	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



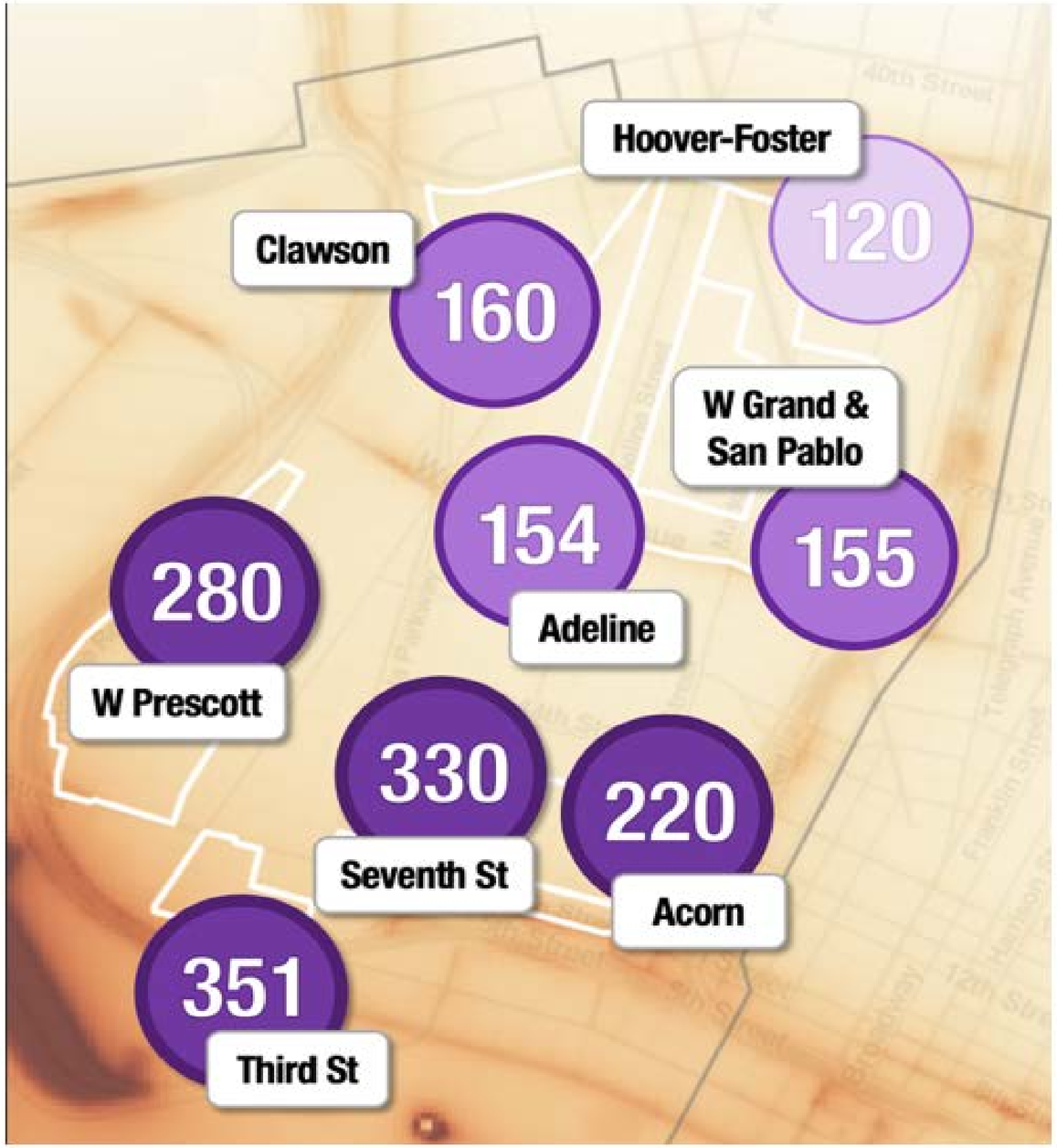
Maps produced by Environmental Defense Fund (EDF)

Bay Area Air Quality Management District

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

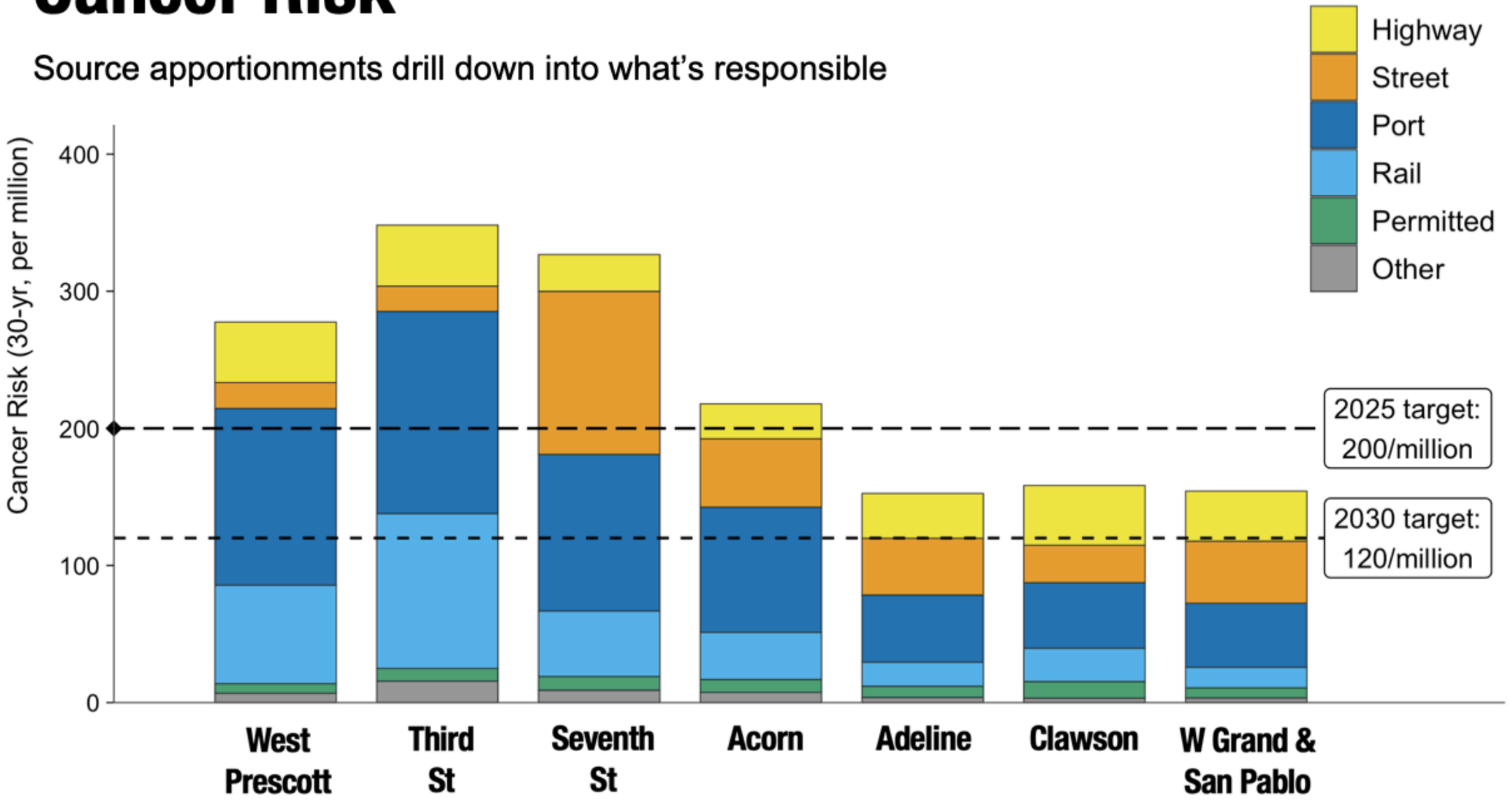
Seventh St
35% Port, 15% Rail, 44% Truck

