AGENDA: 5

Air Monitoring during Incidents: Programs at the South Coast Air Quality Management District

Stationary Source and Climate Impacts Committee Meeting
November 21, 2022

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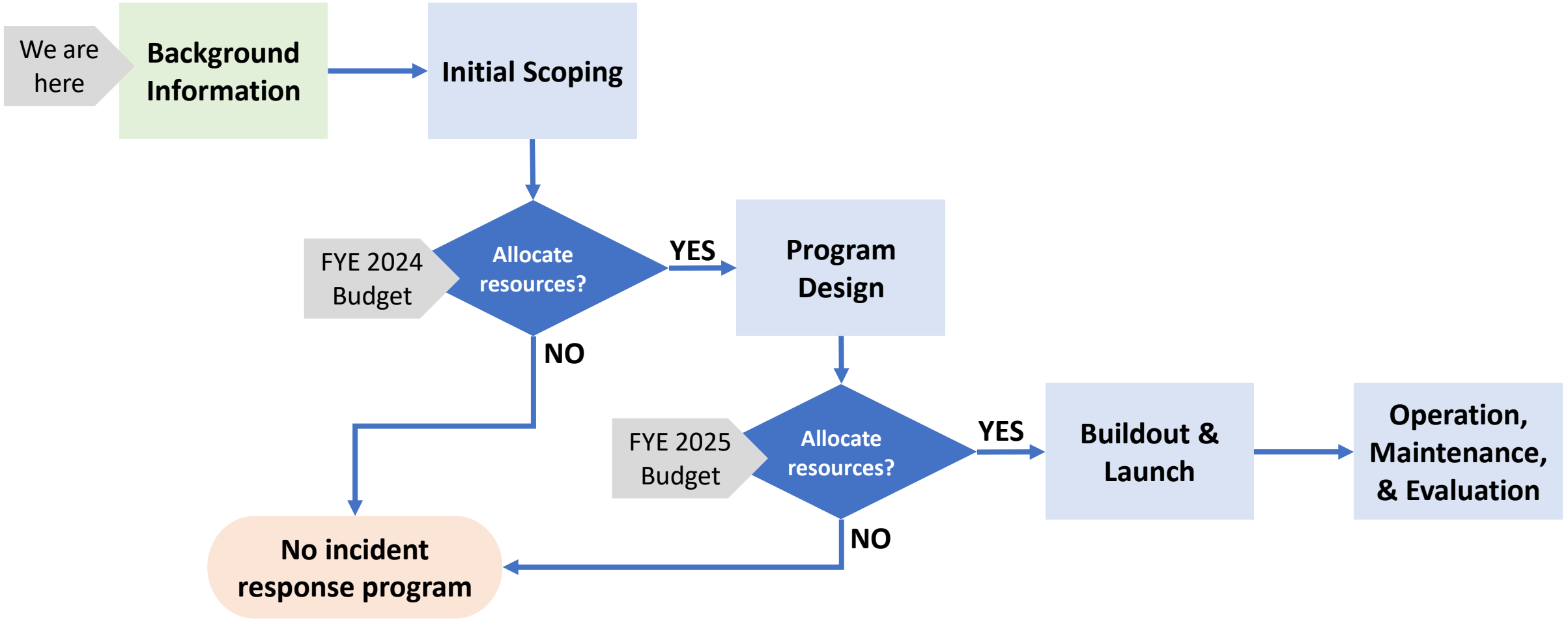
Presentation for Information Only

- No action required.

Current Measurement Capabilities are Insufficient for Incidents

- During incidents, Air District often gets requests for air monitoring from the public
- Air District does not have a comprehensive incident monitoring program
- Consider an incident monitoring program?
  - Understand community concerns and current capabilities
  - Evaluate the costs and benefits of an incident monitoring program, including relative to current backlogged work and other priorities
  - Decide whether to dedicate resources to plan and build out a program

Proposed Discussion Plan: Considering an Incident Monitoring Program



Approaches and Tools for Incident Response and Community Air Monitoring

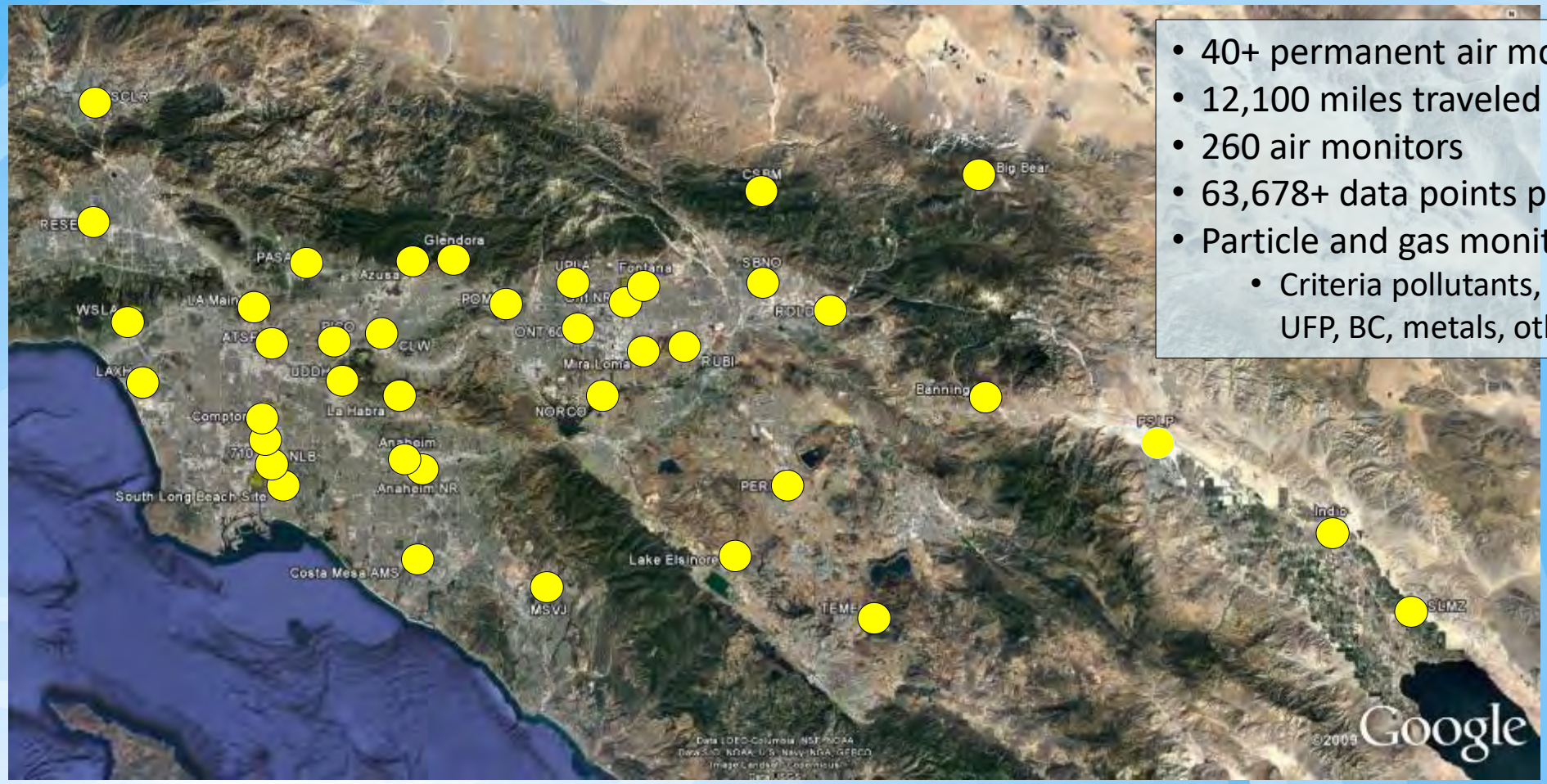
Jason Low, Ph.D.
Deputy Executive Officer
Monitoring and Analysis Division

South Coast AQMD

Cleaning The Air That We Breathe…

- Local air pollution control agency
  - Largest of the 35 local air agencies in California
  - 10,743 square miles
  - 17 million residents
- Responsibilities
  - Regulate emissions from stationary sources
  - Develop and implement plans to meet national air quality standards
  - Permit and inspect 28,400 affected businesses
  - Provide air quality information

Ambient Air Monitoring Network



- 40+ permanent air monitoring sites
- 12,100 miles traveled per week
- 260 air monitors
- 63,678+ data points per week
- Particle and gas monitoring
  - Criteria pollutants, VOCs, carbonyls, UFP, BC, metals, other air toxics

Incident Response and Community Air Monitoring Comparison

INCIDENT RESPONSE

- Initiated by request from emergency response agency and/or incident of concern
- Immediate response needed
- Support of an incident command system (if established) for evaluating acute public health concerns

COMMUNITY AIR MONITORING

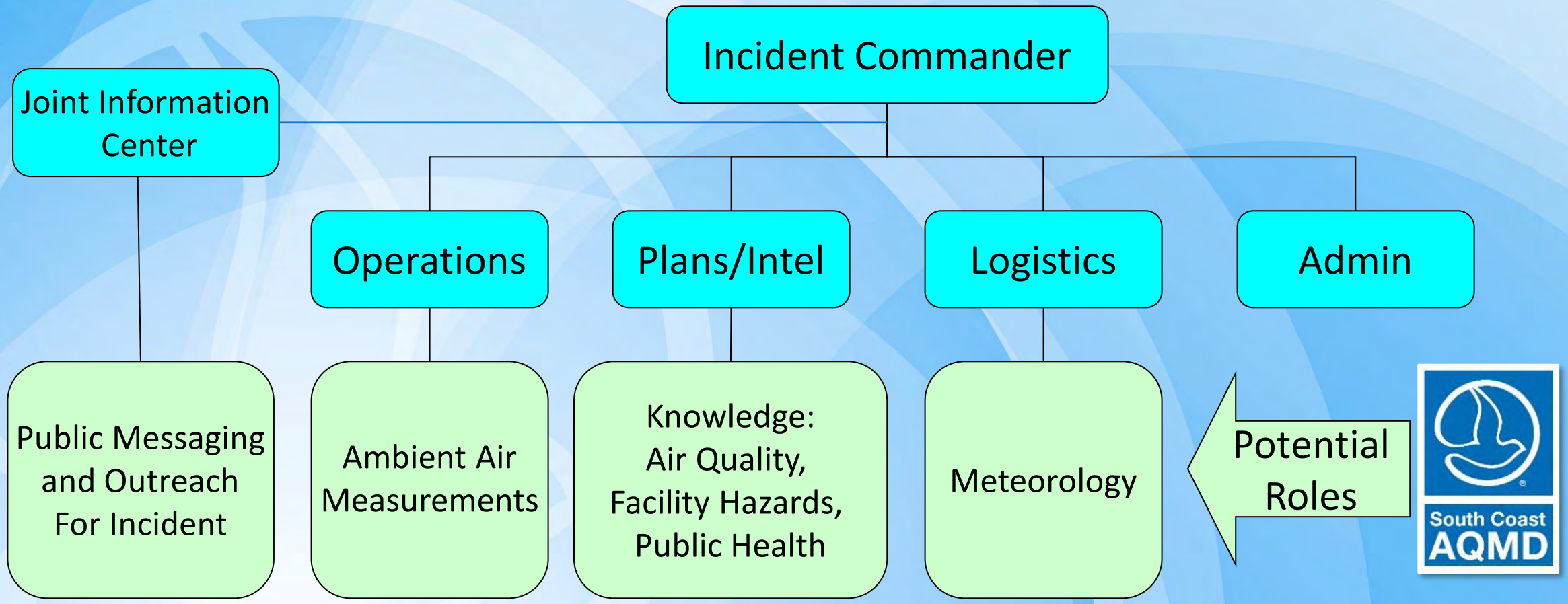
- Proactive to address existing air quality concerns from the community or agency
- Can be developed and implemented as part of an immediate or longer-term effort
- Air measurements that provide information about the air quality concern and may lead towards emissions reductions

