



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

AGENDA: 5

Introduction to the Air District

**Advisory Council Meeting
September 13, 2021**

**Greg Nudd
Deputy Air Pollution Control Officer
gnudd@baaqmd.gov**

Mission Statement

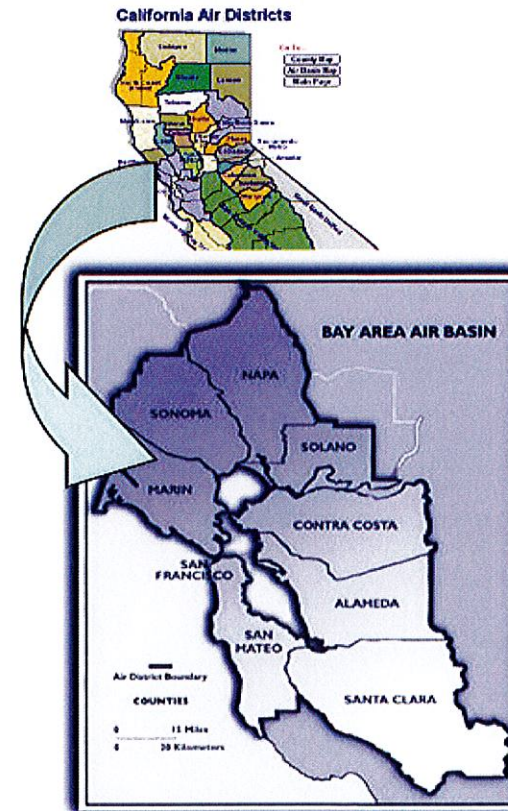


The Air District aims to create a healthy breathing environment for every Bay Area resident while protecting and improving public health, air quality, and the global climate.

Air District Background



- Responsible for air quality in the San Francisco Bay Area
 - Over 100 cities
 - Nearly eight (8) million residents
 - Five (5) million vehicles
- Anticipated growth by 2040
 - Nine (9) million people
 - 20% increase in driving



Air District Overview



- **Board of Directors:**
 - Oversees policies and adopts regulations for the control of air pollution within the district.
 - Appoints the Air District's Executive Officer/Air Pollution Control Officer, who implements these policies and gives direction to staff, as well as the District Counsel, who manages the legal affairs of the agency.
- **Advisory Council:**
 - Provides input to the Board and the Executive Officer on air quality matters.

Air District Overview (cont.)



- **Hearing Board:**
 - Independent, five-member body that serves to adjudicate regulatory compliance issues that may arise between the Air District and local industries and hears appeals of permitting decisions made by the Executive Officer.
- **Community Advisory Council**
 - Air District currently preparing to seat the first Community Advisory Council

Advisory Council Defined by California Health and Safety Code



- California Health and Safety Code, Sections 40260-40268:
- Council shall consist of:
 - Air District Board of Directors Chair, who shall serve as an ex-officio member
 - Seven members who shall be skilled and experienced in the fields of air pollution, climate change, or the health impacts of air pollution
 - Members shall be selected to include a diversity of perspectives, expertise, and backgrounds

Advisory Council Defined by California Health and Safety Code (cont.)



- California Health and Safety Code, Sections 40260-40268 (cont.):
- Council members shall hold office for a term of two years and until the appointment and qualification of their successor
- Shall meet not less than four times a year

Role of the Advisory Council

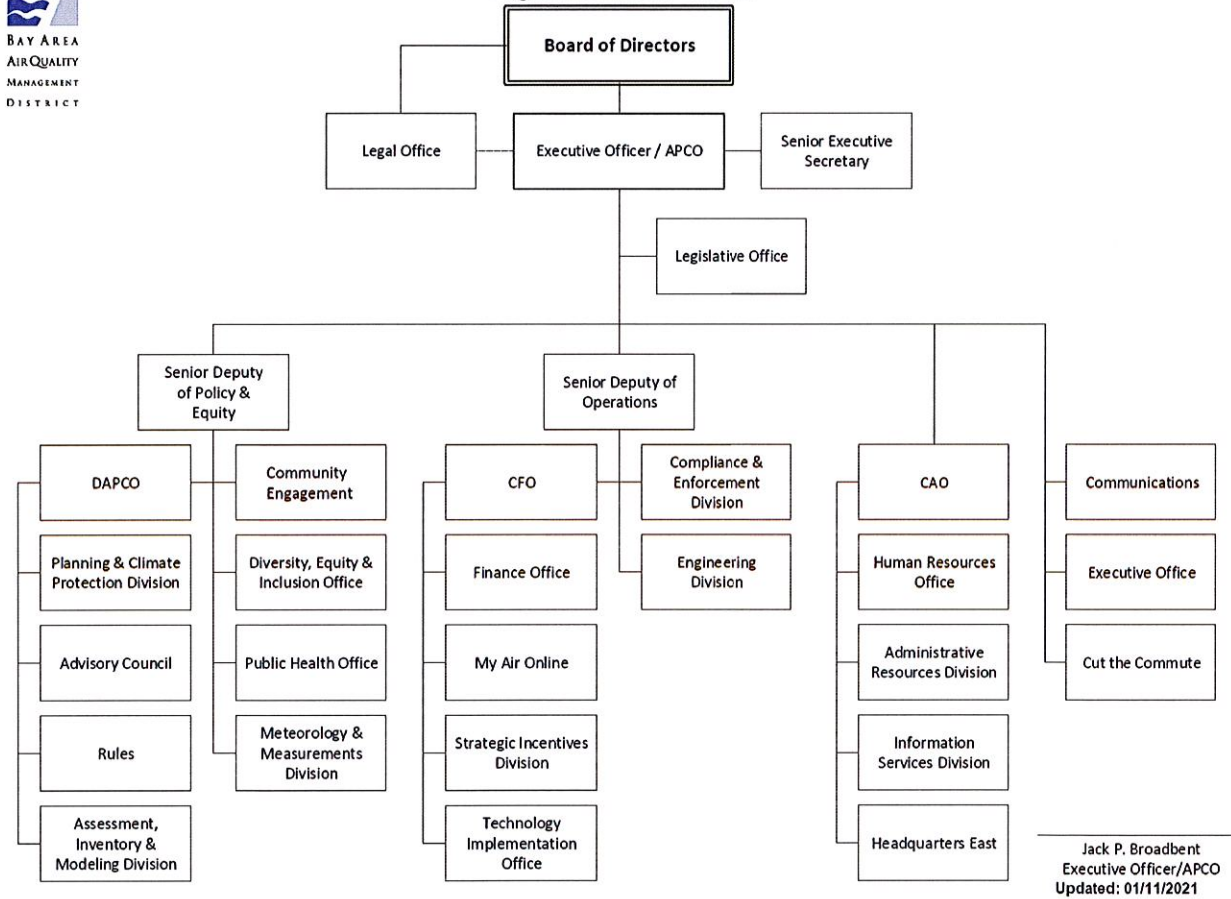


- Air District seeks input and expertise on a variety of air quality topics
- Advisory Council has previously explored:
 - Energy sector/greenhouse gas emissions
 - Ultrafine Particulates
 - Black Carbon
- Most recently the Advisory Council researched and developed a Particulate Matter Reduction Strategy Report (December 2020)