Acorn
42% Port, 16% Rail, 35% Truck

Bay Area Air Quality Management District

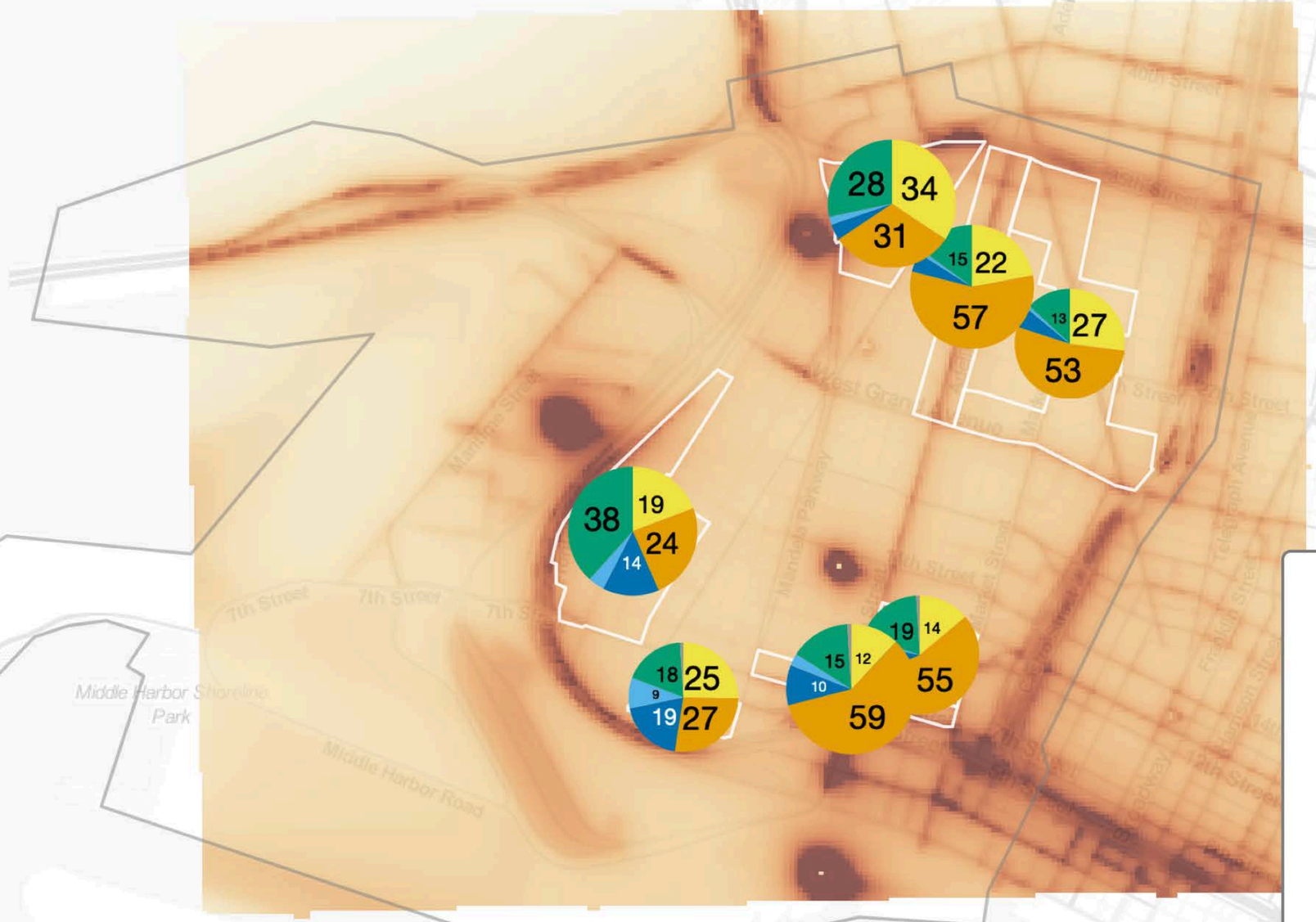
Cancer Risk

Source apportionments drill down into what's responsible



Local Impacts

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

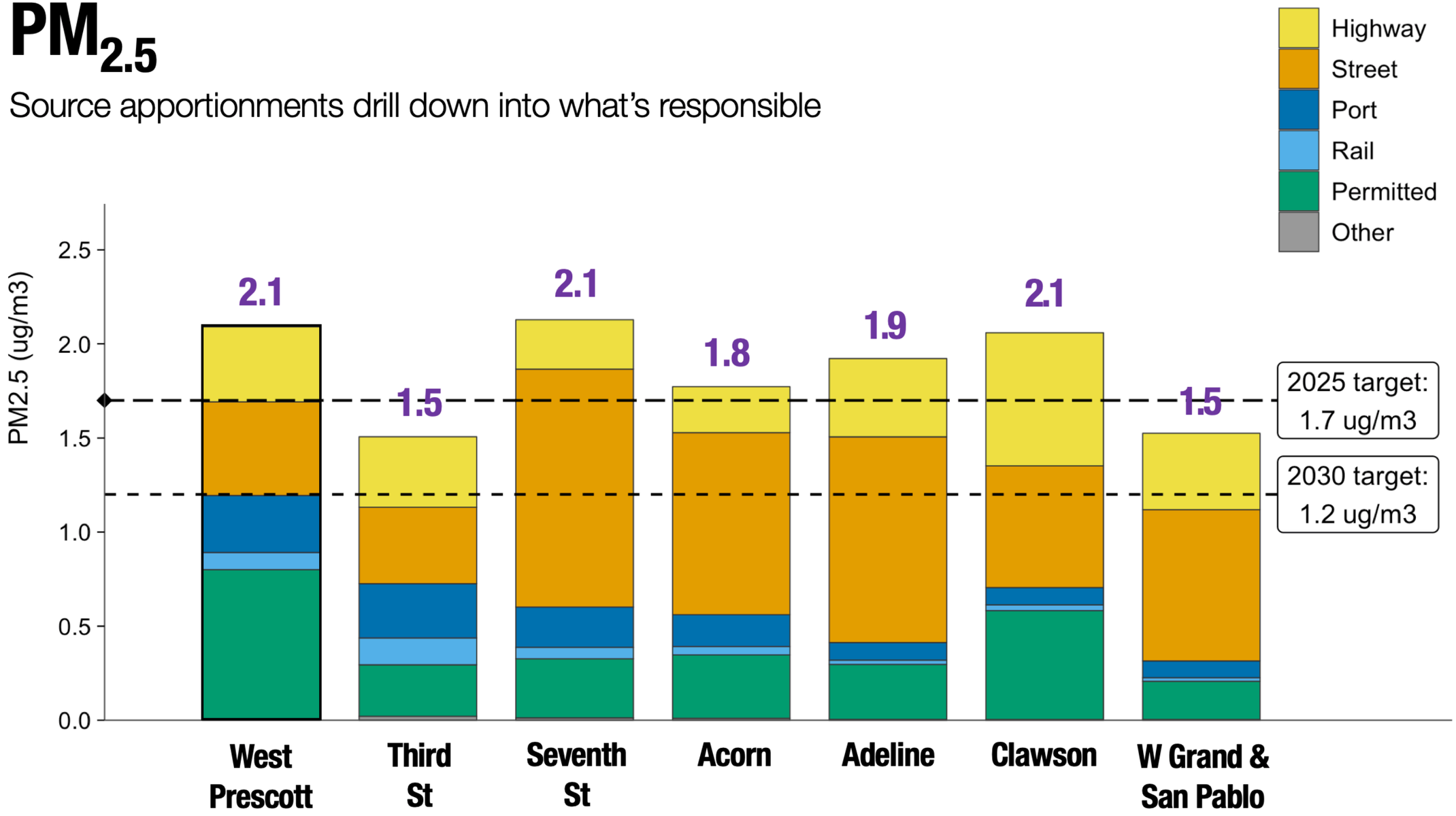


Highway
Street
Port
Rail
Permitted
Other

$PM_{2.5}$
4.0 µg/m³
3.0
2.0
1.0
0

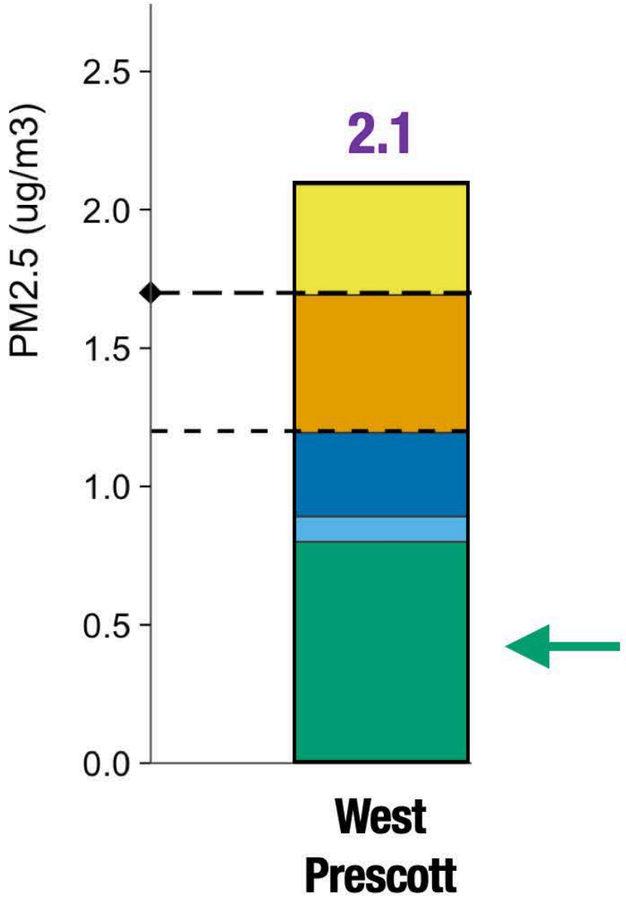
$PM_{2.5}$