Air Quality Incidents

Incident Response Program

- Activated by emergency response agency request and/or air quality incident
- Ready 24 hours a day / seven days a week
- Focus is on acute air quality issues
- Integrate into incident command system (if established)
  - Provide specialized technical support
  - Coordinate outreach communication with Unified Command through Joint Information Center

Incident Command System



Incident Response Operation

Standby

Training

Awareness of Incidents

Assess/ Deploy

Evaluate Incident

Interface with Incident Command

Deploy inspector on-scene

Determine if air monitoring can provide actionable data

Coordinate with senior leadership on resources

Monitoring

Deploy appropriate technology

Review data in context

Provide updates to senior leadership

Messaging

Provide summary of efforts including air monitoring data to Joint Information Center (JIC)

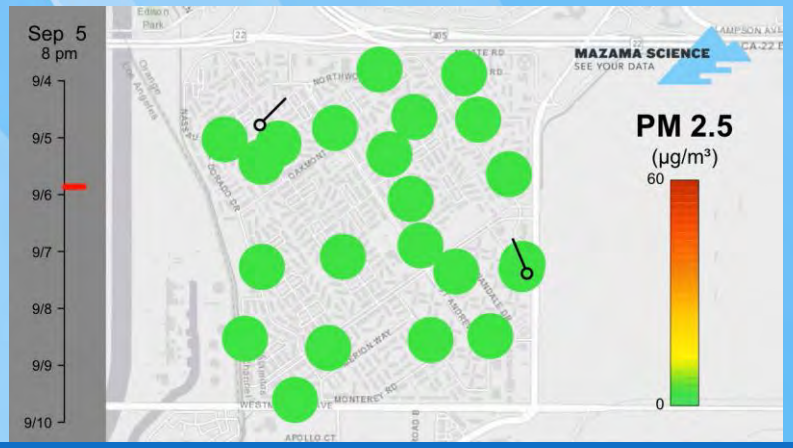
Coordinate Communication with JIC to public and stakeholders

Variety of Air Measurement Methods

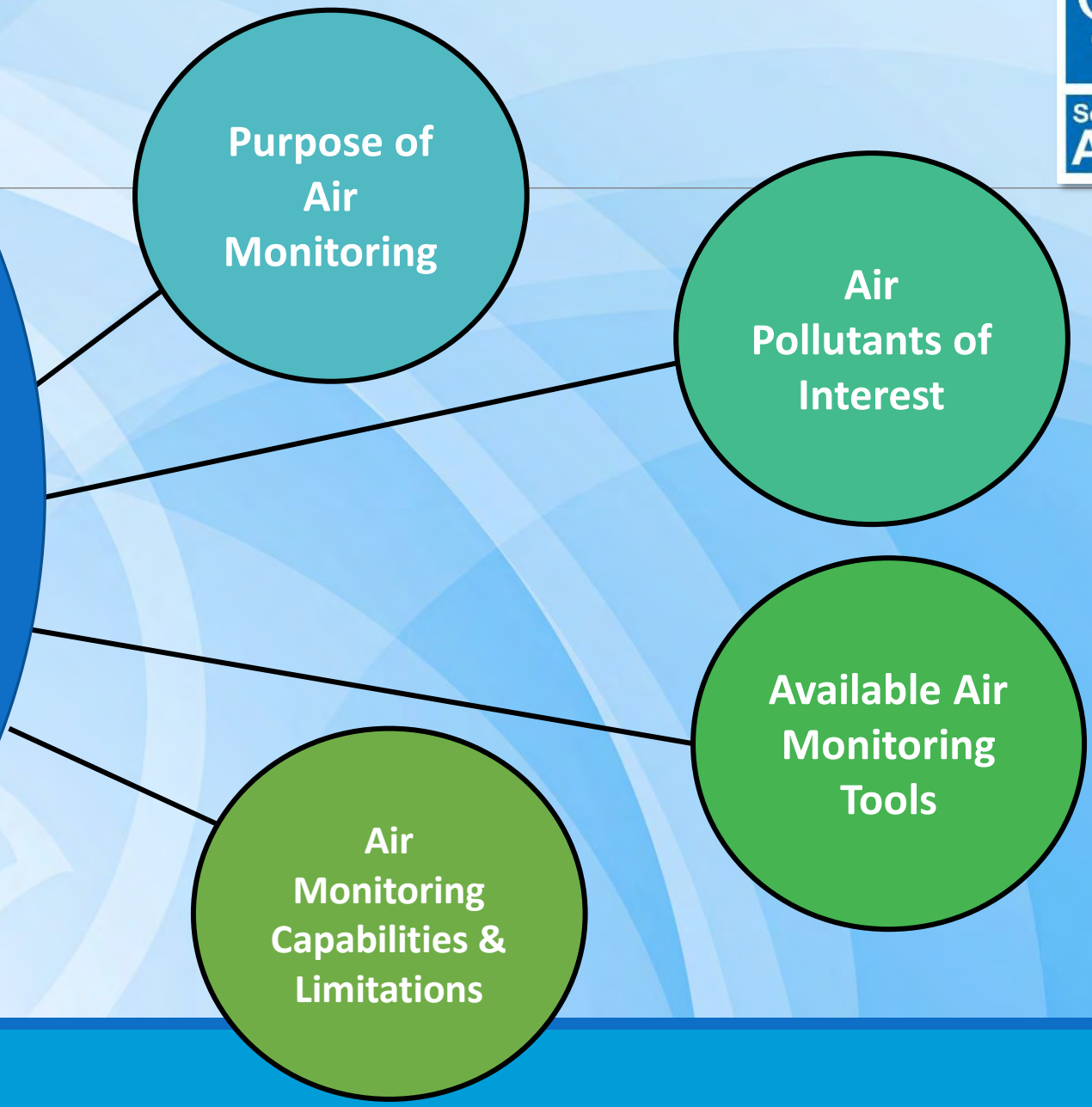
Field Sampling with Laboratory Analysis

Portable and Mobile Instrumentation

Low-Cost Sensors



How to Select the Right Tools for Air Monitoring



Characteristics of Different Measurement Methods

Pollutants	Measurement methods are typically good for single pollutant or a category of compounds
Detection Capability	How well the instrument can identify and quantify the compound (MDL, precision, accuracy, interferences)
Time Resolution	How quickly a result is obtained
Quality Assurance	How well the measurement is connected to a certified value (NIST), documentation, and training requirements

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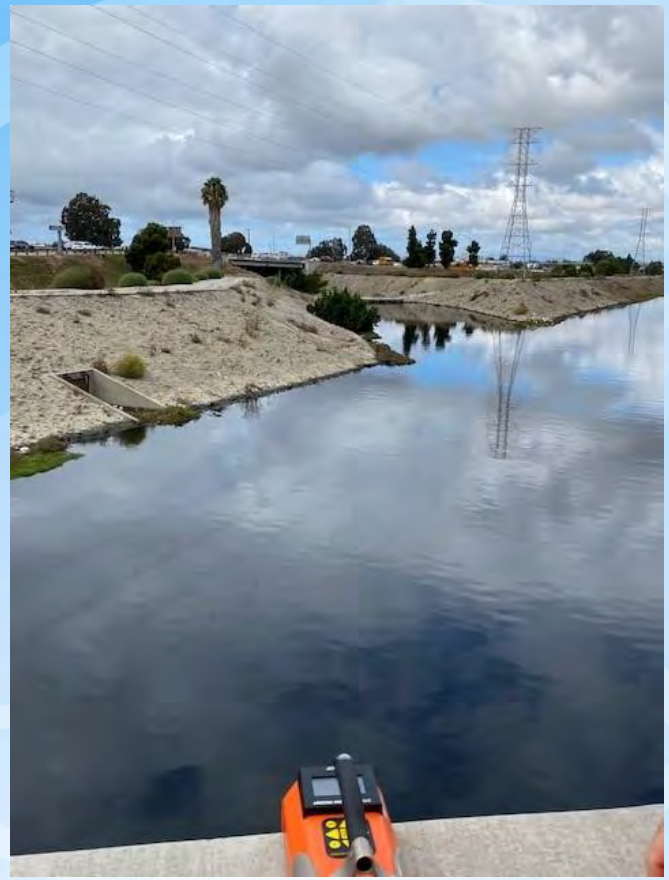
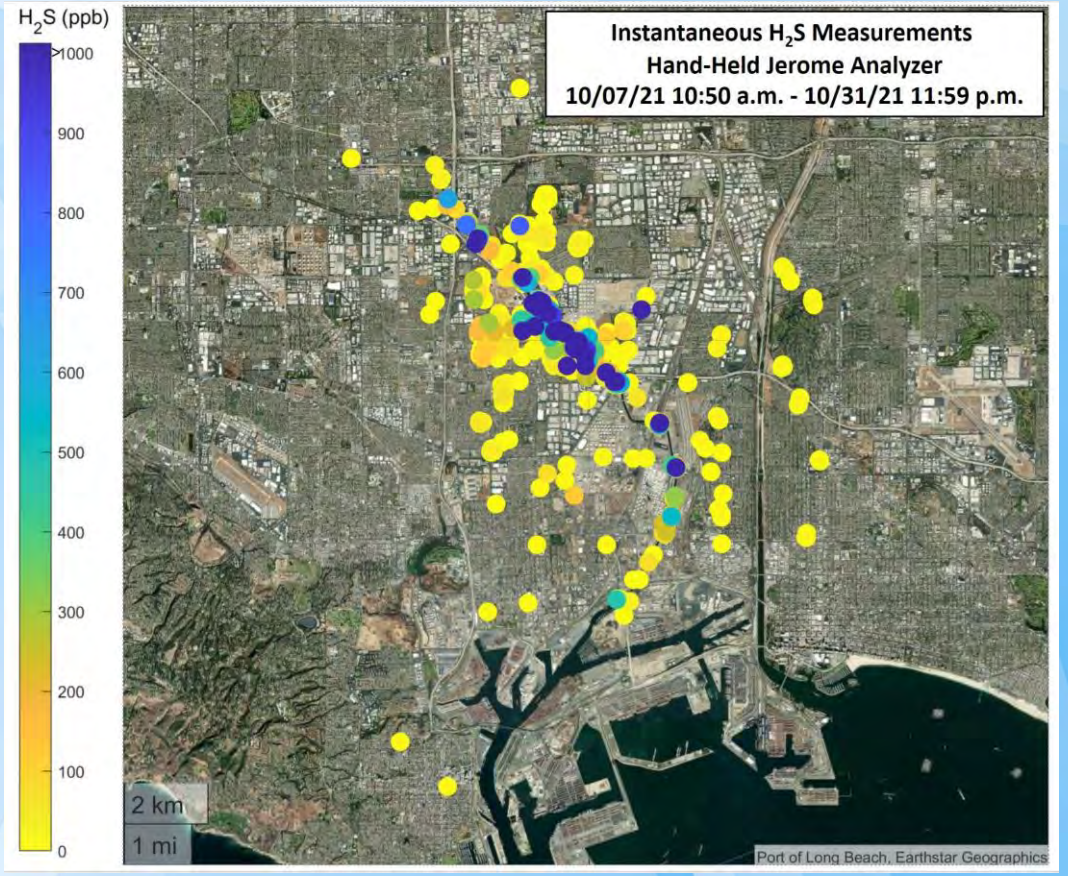
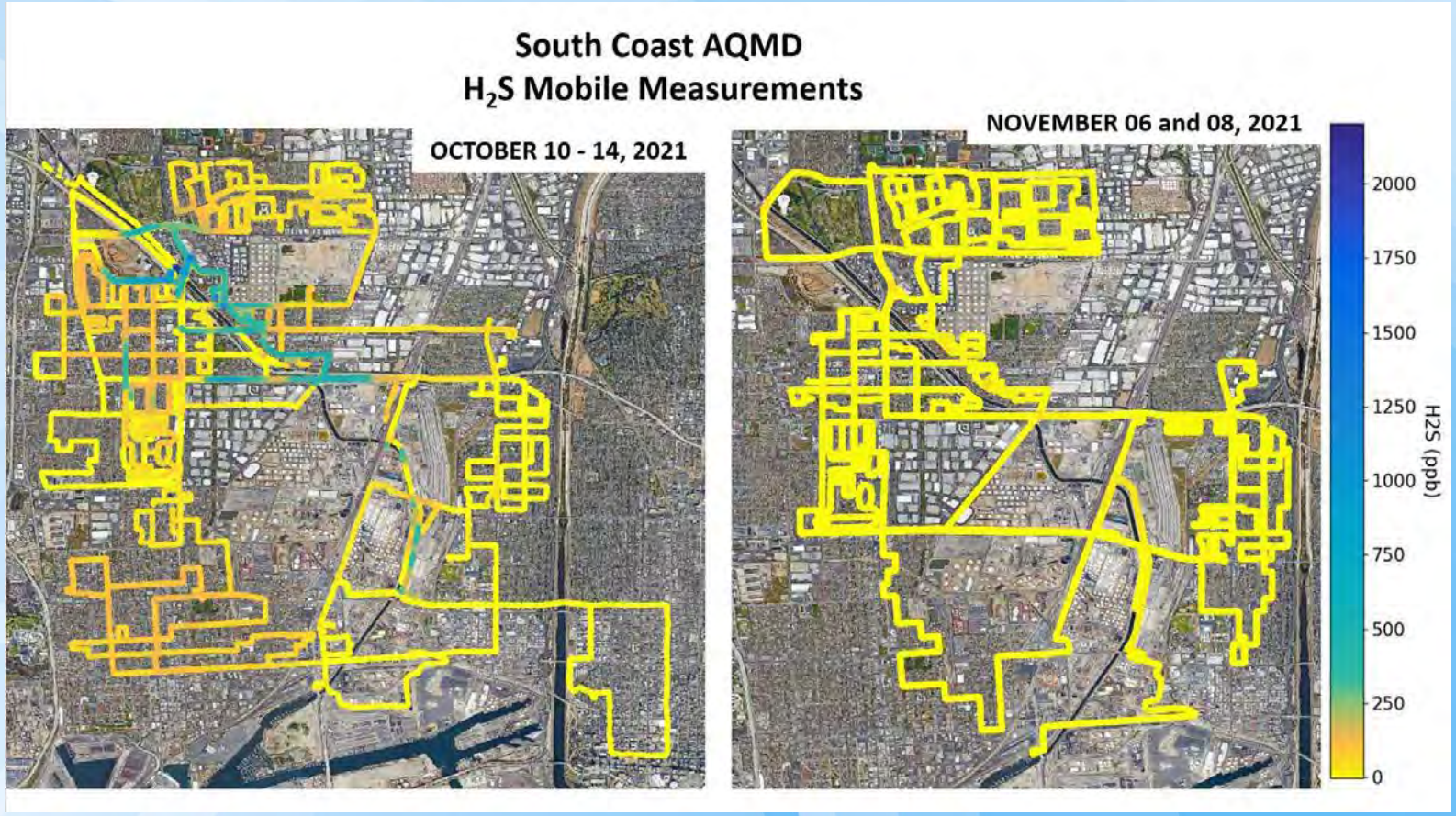
Dominguez Channel Odor Event (Portable Monitor-H2S)