-- For Internal Use only --

Bay Area Air Quality Management District Organizational Chart



Senior Deputy Executive Officers



Veronica Eady

Senior Deputy Executive Officer of Policy & Equity

Damian Breen

Senior Deputy Executive Officer of Operations

Deputy Air Pollution Control Officers (DAPCOs)



Jeff McKay
Chief Financial Officer

Rex Sanders
Chief Administrative Officer

Greg Nudd
DAPCO of Policy



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AGENDA: 6

Bay Area Air Quality Overview

**Advisory Council Meeting
September 13, 2021**

**Ranyee Chiang, Ph.D.
Director of Meteorology and Measurements
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Presentation Goals



Air District Mission

Create a healthy breathing environment **for every Bay Area resident** while protecting and improving **public health, air quality,** and the **global climate**

- What we know
- How we know
- Limitations of what we know

Air Pollutants



Typical Bay Area Sources	Gaseous Air Pollutant	Air Pollutant Category		Impact		
		U.S. EPA Criteria Pollutant	Air Toxic	Odor	Climate	Health
	Ground-level Ozone	✓				••
	Carbon Monoxide	✓				••
	Nitrogen Dioxide	✓				••
	Sulfur Dioxide	✓		○		••
	Carbon Dioxide				•••	
	Methane			○	•	•
	Fluorinated Gases				•	
	Hydrogen Sulfide		✓	○		••

- Transportation, Vehicle Exhaust & Road Dust
- Railways & Railyards
- Airport & Small Aircraft Operations
- Marine Shipping Terminals
- Chemicals Manufacturing & Processing
- Waste Management, Transfer, & Landfills
- Petrochemical Refining, Storage, & Transport
- Power Generation
- Metal Melting, Recycling, & Scrapyards
- Water Management
- Residential Wood Combustion

✓ Member of Category ○ Unquantified Impact • Low Impact •• Medium Impact ••• High Impact

Air Pollutants (cont.)

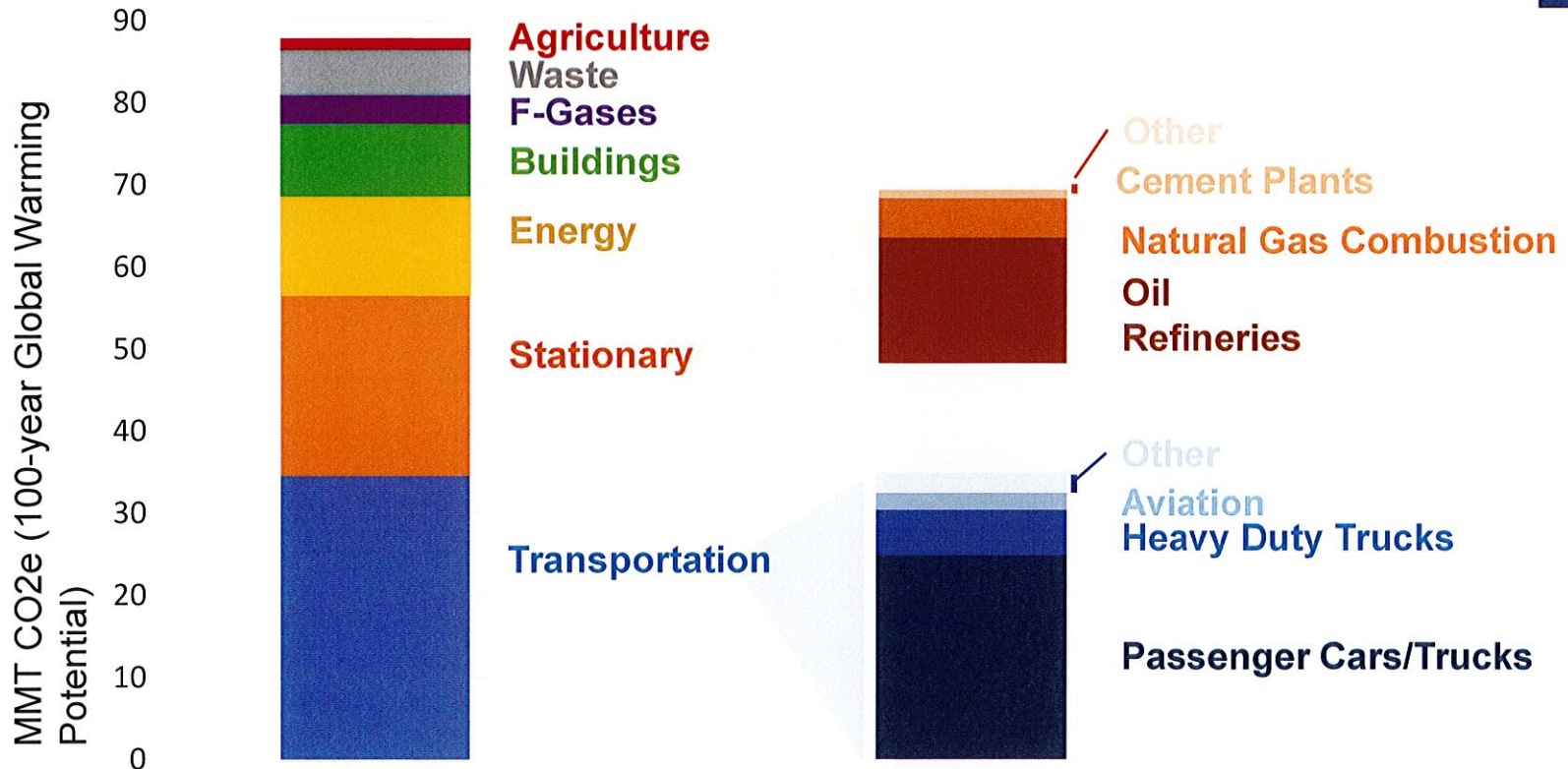


Typical Bay Area Sources	Particle or Volatile Air Pollutant	Air Pollutant Category		Impact		
		U.S. EPA Criteria Pollutant	Air Toxic	Odor	Climate	Health
	Particulate Matter	✓			•	•••
	Diesel PM		✓		••	•••
	Ultrafine PM					•••
	Metals		✓	○		•••
	Lead	✓	✓			•••
	Volatile Organic Compounds		✓	○	•	•••
	Polycyclic Aromatic Hydrocarbons		✓	○		•••