Source apportionments drill down into what's responsible



$PM_{2.5}$

Source apportionments drill down into what's responsible

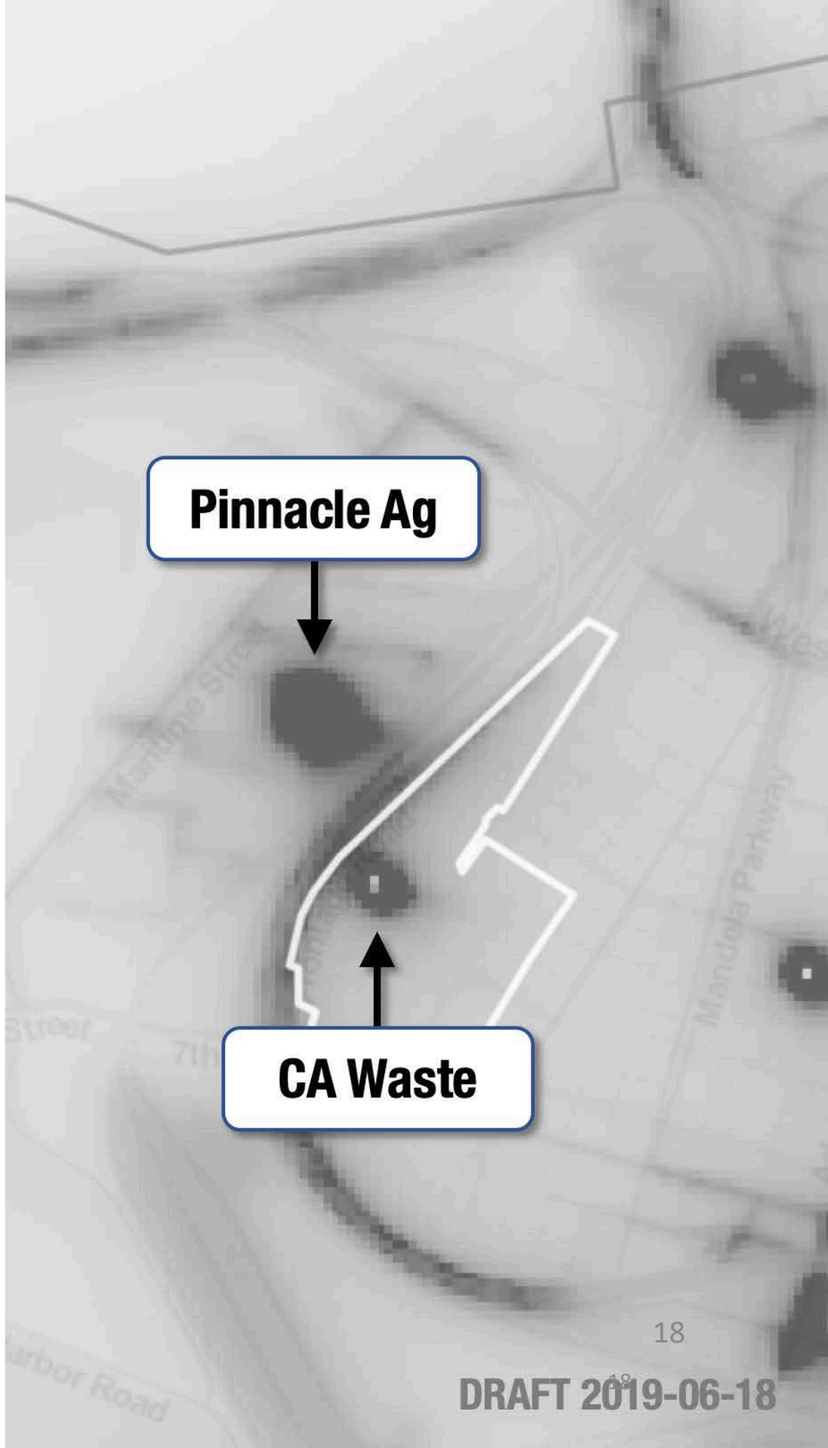


38%

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

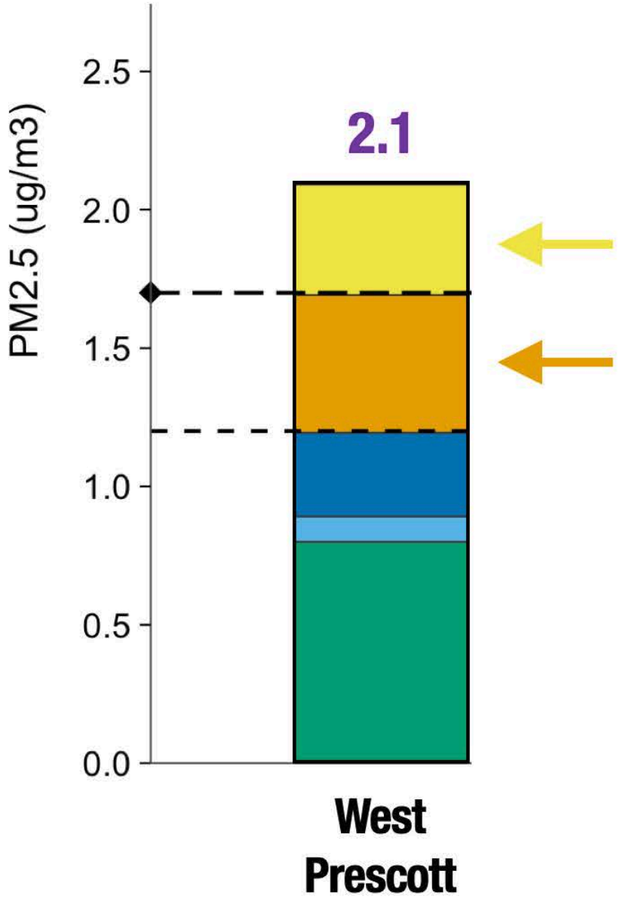
CA Waste and **Pinnacle Ag** (indicated on the map at right) account for four-fifths of that.

* $PM_{2.5}$ 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.)