Dominguez Channel Odor Event (Mobile Platform-H2S)



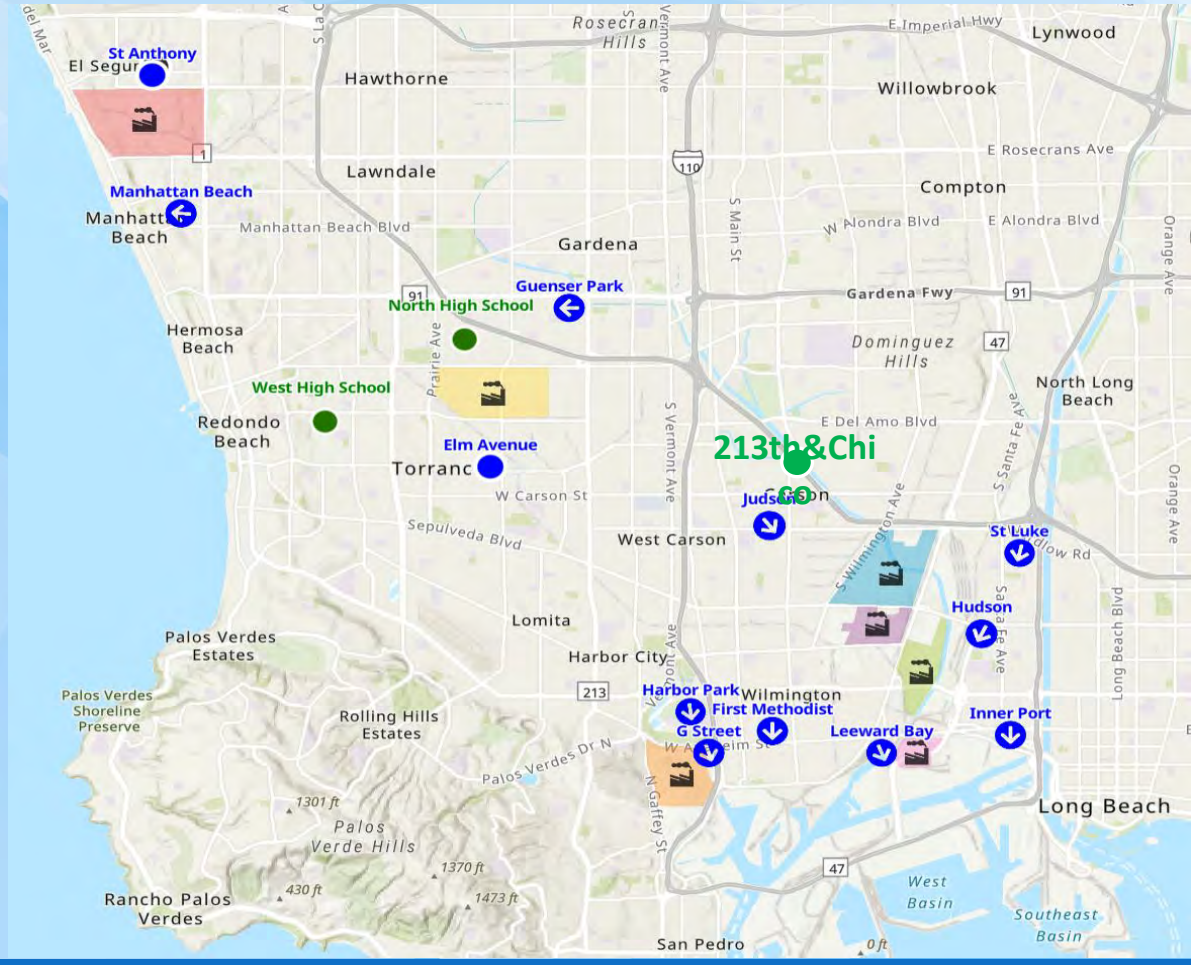
Dominguez Channel Odor Event (Stationary Sites)

Rule 1180 Fenceline and Community Air Monitoring Locations

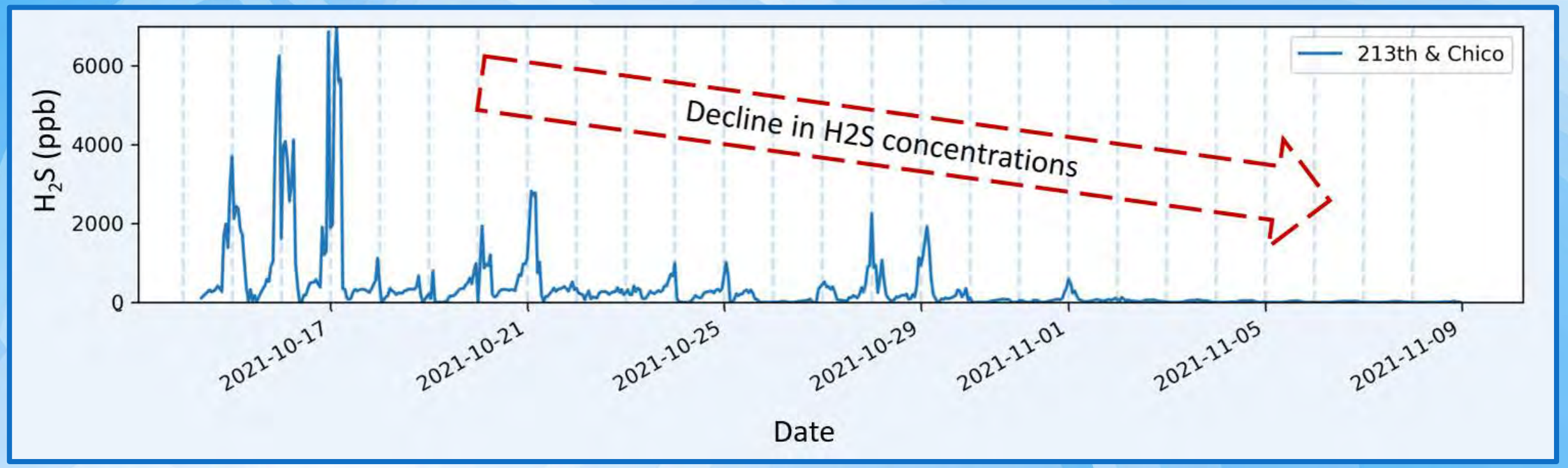
- Continuous real-time measurements of VOCs, H2S and other air pollutants
- Automatic email notifications in case of increased air pollution levels
- https://xappprod.aqmd.gov/Rule1180CommunityAirMonitoring/

New Air Monitoring Site (213th & Chico)

- Located near E 213th Street and the Dominguez channel
- Continuous real-time measurements of H2S
- Measurements started on October 14, 2021