- Transportation, Vehicle Exhaust & Road Dust
- Railways & Railyards
- Airport & Small Aircraft Operations
- Marine Shipping Terminals
- Chemicals Manufacturing & Processing
- Waste Management, Transfer, & Landfills
- Petrochemical Refining, Storage, & Transport
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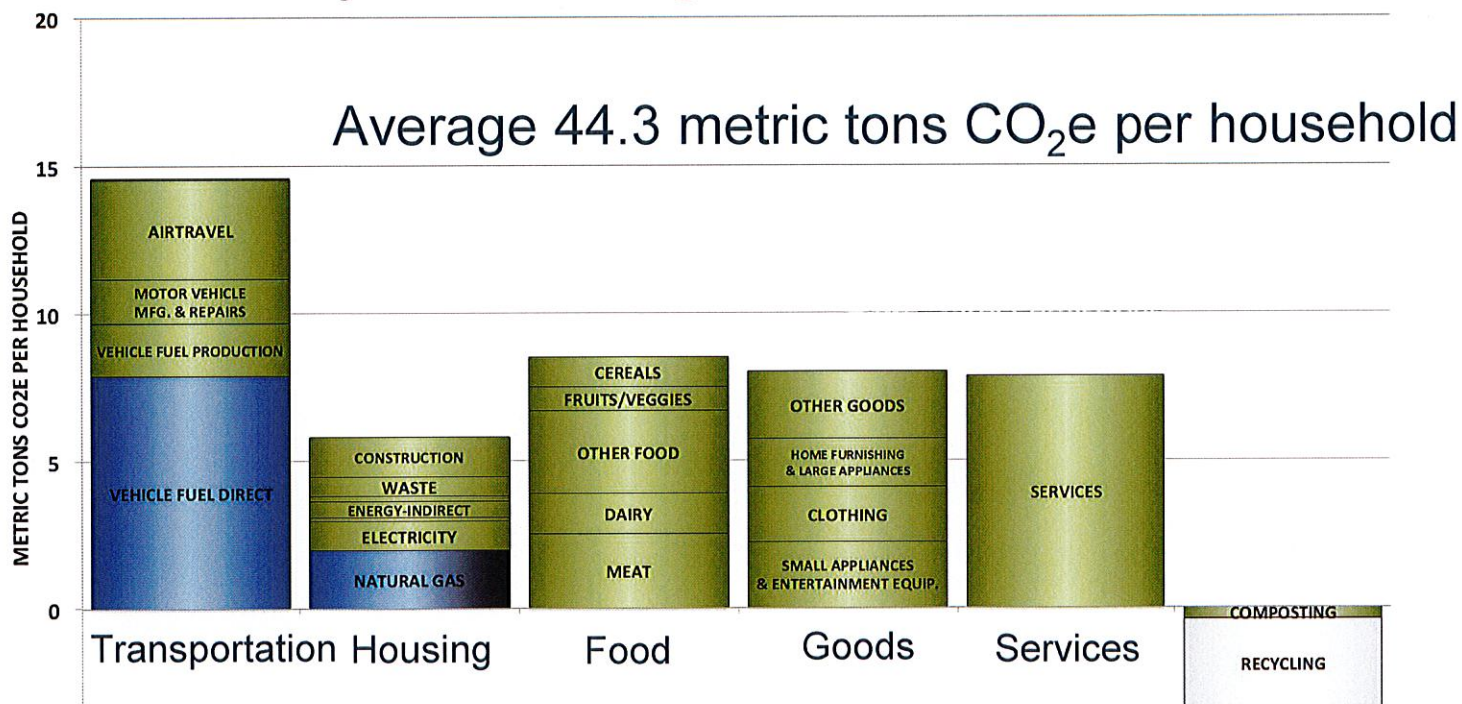
Climate Emissions: Bay Area Greenhouse Gas (GHG) Emissions



2017 GHG Emissions Inventory
(with measurements-based revisions to methane estimates)

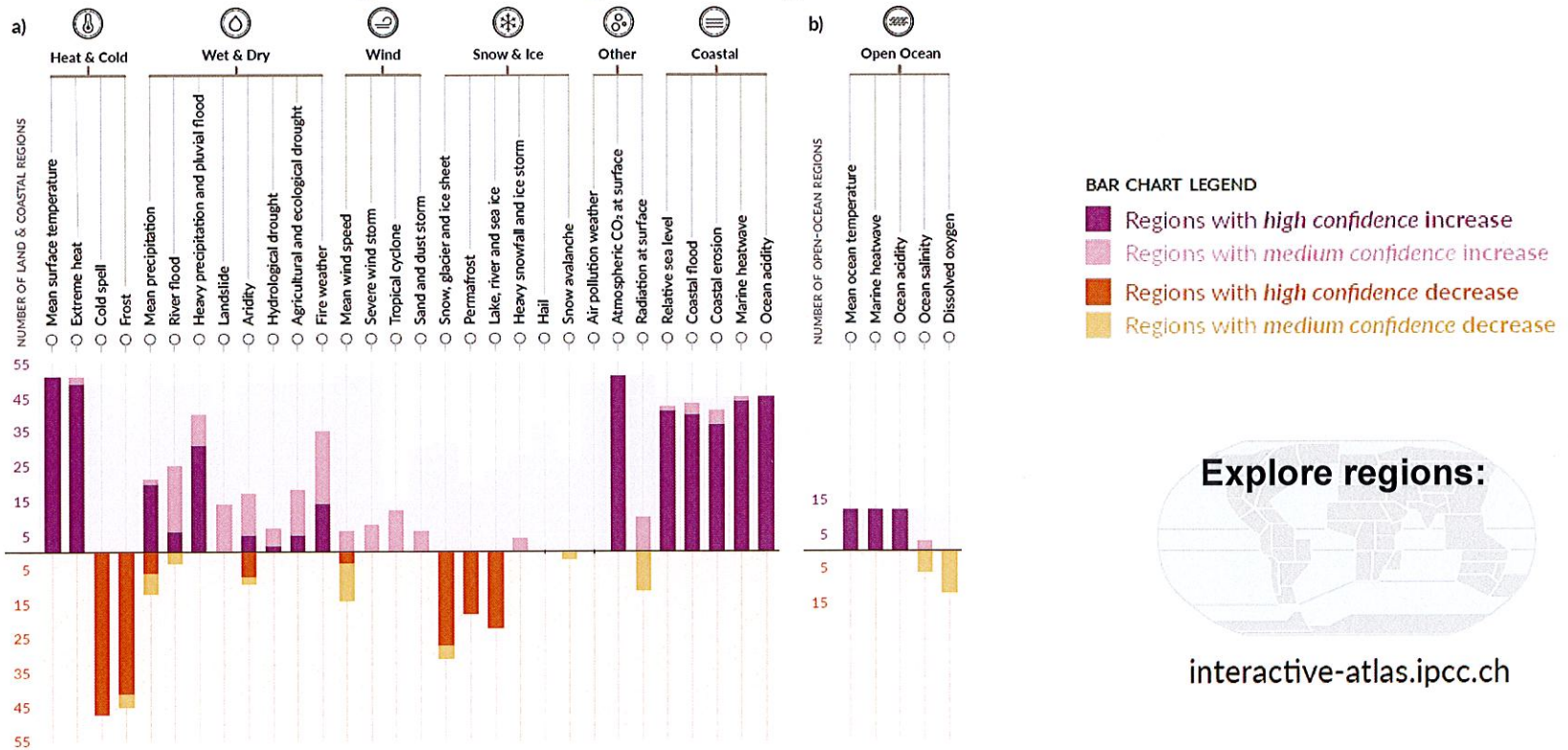
Climate Emissions (cont.)