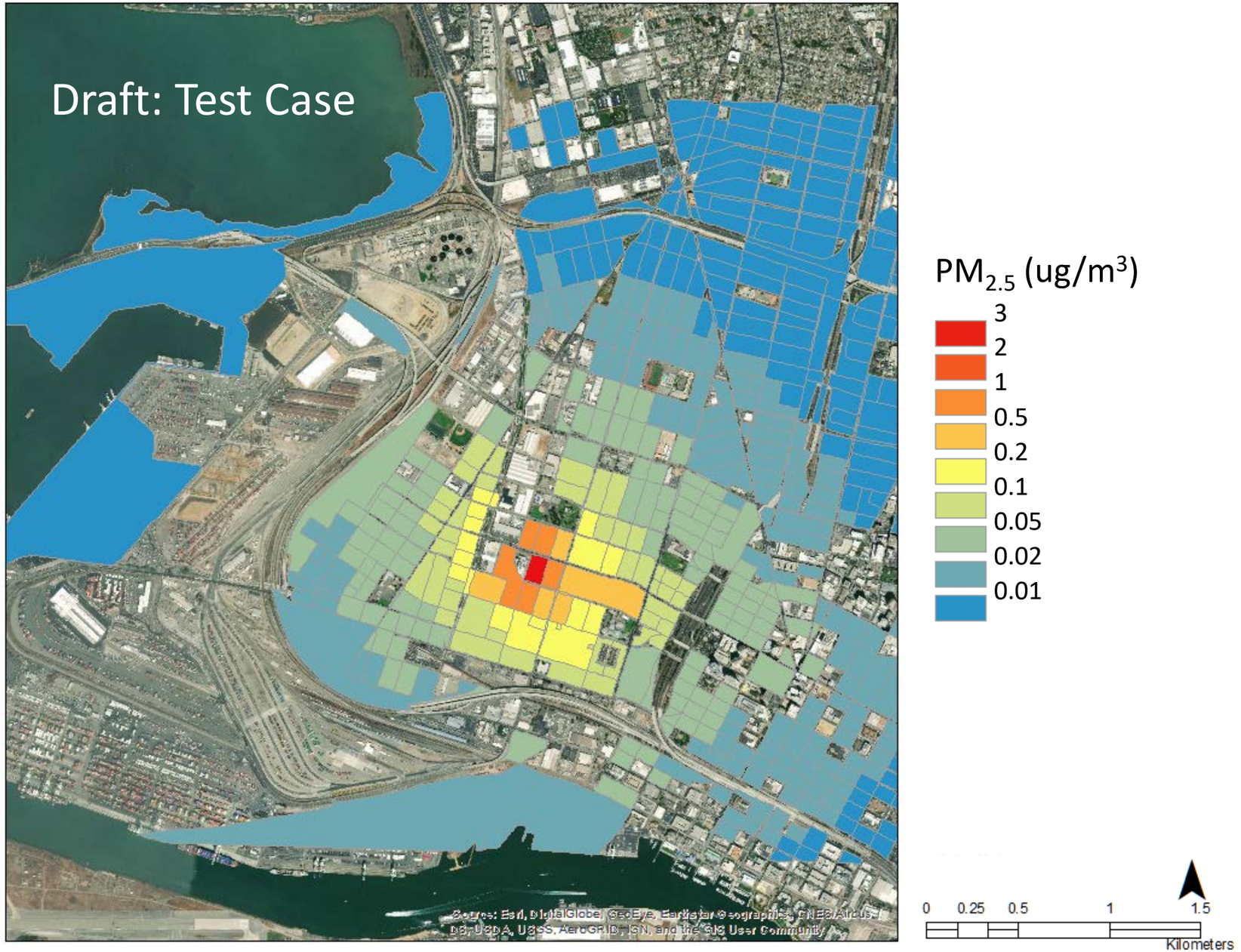
Risk-Assessment Approach for $PM_{2.5}$

- 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



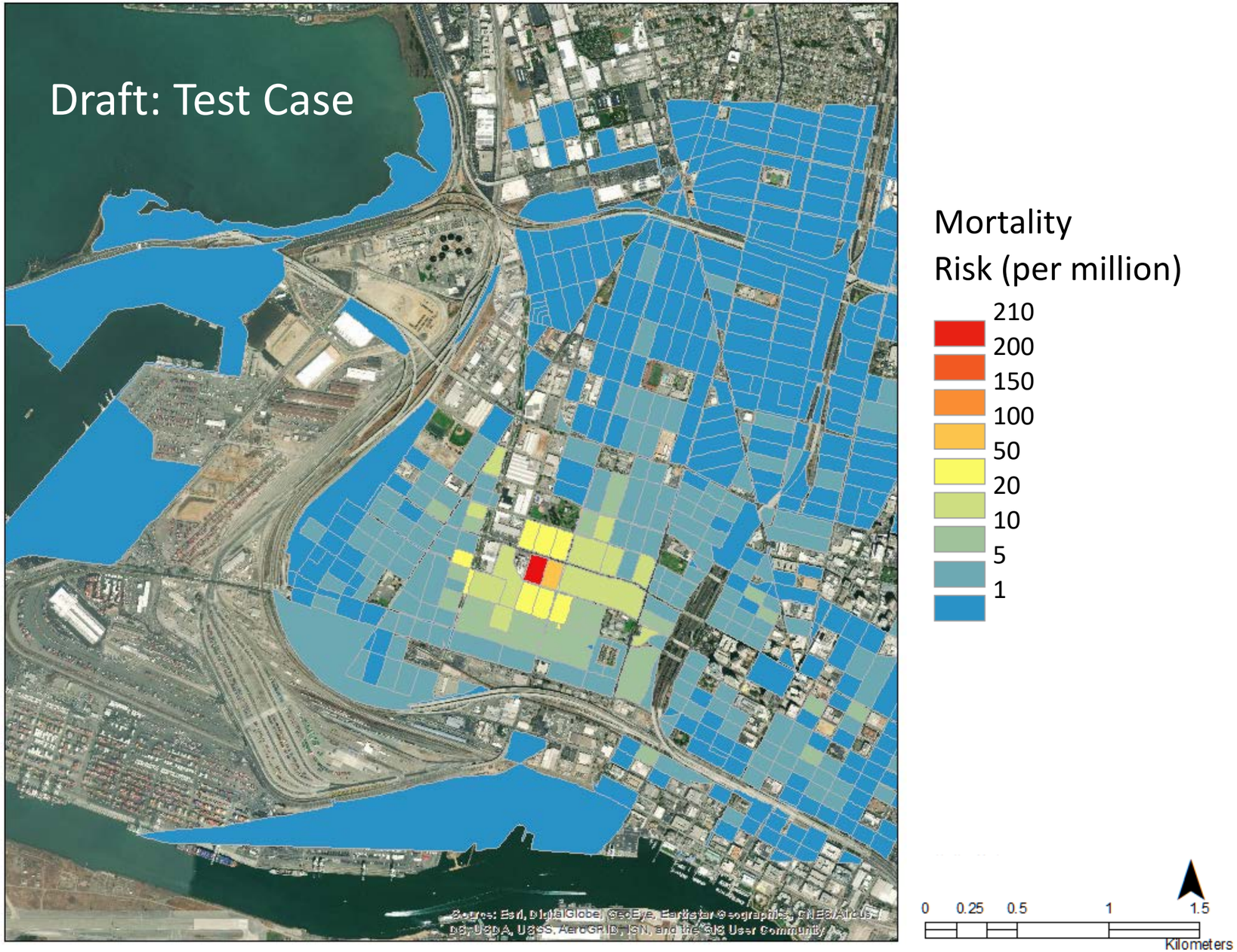
Bay Area Air Quality Management District

DRAFT Risk-Assessment Approach for $PM_{2.5}$