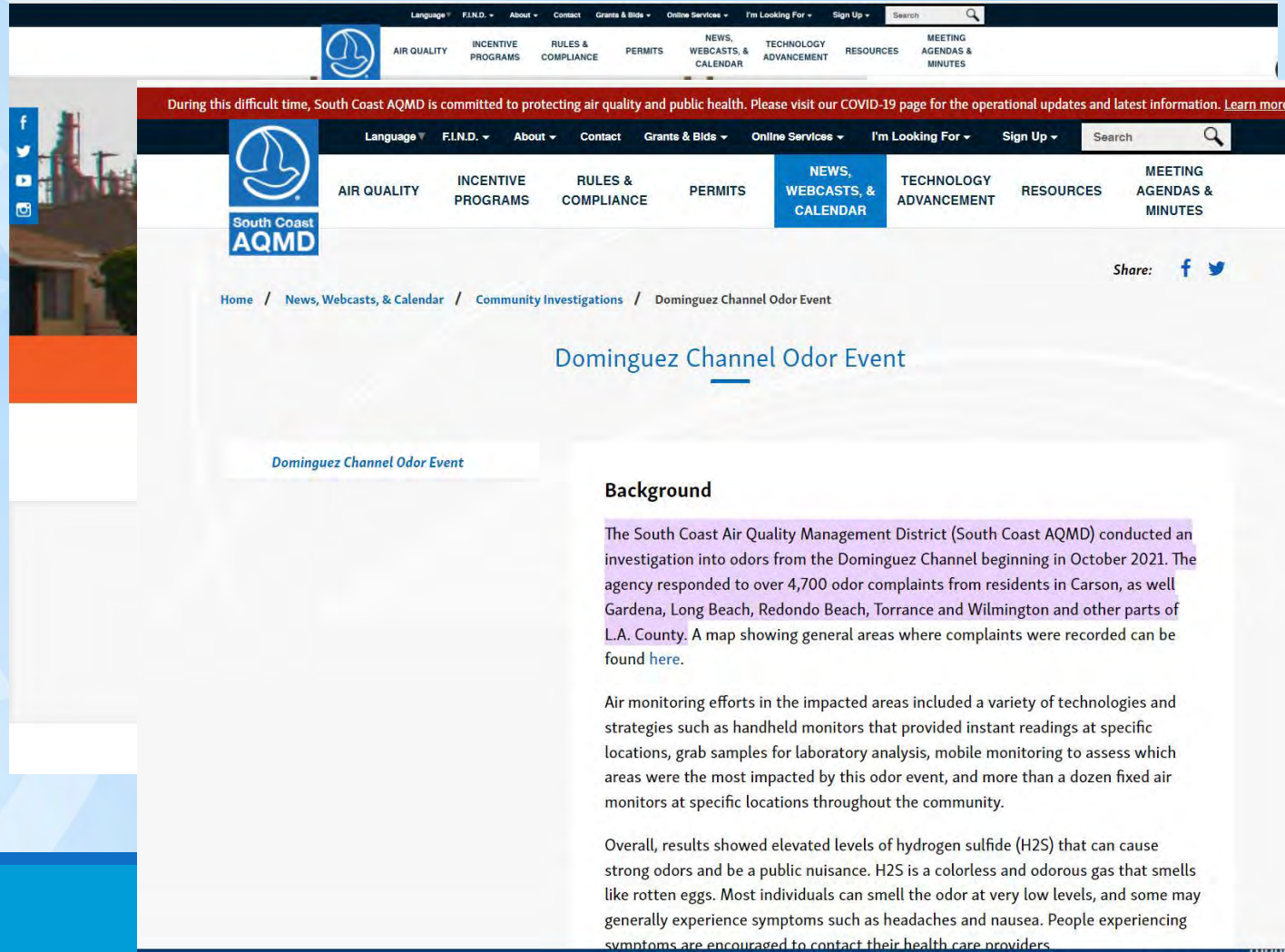
Dominguez Channel Odor Event (Temporary Site-H2S)



Dominguez Channel Odor Event (Mobile Platform-Benzene)

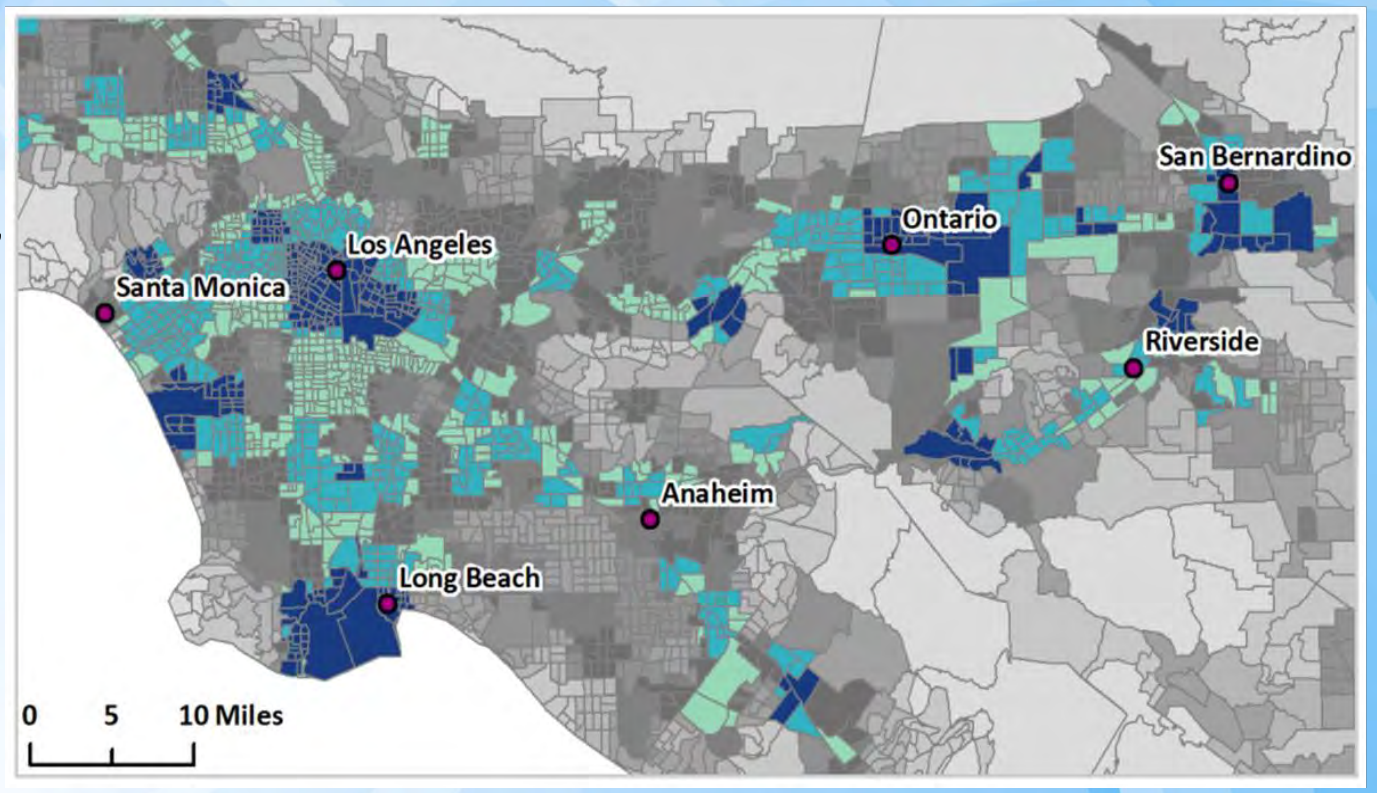
Public Communication

- Joint Information Center
- Webpage
  - Summary of Activities
  - Monitoring Data
  - Updated Advisories
- Outreach
  - Public Health Agencies
  - Elected Officials
  - AB 617 CSC
  - Press Releases
  - Media Interviews
  - Timely Social Media



Motivation for Community-Level Efforts

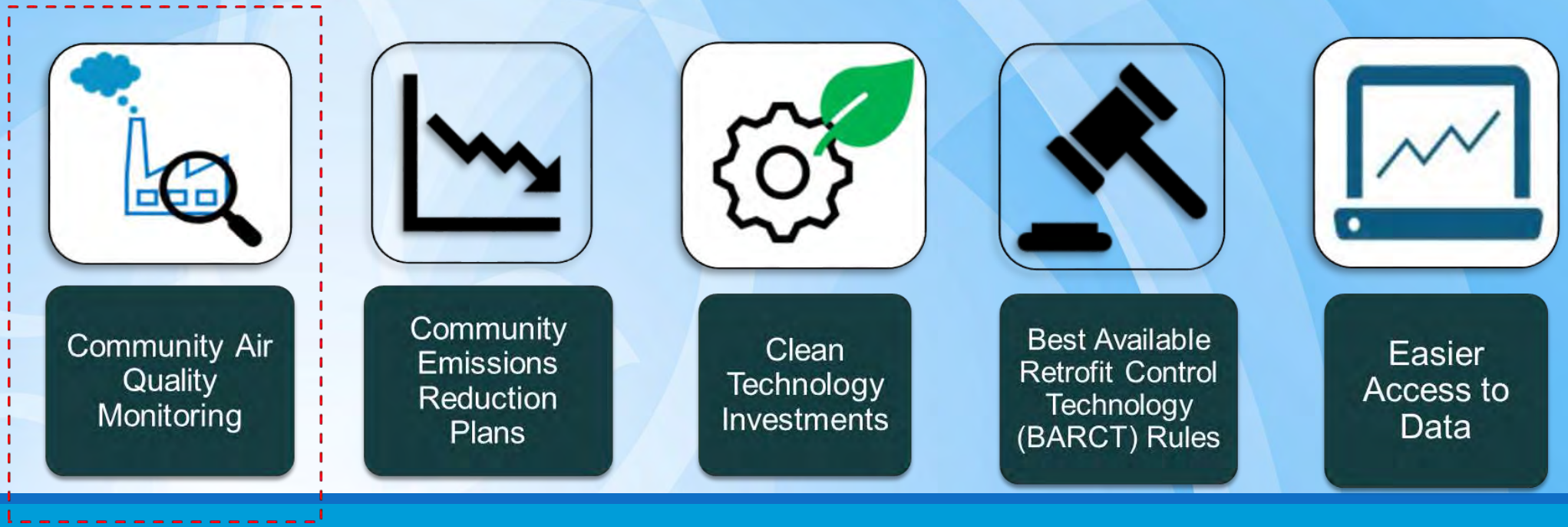
- Historical focus on regional air quality
- Significant improvement, but disproportionate burdens remain
- Need for community-level focus
- Evaluate acute and chronic air quality issues



Source: CalEnviroScreen 3.0

California State Assembly Bill (AB 617)

- Statewide program enacted in 2017 to **reduce air pollution** in communities that are disproportionately impacted by air pollution
- Community partnerships and leadership are central to the program



Air Quality Concerns and Priorities

Diesel Exhaust

Truck Traffic

Railyards

Sensitive Receptors

Air Toxics

Refineries

Metal Processing Facilities

Oil Wells

Auto Body Shops

Odorous Compounds

Rendering Facilities

Waste Transfer Stations

Criteria Pollutants

Cement Batch Plants

Dust

...and more!