Bay Area Average Household GHG Footprint



2013 Consumption-based Emissions Inventory

Climate Change Impacts: Changes in Physical Systems, Events, Extremes



interactive-atlas.ipcc.ch

Source: IPCC Climate Change 2021: The Physical Science Basis

Air Pollution: Emissions to Health Effects



Emissions: Source Testing



Preparing glassware for particulate testing



Setting up test equipment at a local refinery



Measuring emissions from a stack from a pollution control device



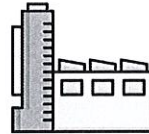
Sampling from a surface at a composting facility

Emissions (cont.): Inventory



- Variety of estimation methods & inputs
- Certain events or sources may not be inventoried
 - Accidents, startups & shutdowns, etc.

Stationary Sources w/Permits



Refineries, power plants, gas stations, autobody shops

Area Sources



Fireplaces, water heaters, consumer products

On-Road Mobile



Cars, trucks, buses

Off-Road Mobile



Ships, aircraft, rail, construction equipment

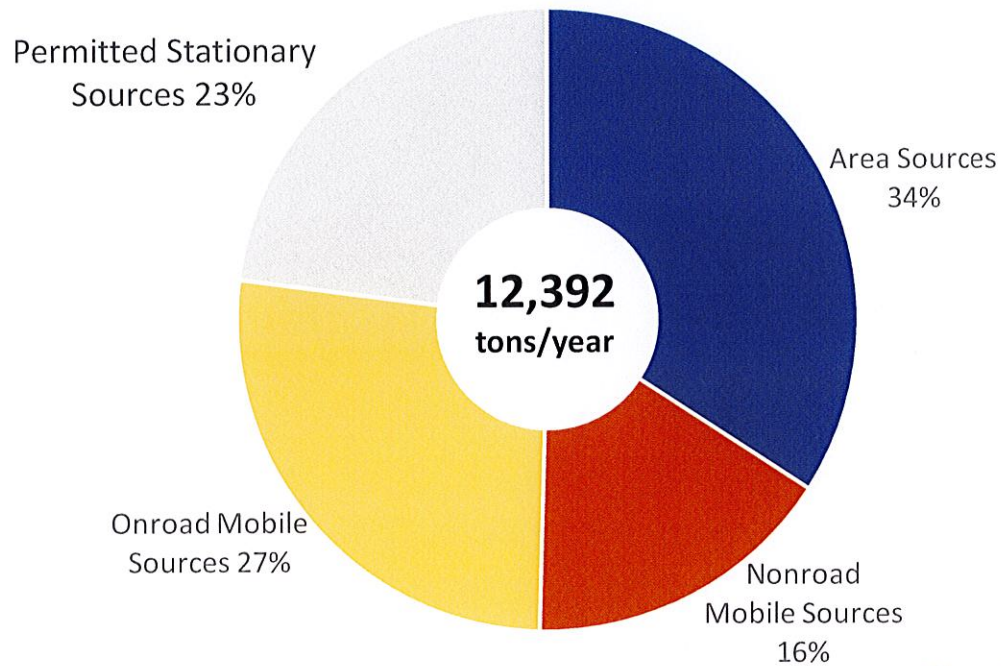
Natural



Soil, sea salt, vegetation

Emissions (cont.)

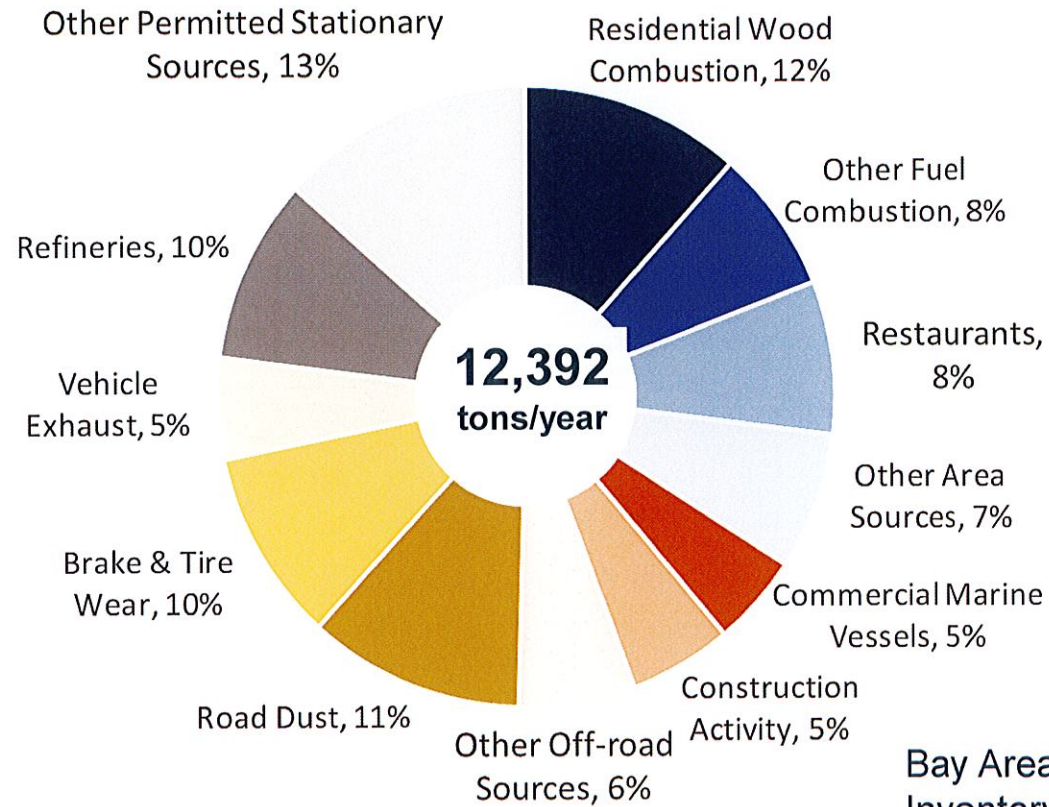
Fine Particulate Matter (PM_{2.5})