Approach similar to US EPA's BenMAP model

PM Mortality "Risk" from

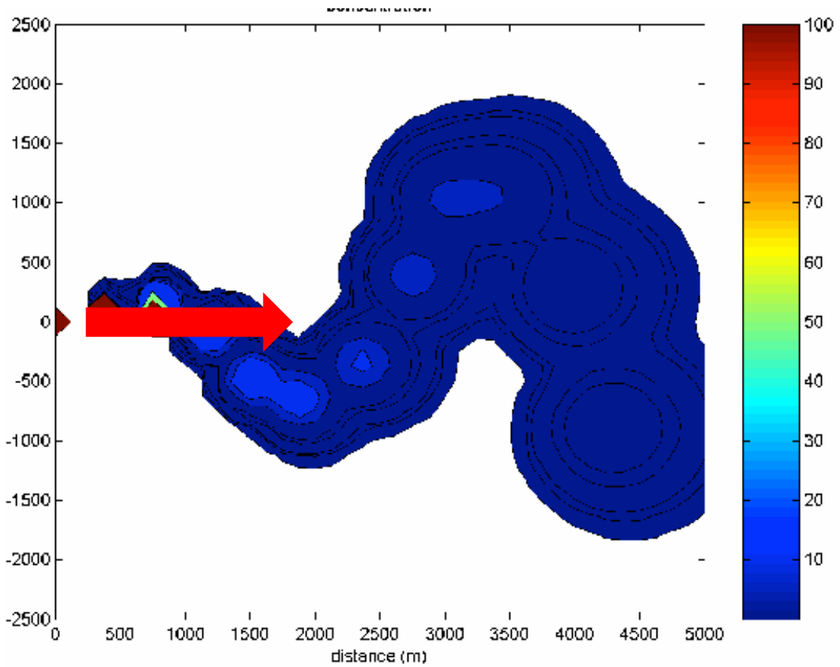
- County baseline mortality rate
- Increment in $PM_{2.5}$ concentrations
- Census block population characteristics