Community Air Monitoring Objectives

01

Better understand emission sources, pollutants of interest and their levels and establish baseline

02

Look at levels of pollution at the community level for providing information on further action

03

Support development and implementation of emissions reduction strategies

04

Provide air pollution data to the general public

General Air Monitoring Approach

Mobile Monitoring

- Survey large areas
- Identify hotspots and unknown sources
- Support inspections and enforcement actions
- Inform emission reduction efforts

Fixed Monitoring

- Provide more information about possible sources
- Assess levels in community
- Support emission reduction strategies
- Track progress

Sensors

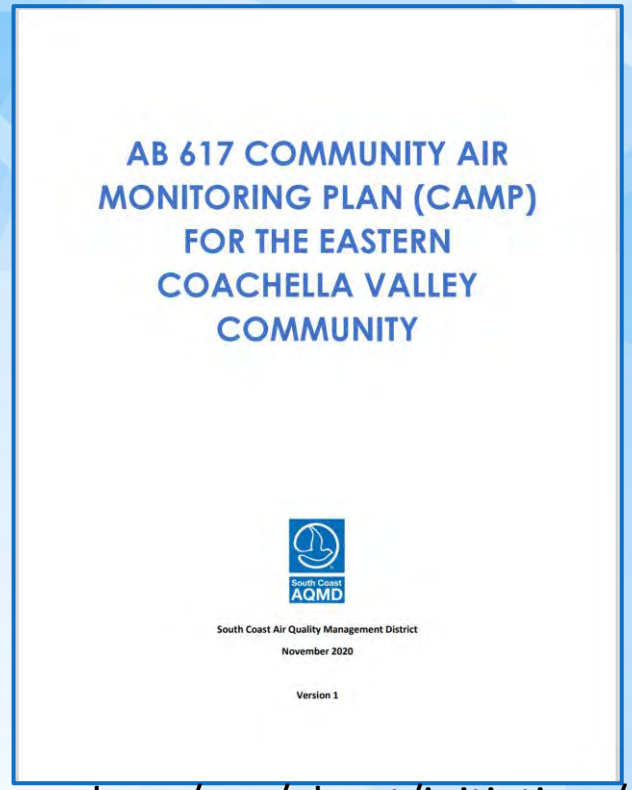
- Provide more information about how levels vary within the community
- Complement other monitoring strategies
- Engage the community in air pollution measurement

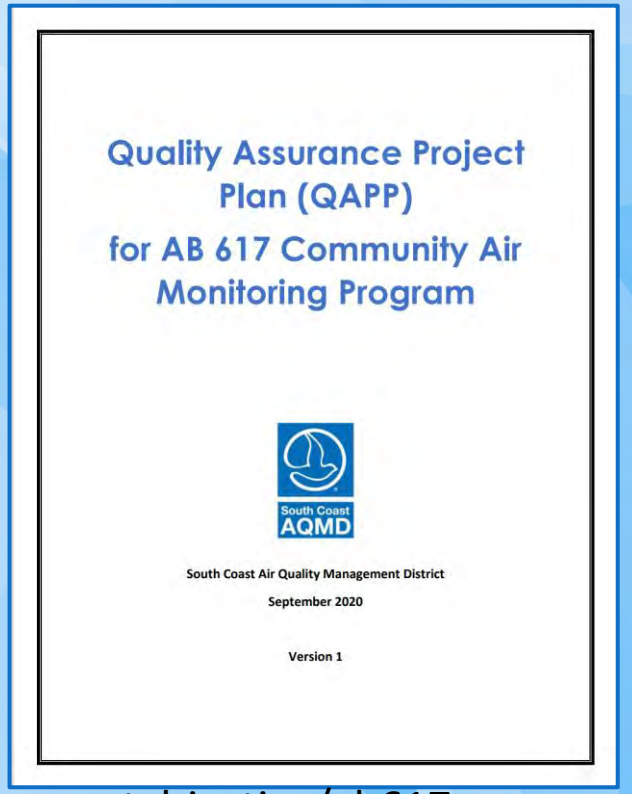
Comprehensive and Purposeful Air Monitoring





Community Air Monitoring Plans





http://www.aqmd.gov/nav/about/initiatives/environmental-justice/ab617-134/ab-617-community-air-monitoring

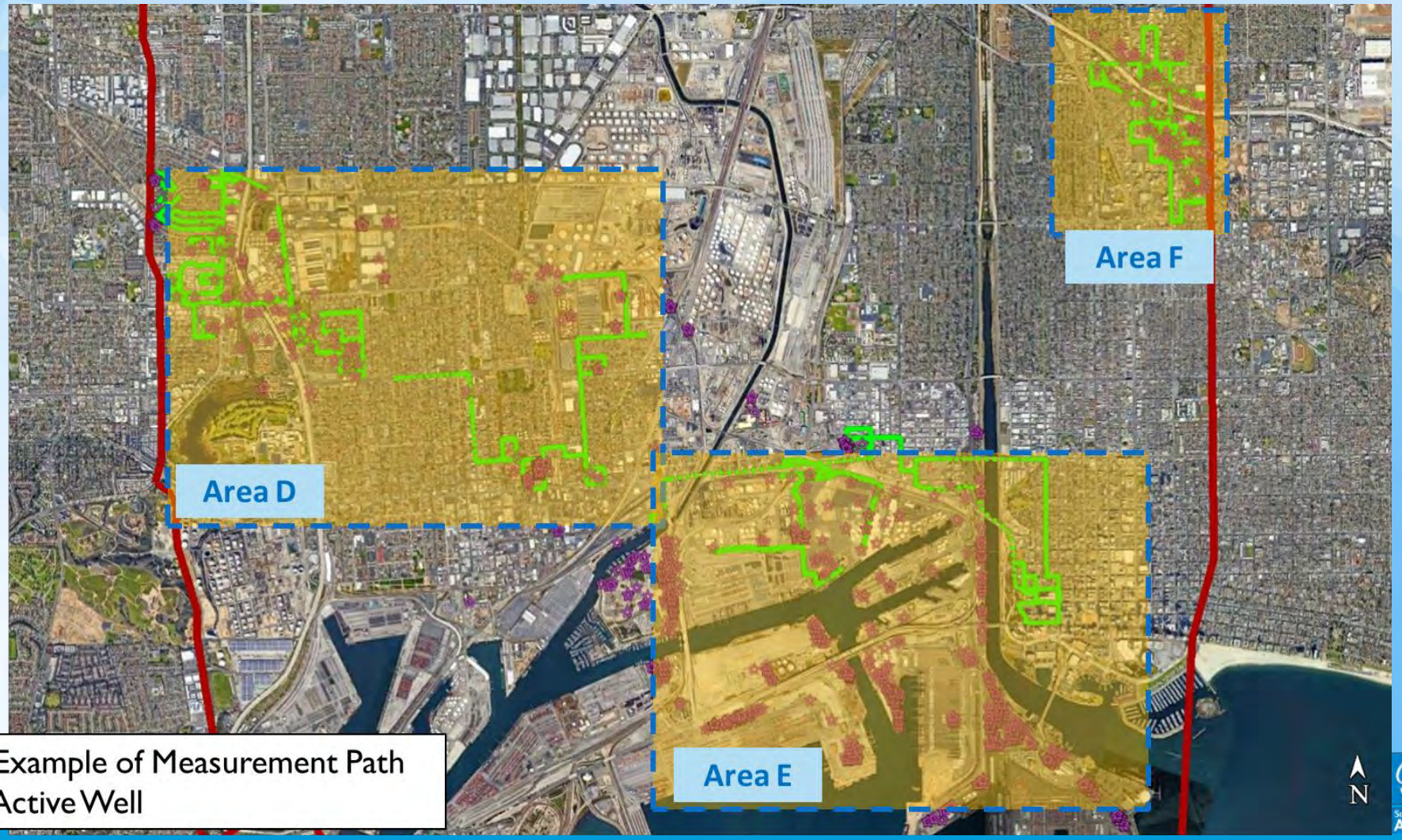
Community Air Monitoring Example: Oil Wells

Wilmington, Carson, West Long Beach Community

- Purpose of Air Monitoring
  - Identify Leaks and High Emitting Oil Wells
  - Support Enforcement Actions
  - Assess Community Impact
- Target Air Pollutants
  - Methane, VOCs, Alkanes
- Air Monitoring Solution
  - Optical Remote Sensing Van
  - Optical Gas Imaging Camera