Bay Area 2016 Emissions Inventory

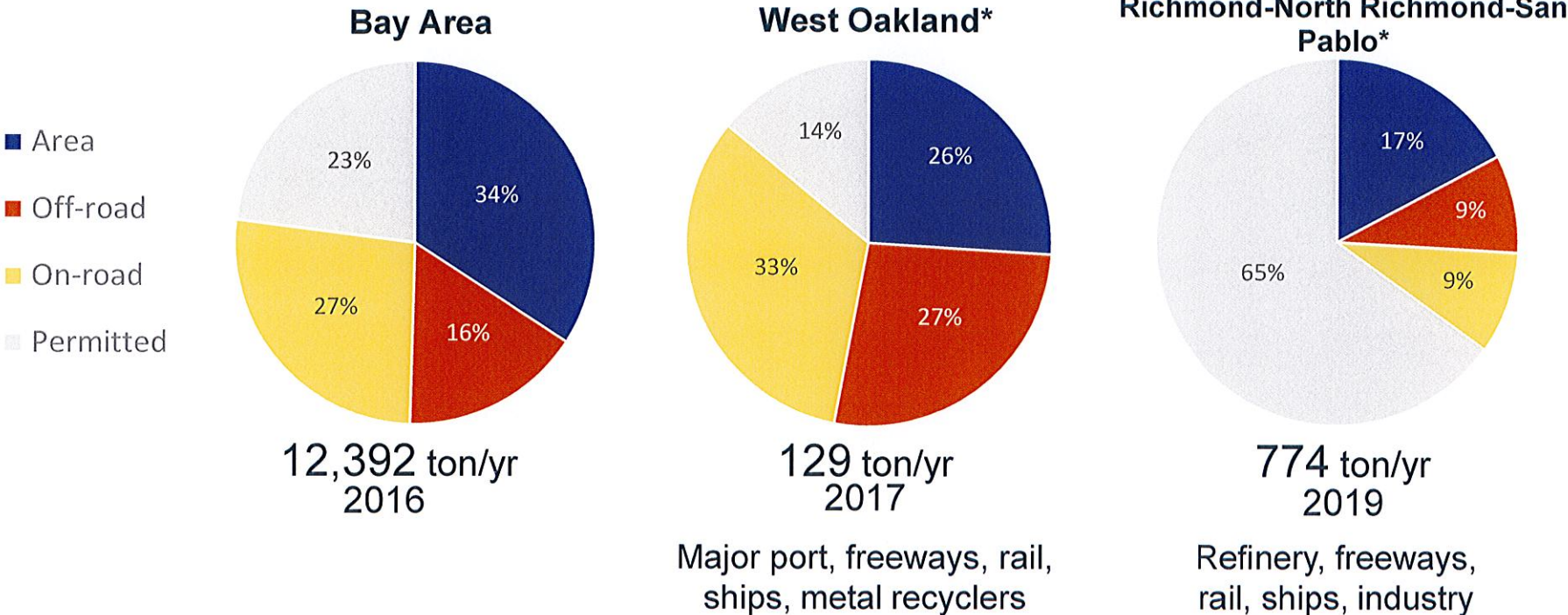
Emissions (cont.)

Fine Particulate Matter (PM_{2.5})



Bay Area 2016 Emissions Inventory

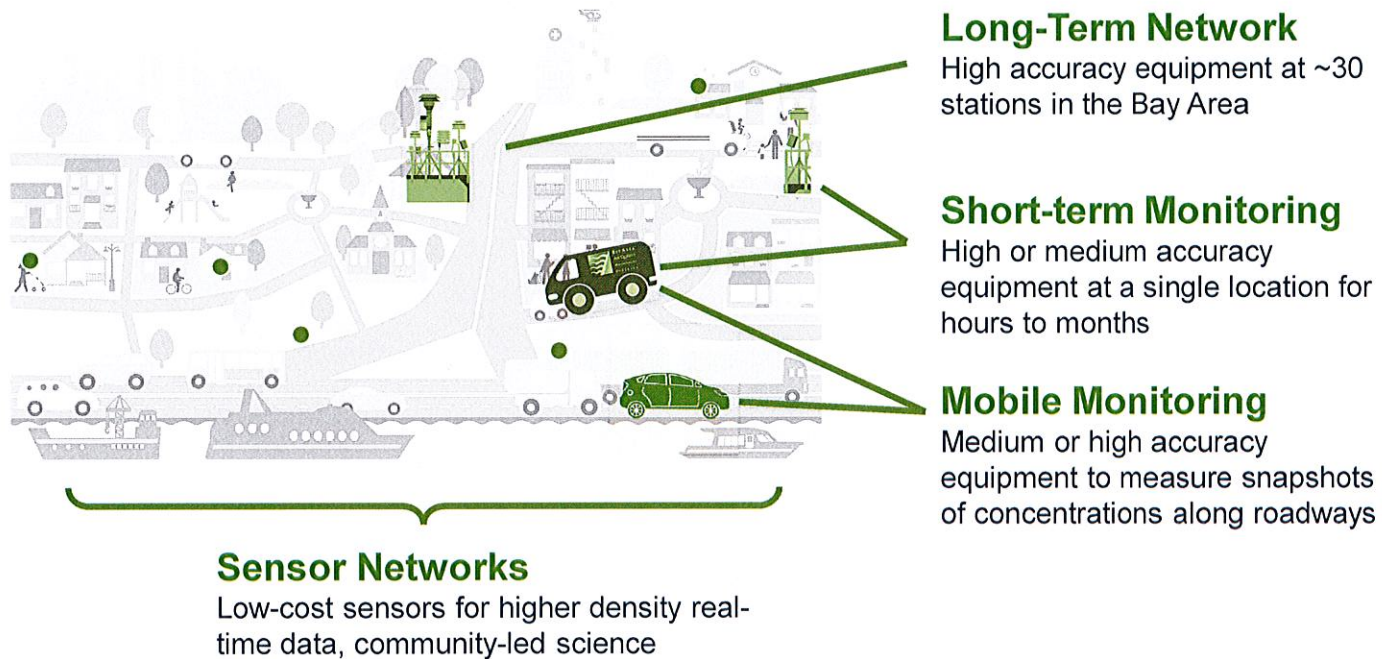
Emissions (cont.): Fine Particulate Matter (PM_{2.5})