Bay Area Air Quality Management District

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
- District staff are currently evaluating alternative modeling approaches:
  - Sub-grid plume tracking or puff models



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

AGENDA: 6

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

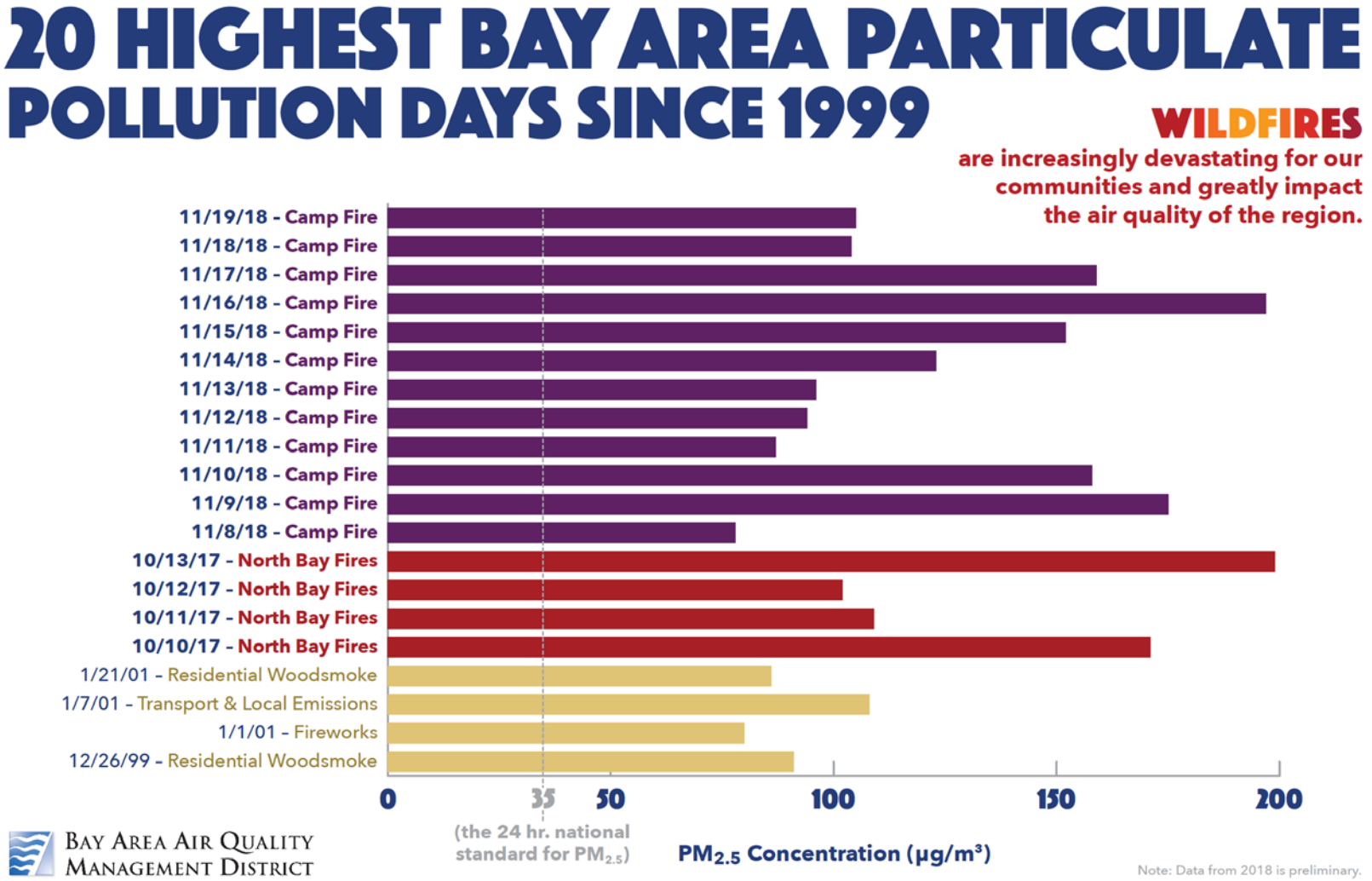
Update on Wildfire Response Efforts

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

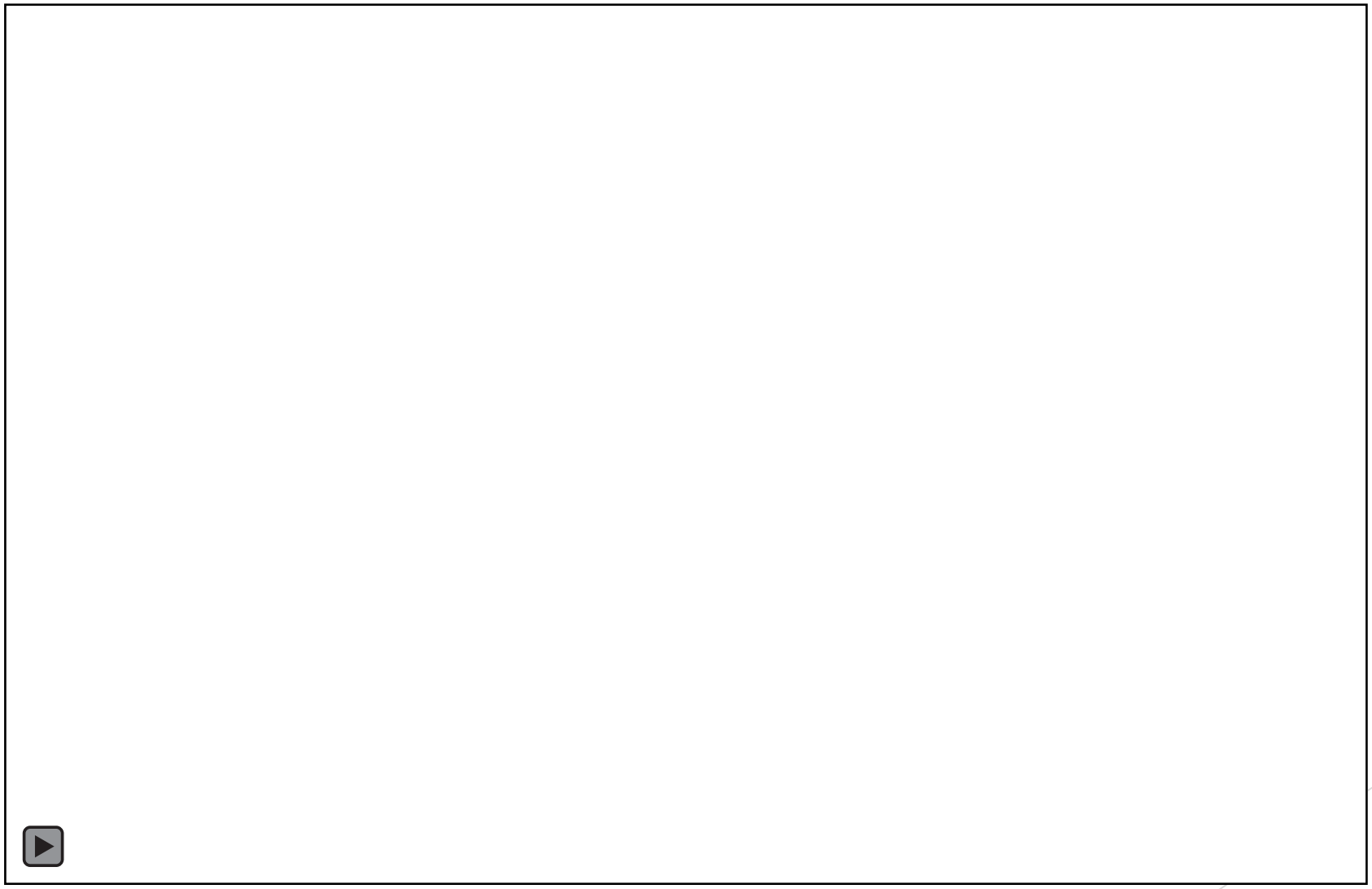
Presentation Overview

- 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

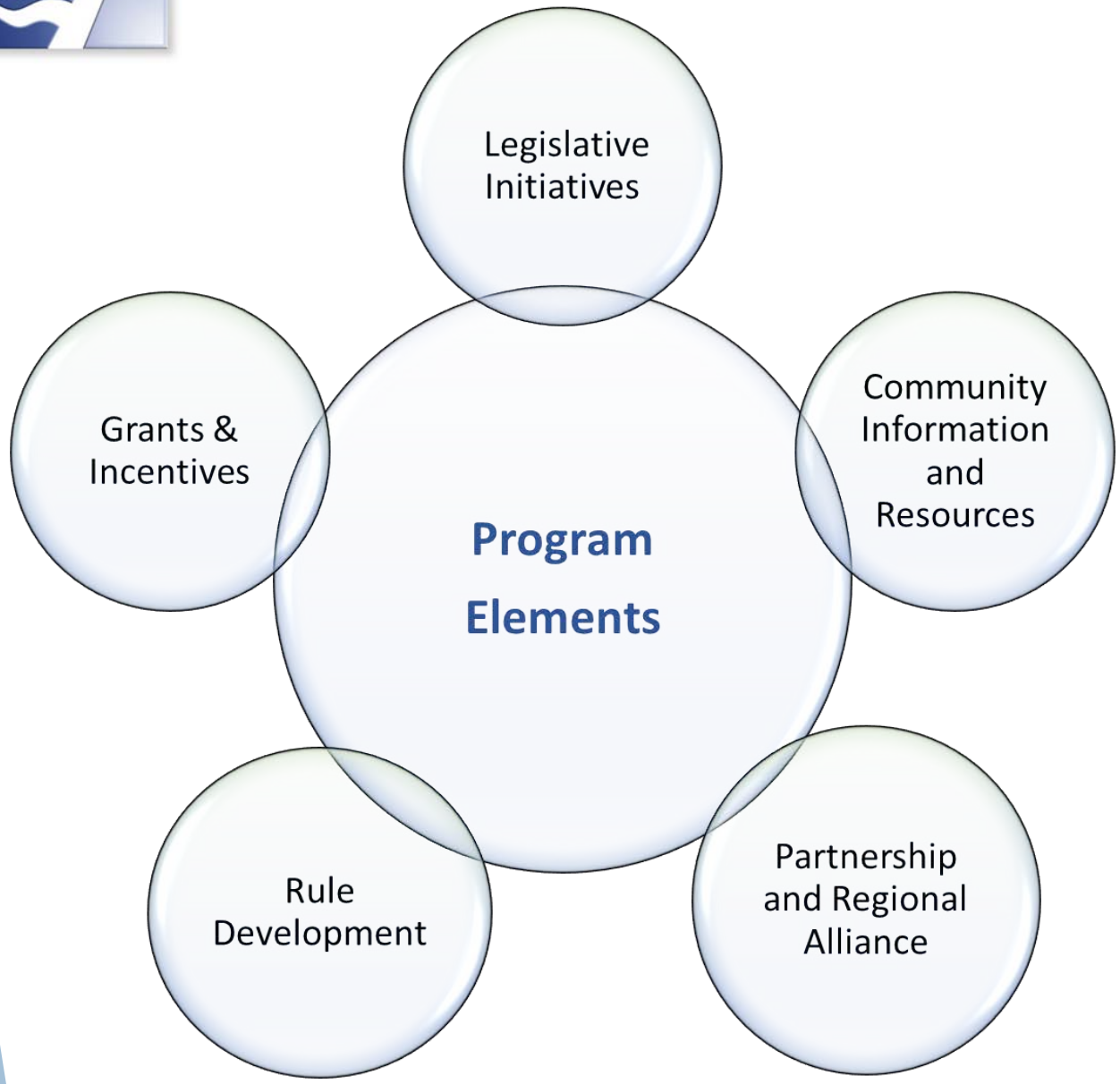


2017 North Bay Fires



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

- 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

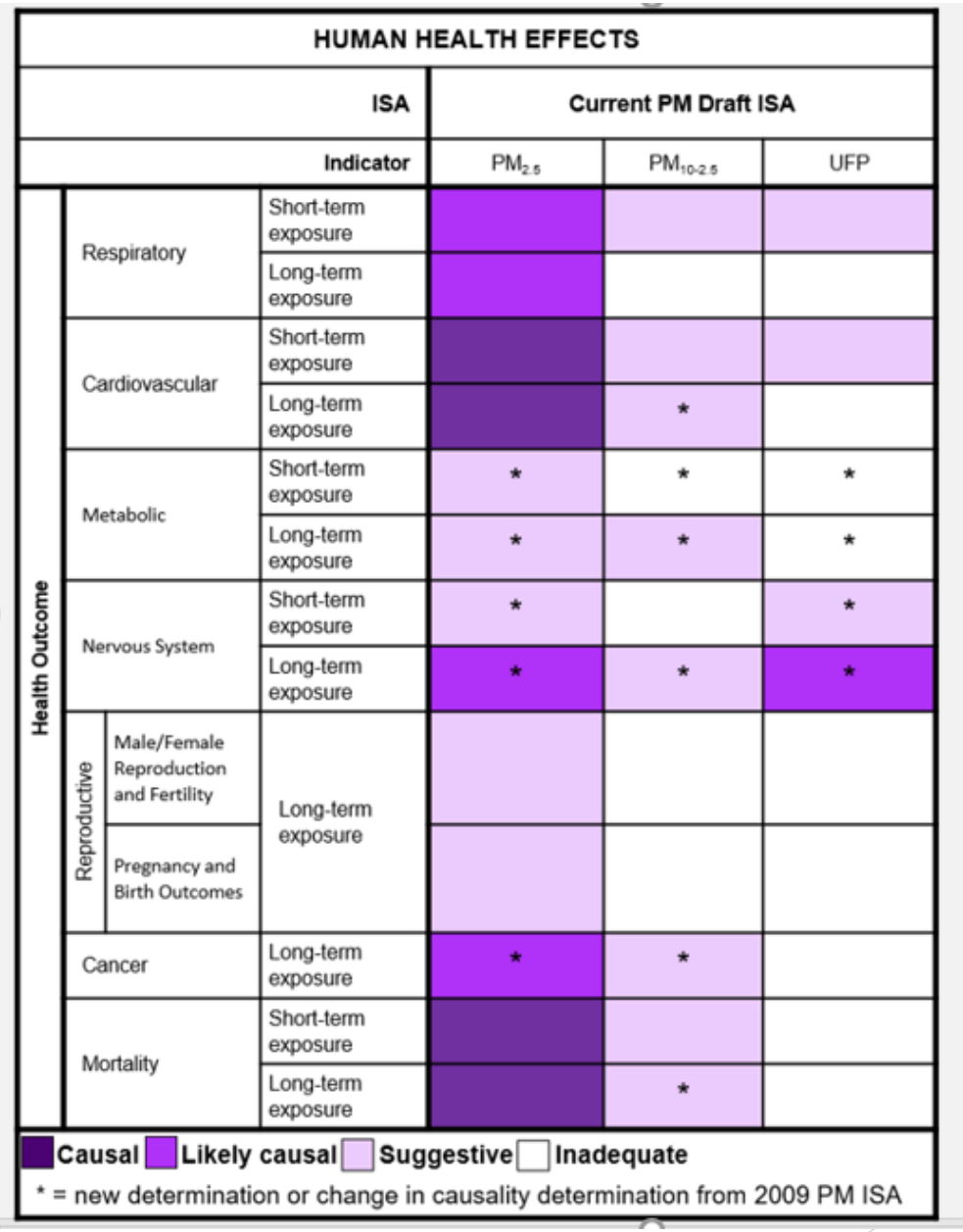
Community Information and Resources

- 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

United States Environmental Protection Agency

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			
	Reproductive: Pregnancy and Birth Outcomes	Long-term exposure			
	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?

AGENDA: 7

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

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

Council Report:
Context

- **FOCUS** – *"To Attainment and Beyond"*
  - Nearing or at attainment
  - But, more health benefits to be had