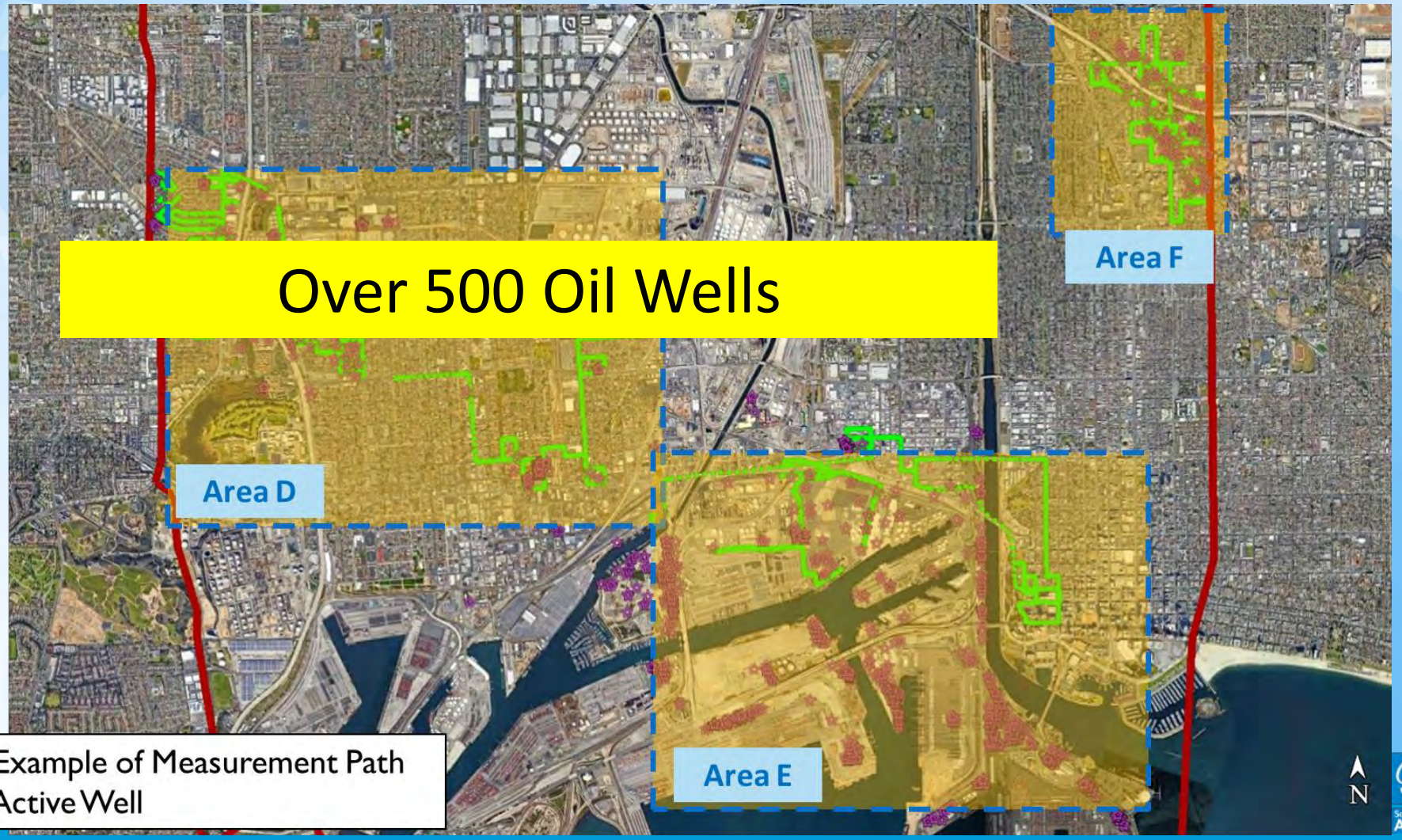
Oil Wells

Wilmington, Carson, West Long Beach Community



Oil Wells

Wilmington, Carson, West Long Beach Community



Oil Wells

Wilmington, Carson, West Long Beach Community

Area D - May 3, 2022

Total Alkanes Oil Wells Benzene

Oil Wells

Wilmington, Carson, West Long Beach Community

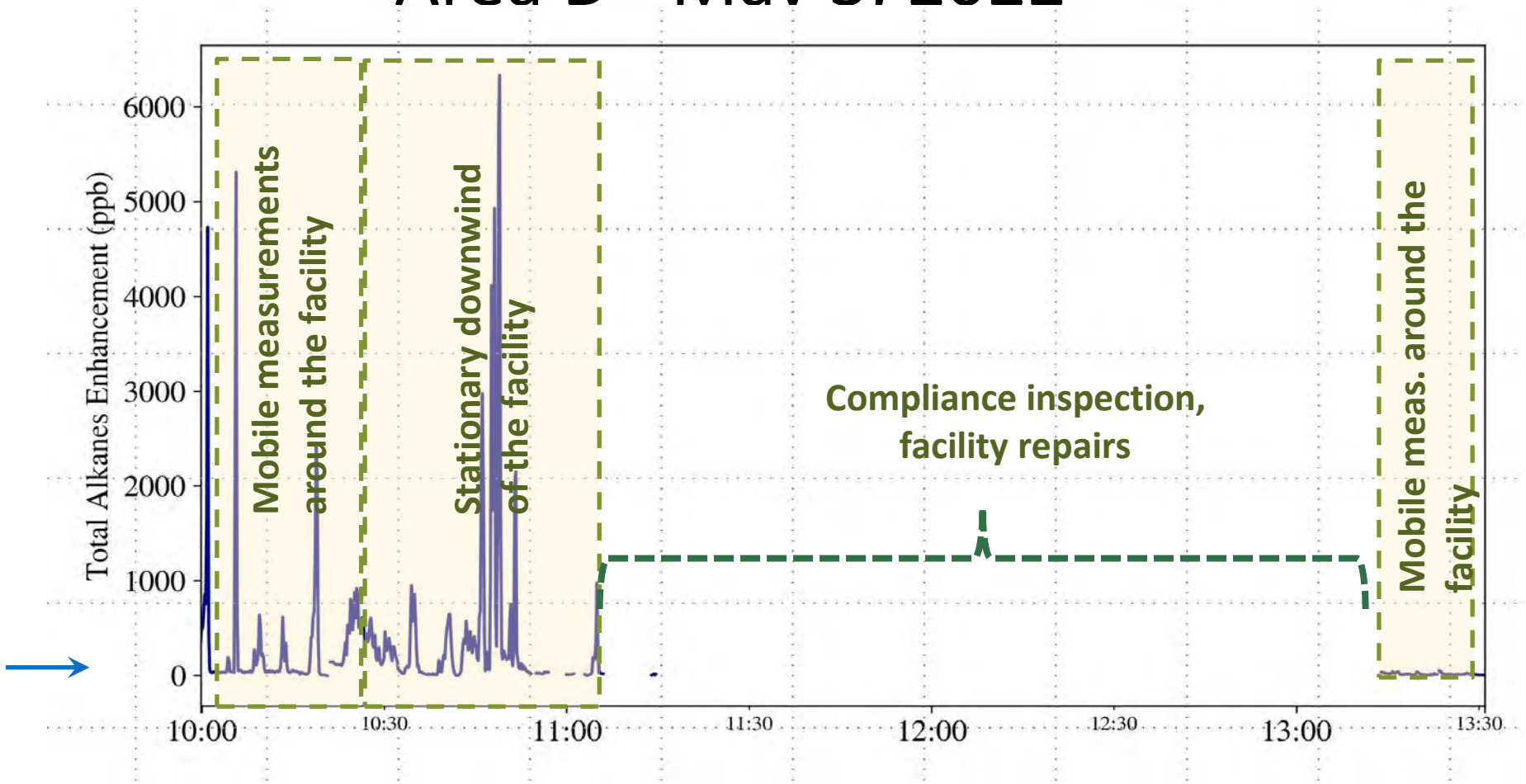
09/19/2019

11:32 am

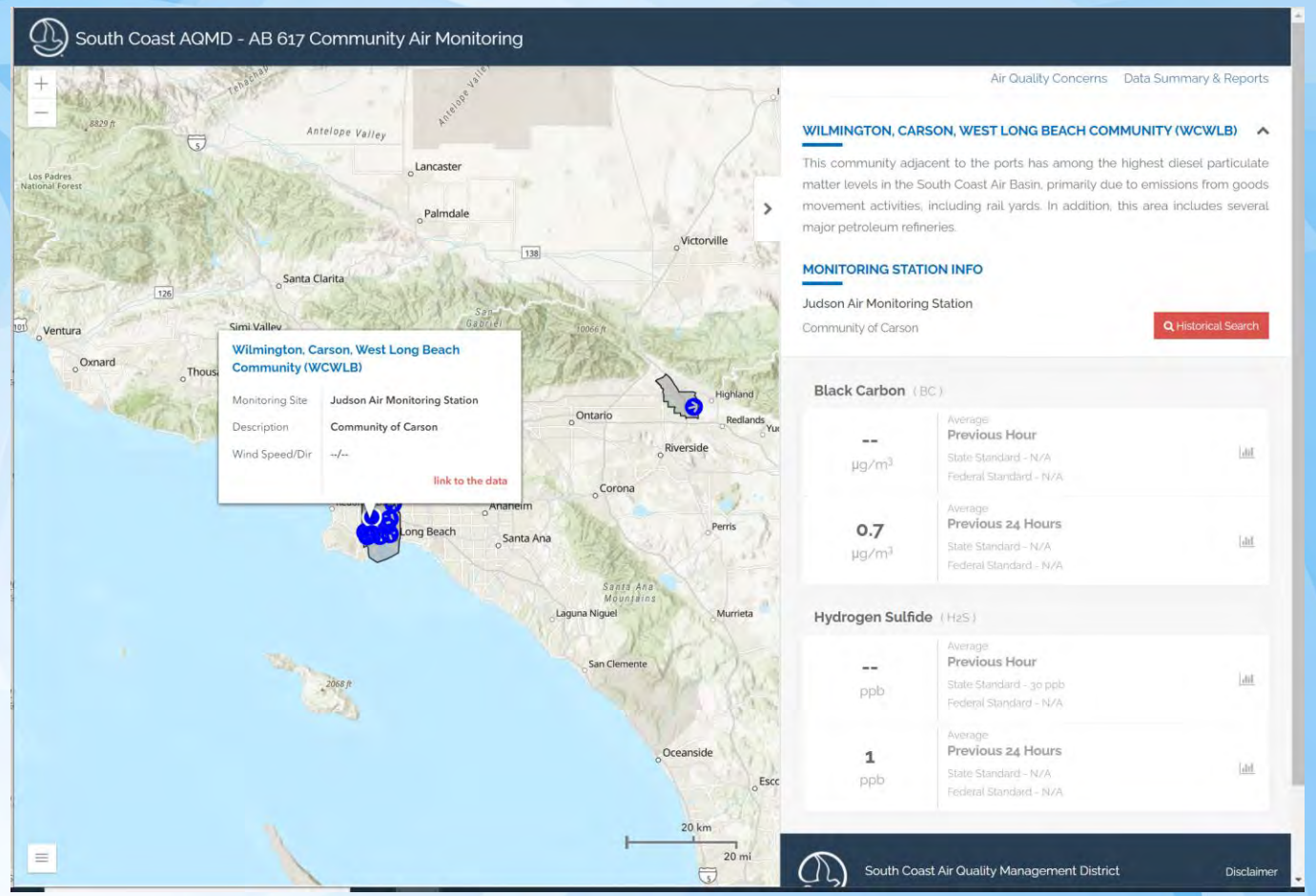
Oil Wells

Wilmington, Carson, West Long Beach Community

Area D - May 3. 2022



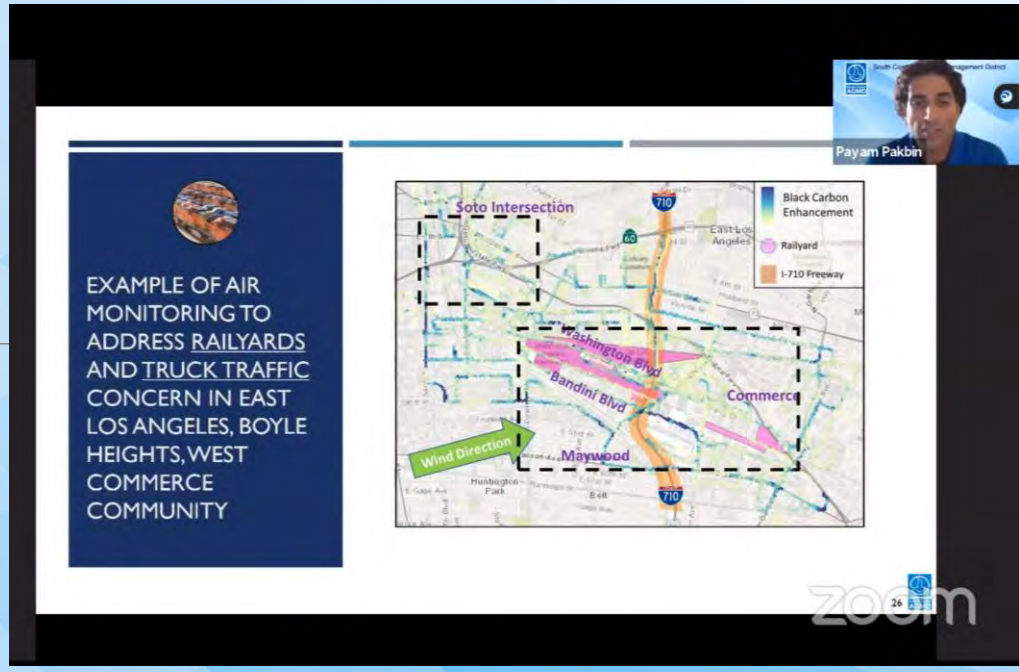
Community Air Monitoring Dashboard

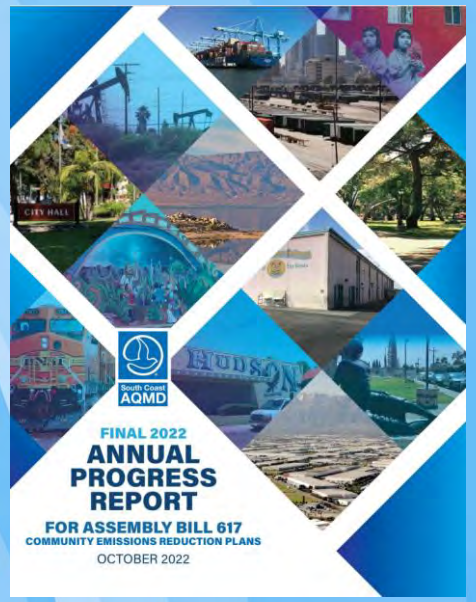


http://xappprod.aqmd.gov/AB617CommunityAirMonitoring/Home/Index

Additional Communication

- Community Steering Committee meetings
- Air monitoring working group meetings
- Progress reports





Summary

- Incident Response and Community Air Monitoring may provide valuable public health information and also identify potential issues that lead to reducing pollution emissions
- Resource intensive
  - Expansive toolbox
  - Specialized technologies and knowledge
  - Communication of efforts

For Additional Information

Email: jlow@aqmd.gov

AB 617 website: *www.aqmd.gov/AB617*

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AGENDA: 6

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Fugitive Dust Emissions Overview

Stationary Source and Climate Impacts Committee
November 21, 2022

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Air Quality Engineering Manager
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Presentation Outcome

- Provide an overview of fugitive dust emissions, focusing on major sources and potential health impacts.

Presentation Outline

- Key technical concepts
- Sources of fugitive dust emissions
- Exposure and health impacts

Presentation for Information Only

- No action required.