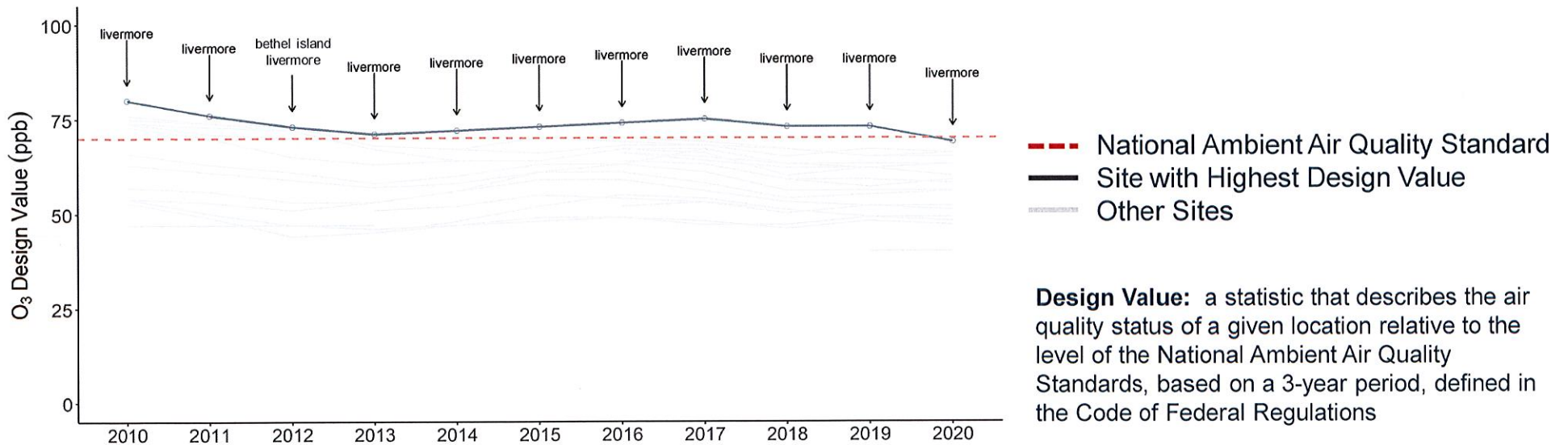
* Emissions densities in the two communities are similar (about 3.5 ton/yr per km²)

Ambient Concentrations

Types of measurements

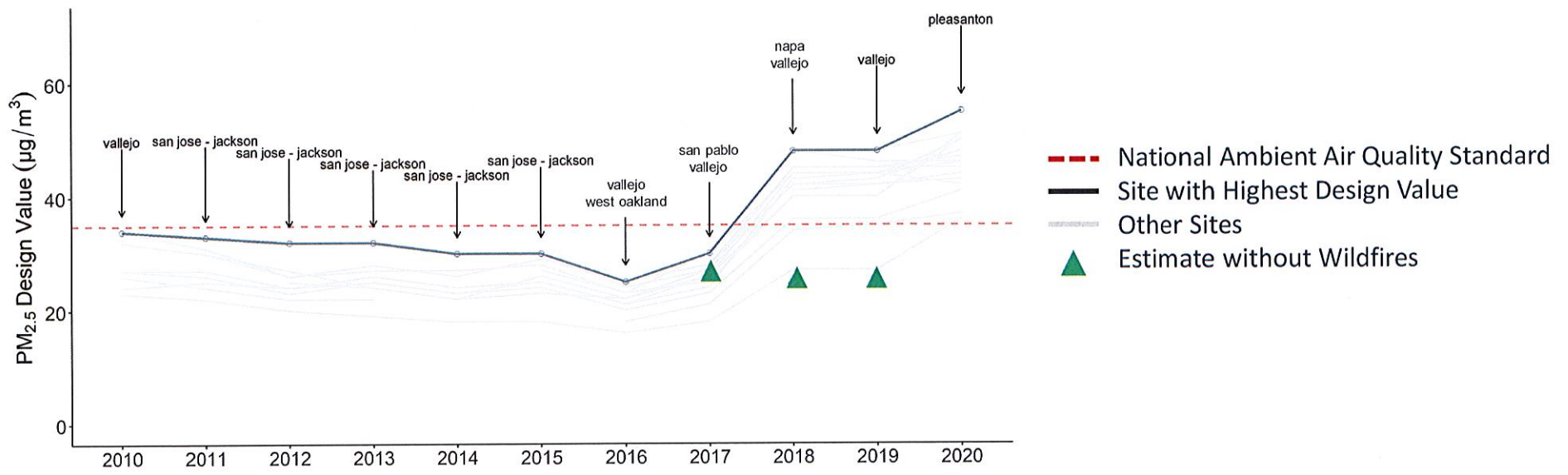


Ambient Concentrations (cont.): Area-wide measurement trends (8-hour Ozone)



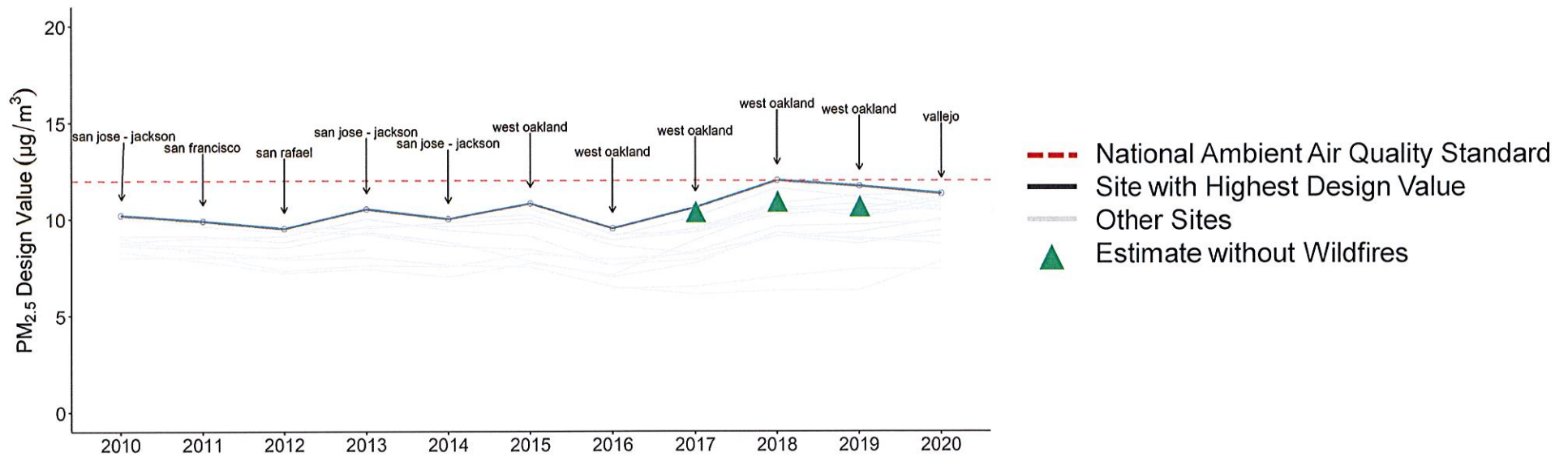
Ambient Concentrations (cont.):