- **NEXT**
  - What are the next best things to do?
  - How do we most move the public health needle?
    - For everyone in the Bay Area
    - Especially for those in highest-risk communities (AB 617)
- **KEY**
  - Particulate matter (PM) is dominant health risk driver for both criteria pollutants and air toxics.

Council Report:
Important Questions

- Are current PM standards sufficiently health protective?
- What's the bullseye in the clean air target? How clean is clean enough?
- How will we know when we get to the target? What metrics should we use to track progress?
- How do we combine criteria pollutants and toxics? Cancer and non-cancer health endpoints? Short- and long-term effects?
- How can we make sure everyone is treated fairly?
- How can we ensure that everyone breathes clean air?
- What are the most important actions that can be taken now? And, in the future?

Council Report:
Best Science

- **USEPA**
  - Draft PM Integrated Science Assessment (PM ISA) in October 2018
  - Accelerated review of PM standards by December 2020
  - But: CASAC reconfigured, deemphasis of science backgrounds
    - PM Review Panel disbanded
    - Highly critical of draft PM ISA
      - "Lack of comprehensive, systematic review"
      - "Lack of scientific method"
      - "Use of unverifiable opinions"
      - "Lack of scientific support"
- **IMPLICATIONS**
  - District must develop its own assessment of the best science
    - Last PM ISA done ten years ago in 2009
    - Much research since then, stronger health evidence, additional health concerns (e.g., UFP, neurological effects, cancer)

Council Report:
Best Science

- **Draft PM Integrated Science Assessment**
  - Presentation by Jason Sacks, USEPA Assessment Lead
    - AC meeting on March 11th
- **Highlights**
  - 1,879 pages
  - Dozens more recent research papers since 2009 PM ISA
  - Stronger evidence for PM health effects
    - **CAUSAL**: mortality, cardiovascular effects, heart disease, stroke
    - **LIKELY CAUSAL**: respiratory effects (e.g., asthma and COPD exacerbation, ED visits, respiratory mortality, impaired lung function)
  - New conclusions
    - **LIKELY CAUSAL:** Cancer
    - **LIKELY CAUSAL:** UFP, nervous system effects
    - Children and nonwhite populations at disproportionately increased risk

Council Report:
Best Science

- **PM Symposium**
  - Convened by Advisory Council for its late fall meeting
  - PM health experts, including state officials, local health officials, and community groups
  - Goals
    - Review new PM health research, complexities of PM characterization
    - Review District actions on PM
    - Set stage for possible District action (e.g., establishing guidelines beyond those already in effect at federal, state, and local levels)