Fugitive Dust – Key Concepts

- Fugitive dust is particulate matter generated by open air operations and does not pass through a stack or vent
- Dust becomes fugitive when suspended in the air by wind currents or mechanical forces (e.g., earth moving)
- Fugitive dust emissions are often episodic and influenced by weather (e.g., wind speed and precipitation)
- Emissions from fugitive dust sources are not as well-characterized as emissions from combustion sources

Fugitive Dust – Key Concepts (cont'd)

- Fugitive dust includes coarse and fine particulate matter
- Particles are defined by their diameter for regulatory purposes
  - PM_{10}: diameter of 10 micrometers or less
  - $PM_{2.5}$: diameter of 2.5 micrometers or less (fine particulate matter)
- Both PM_{10} and $PM_{2.5}$ can cause a wide range of health impacts
- $PM_{2.5}$ is typically characterized as more potent, gram for gram
- Controls on fugitive dust can reduce both fine and coarse dust

Sources of Fugitive Dust

Industrial Facilities

Road Dust

Earth Moving Operations & Construction Sites


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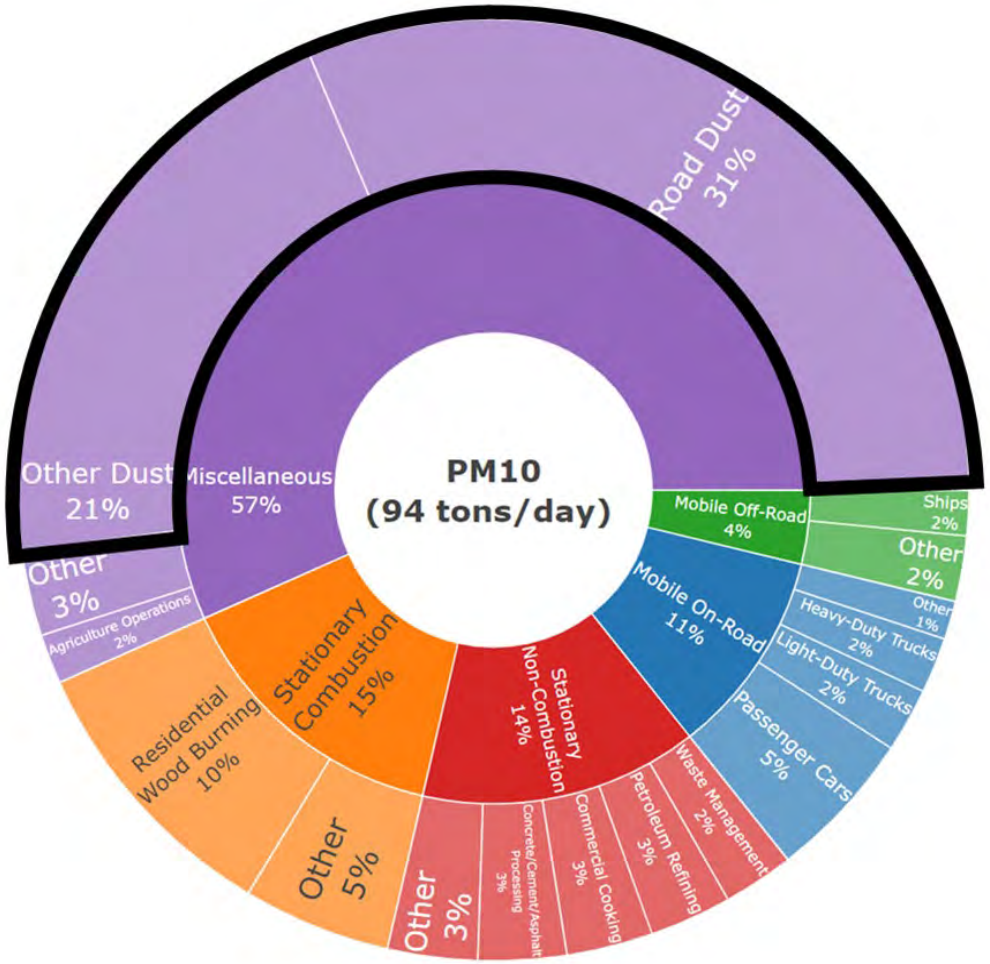
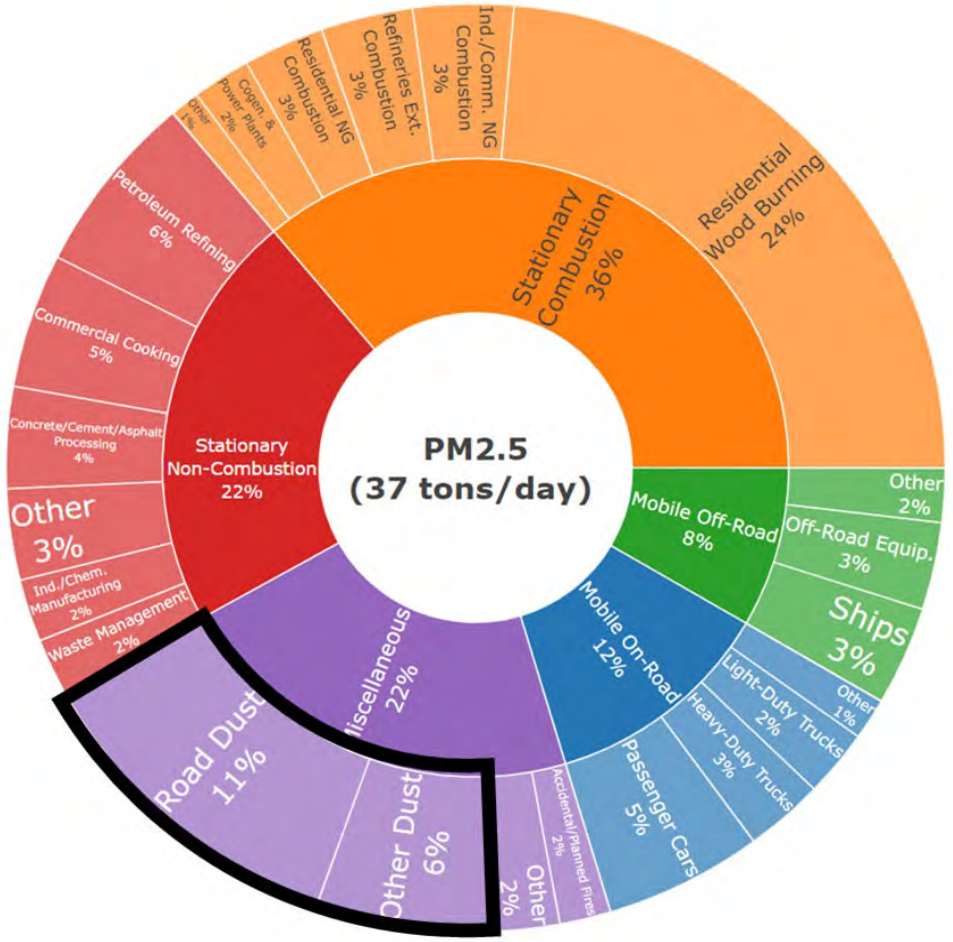
Bay Area Emissions Inventory (year 2021): PM_{10} and $PM_{2.5}$

Road Dust (paved and unpaved roads) and Other Dust (e.g., construction and wind blown)





Industrial Emissions

- Storage and transfer of bulk materials (coal, aggregate, food products) are a leading source of dust emissions
- Earth moving occurs at some facilities (daily cover applied at landfills)
- Emissions vary with daily activity levels (materials being moved or disturbed) and with weather

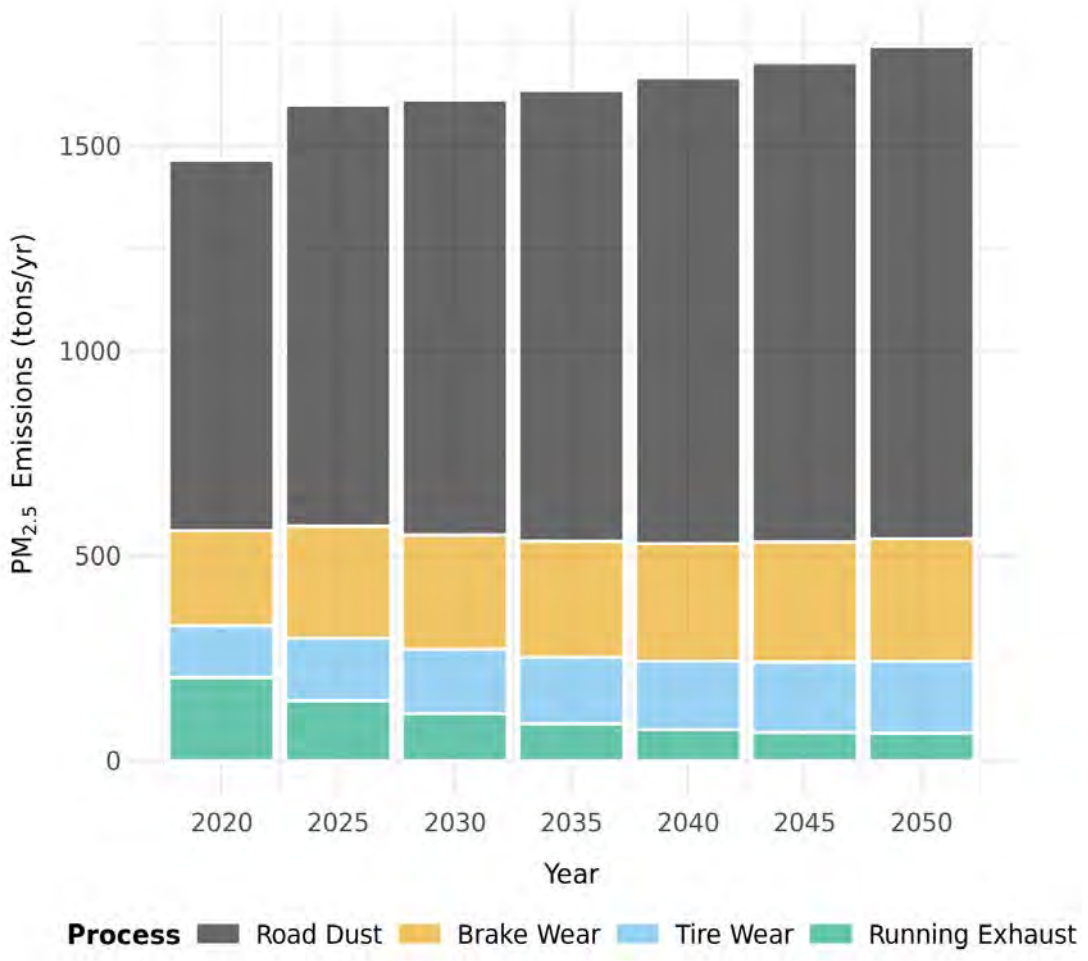
Fugitive Dust Emissions for Sample Industrial Facilities in Bay Area AB 617 Communities

Facility Description	$PM_{2.5}$ Emissions (pounds/day)
West Oakland Ready-Mix Concrete Supplier	5.0
West Oakland Grain Processing and Shipping Operation	8.1
Richmond Coal and Petcoke Handling Terminal	42.8
Richmond Landfill	53.2

Note: Emissions for these West Oakland and Richmond facilities are for 2017 and 2019, respectively.