Area-wide measurement trends (24-hour PM_{2.5})



Ambient Concentrations (cont.)

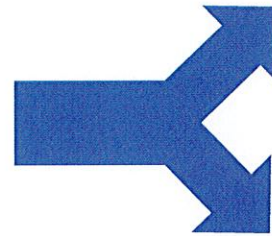
Area-wide measurement trends (Annual PM_{2.5})



Ambient Concentrations (cont.) Forecasting



- Air quality data
- Weather and smoke models
- Satellite imagery and cameras
- Local geography and wind flow
- Marine layer depth

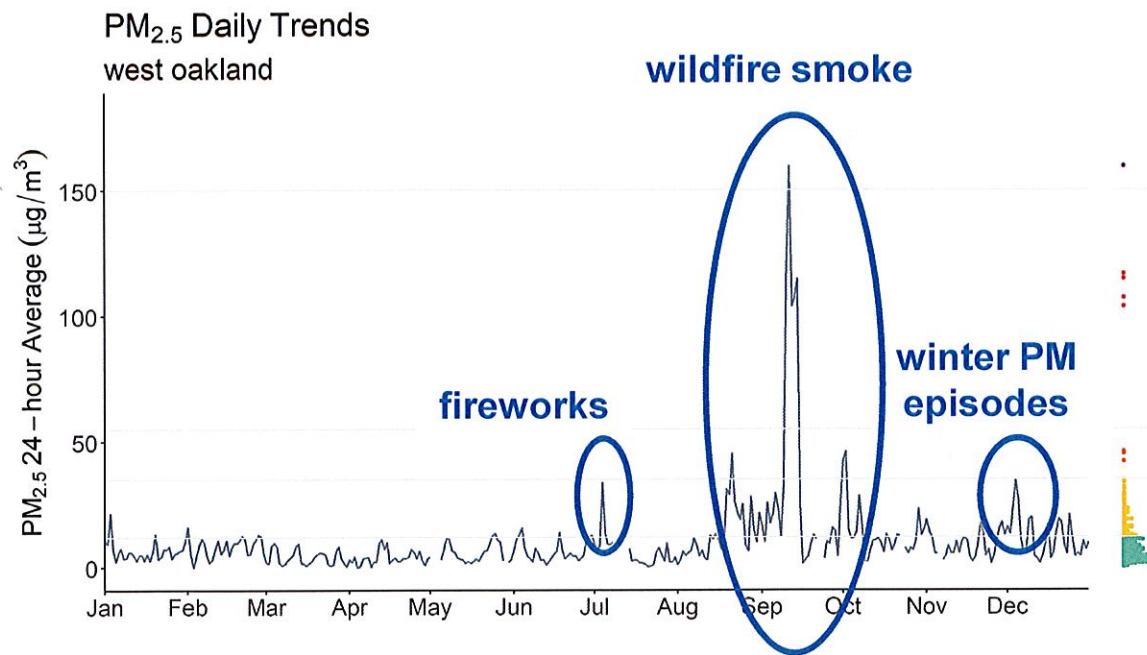


O₃: Encourage carpooling, public transit, biking, & walking

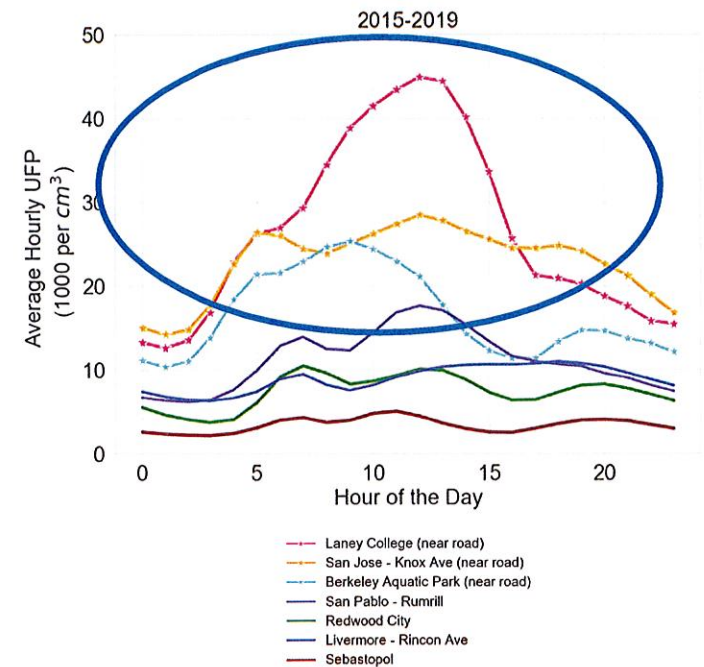
PM: Prohibit the use of fireplaces, wood burning

Ambient Concentrations (cont.)

Area-wide challenges



Ultrafine particulate matter (UFP) near roadways

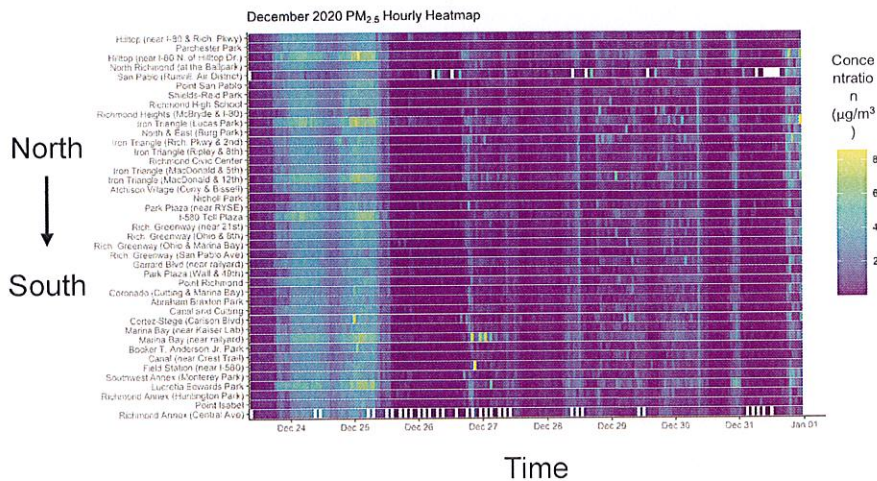


Ambient Concentrations (cont.)