Bay Area On-Road Mobile Source $PM_{2.5}$ Emissions

- Road dust is the largest contributor to on-road $PM_{2.5}$ emissions (more than 60%)
- Emissions depend on silt loading, traffic levels, vehicle weight, and the amount of moisture
- Road dust emissions are forecasted to increase due to increased driving (miles traveled), but uncertainties could be high

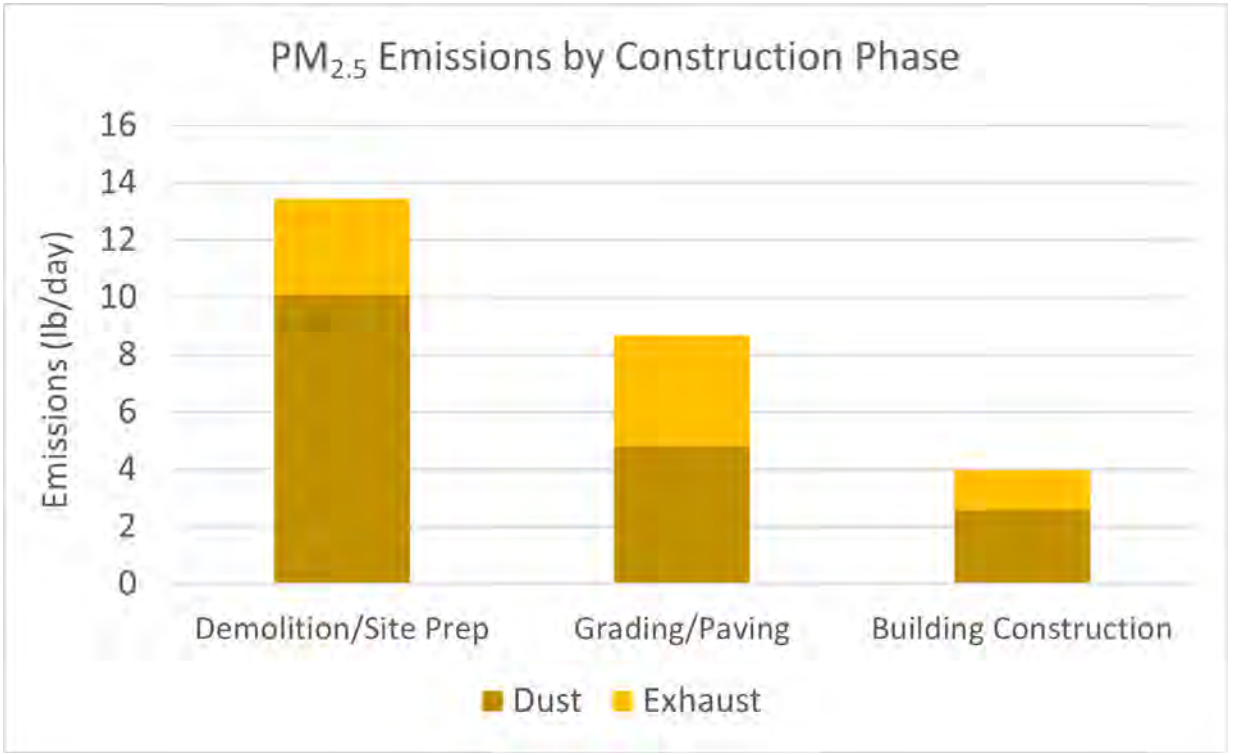


Note: Year 2020 data reflect reduced travel activity due to the COVID pandemic.

Construction Emissions

- Daily emissions vary depending on project type, construction phase, activity levels, and meteorology
- Operations involving excavation and earth moving generally produce the highest emissions
- Track out from construction projects can increase silt on adjacent streets and increase road dust emissions

Emissions Estimates for a Proposed Mixed-Use Construction Project in the Path to Clean Air AB 617 Community



Note: the estimates shown above represent unmitigated $PM_{2.5}$ emissions taken from environmental documents for the project.

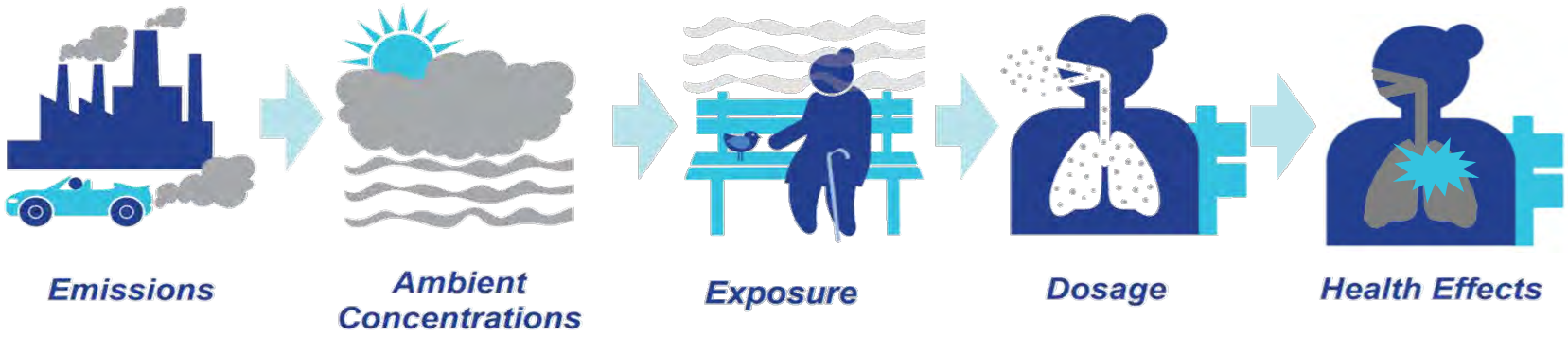
Evaluating Exposures

- $PM_{2.5}$ concentrations from fugitive dust tend to decrease rapidly with distance from the source
- But many dust sources are close to homes and schools
- Recent analysis of an infill construction project showed high levels of added $PM_{2.5}$ exposure (more than +1 µg/m^3) at the most impacted location (unmitigated emissions)

Infill construction projects can create dust near existing schools and residences

Health Impacts

- Coarse PM is more associated with respiratory impacts; fine PM can penetrate deeper into the lungs and enter the bloodstream
- PM exposure has been linked with increased hospital admissions, asthma attacks, and premature deaths
- Children, the elderly, and people with existing health conditions are especially sensitive
- US EPA has determined that all sources of $PM_{2.5}$ are “causal” for serious health impacts



Fugitive Dust – A Growing Concern

- As other sources are increasingly controlled, dust sources are growing contributors
- We have a better understanding of health impacts of all sources of particulate matter
- Dust in urban settings can contain toxic contamination from historical uses
- While there is uncertainty in some estimates of dust emissions, there is enough certainty for action and attention

Feedback Requested/Prompt

- Questions and Comments

AGENDA: 7

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Fugitive Dust Controls and Programs Overview

Stationary Source and Climate Impacts Committee
November 21, 2022

Mark Tang
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Eric Lara
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Presentation Outcome

- Provide an overview of fugitive dust controls and programs to mitigate these emissions and reduce exposure

Presentation Outline

- Background and fugitive dust control measures
- Air District fugitive dust activities and programs
- Other fugitive dust reduction strategies
- Rule Development efforts

Presentation for Information Only

- No action required.

Background

Community Perspectives

- Community Advisory Council
- Community Stakeholders
- AB617 Committees

Scientific & Regulatory Perspectives

- Advisory Council
- Clean Air Act

Dust Concerns – Exposures and Health Impacts

Unpermitted facilities (construction sites and illegal operations)
Stationary and mobile sources in overburdened communities

Fugitive Dust Control Measures

Industrial Facilities

Construction Sites

Road Dust

- Watering exposed surfaces and transfer points
- Maintain moisture content of exposed surfaces
- Covering haul trucks & inactive storage piles
- Enclosures of storage material & conveyers
- Paving
- Installation of wind screens
- Wheel washers & gravel pads
- Wet sweeping and vacuuming paved surfaces
- Operational limitations during wind events and poor AQI

- Reduce vehicle miles traveled (VMT)

Air District Fugitive Dust Activities & Programs

CEQA
LEAD, RESPONSIBLE, COMMENTING

Industrial Facilities

Construction Sites

Road Dust

- Permitting
- Enforcement
- Rule Development

- Incentives
- Rule Development
- Commuter Benefits Program
- Flex Your Commute

Other Fugitive Dust Reduction Strategies

Fugitive Dust

- Plan Bay Area 2050 / VMT Reductions
- Evaluate and mitigate dust impacts through CEQA project review
- Local, Regional, State & Federal Ordinances, programs & partnerships

Evaluating Opportunities for Program Improvements

RULE DEVELOPMENT OPPORTUNITIES

Challenges with addressing fugitive dust

- Number of sources
- Permitted and unpermitted sources
- Variety of sources
- Episodic nature of events
- Emissions characterization
- Efficacy of controls

Evaluate potential opportunities through the white paper process

Fugitive Dust White Paper Process

Explore potential strategies	• Conduct gap analysis • Review regulations and programs from other jurisdictions • Review advancements in technologies (monitoring and controls)
Develop recommendations for further action	• Potential regulatory amendments • Implementation improvements • New programs
Engagement with stakeholders	• Community representatives • Community Advisory Council • Scientific Advisory Council

Fugitive Dust White Paper Process (Cont'd)

Opportunities → **Preliminary Recommendations**

- Regulation 6: PM Definitions
- Rule 6-1: PM General Requirements
- Rule 6-6: PM Prohibition of Trackout

- **Explore effectiveness of existing and future requirements**
- **Improve practicality of current and future measures**

Evaluating Potential Opportunities

Industrial Facilities

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Construction Sites

- Best management practices
- Adequately wetted
- Wind speed monitoring
- Covers and enclosures
- Dust control plans
- Fenceline monitoring
- Property line requirements
- Notification requirements

Evaluating Potential Opportunities (Part 2)

Regarding Trackout:

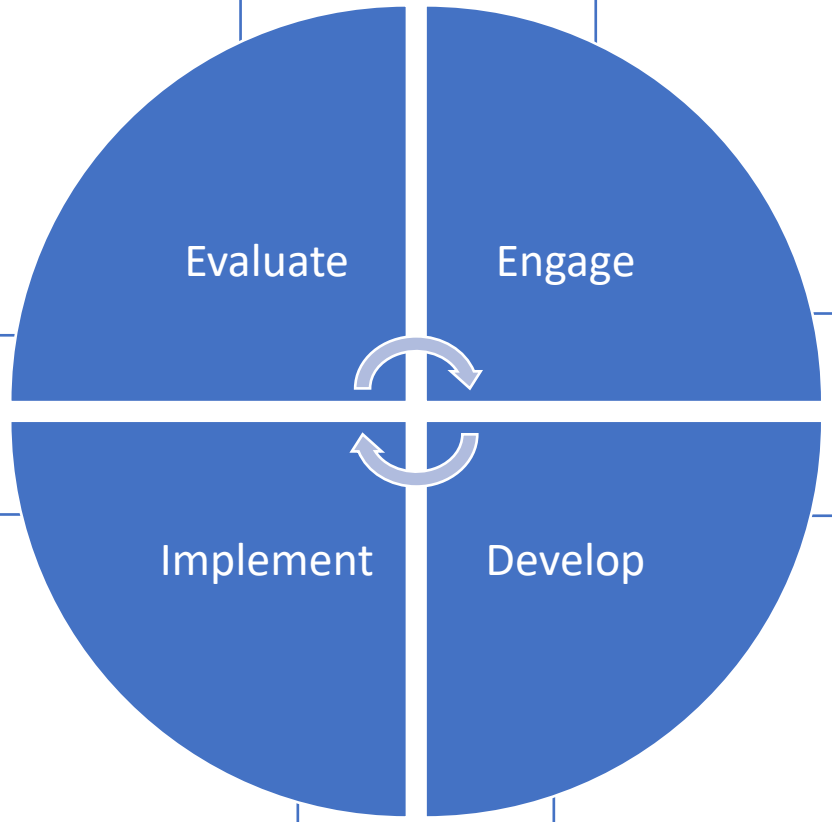
- Property exit controls
- Wet vacuum trucks
- Clean truck routes
- Immediate clean up
- Signage and speed limits
- Dust supervisors

Road Dust

Fugitive Dust White Paper Next Steps

- Utilize fugitive dust white paper process to evaluate potential strategies and improvements

- Continue engaging with community stakeholders to solicit feedback



- Implement recommendations for further Air District actions

- Develop and refine preliminary recommendations

Feedback Requested/Prompt

- Questions and Comments