Community designed monitoring to assess local impacts



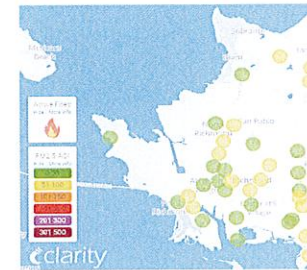
Hourly PM concentrations within a community



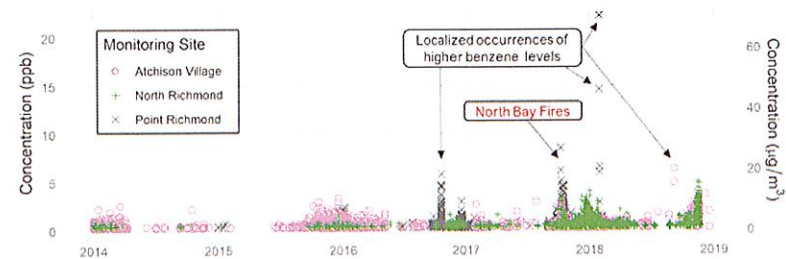
Estimated typical PM on all streets



Real-time PM



Hourly benzene levels around refinery





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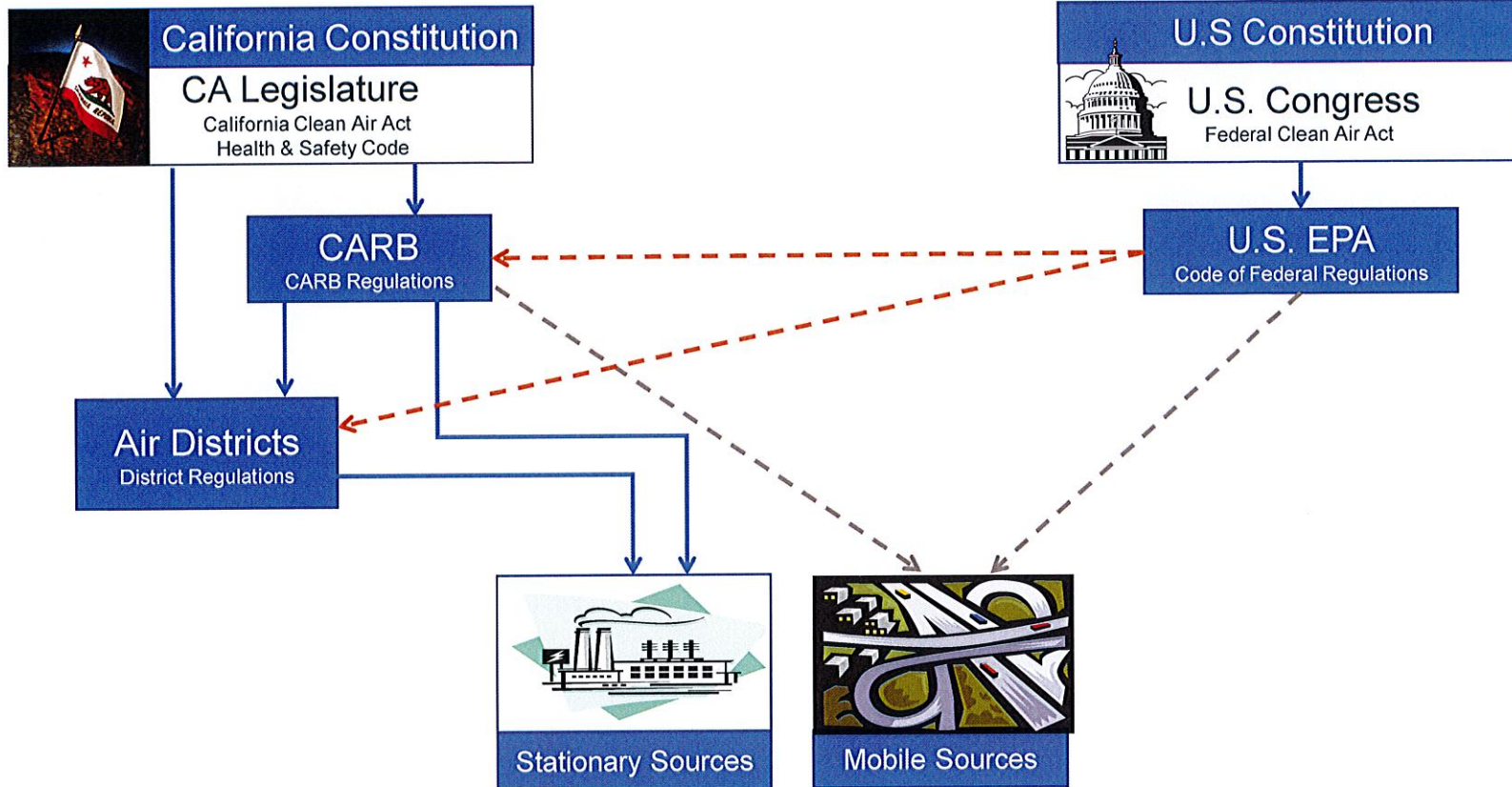
AGENDA: 7

Overview of Air District Legal Authorities

Advisory Council Meeting
September 13, 2021

Alexander “Sandy” Crockett
Acting Senior Assistant Counsel
acrockett@baaqmd.gov

Conceptual Framework



Air District Authority



- Primary responsibility: Control of air pollution from stationary sources
- Powers to:
 - Adopt and enforce regulations
 - Require stationary source permits
 - Adopt fees
 - Adopt air toxic control measures
 - Regulate nuisances
 - Prohibit dark smoke
 - Adopt state nonattainment plans
 - Adopt regulations necessary to execute duties

Institutional Roles Within the Air District



- Board of Directors
 - Quasi-Legislative Branch
- Air Pollution Control Officer (APCO) and Air District Staff
 - Quasi-Executive Branch
- Hearing Board
 - Quasi-Judicial Branch

Advisory Council

- Advises Board of Directors and APCO on technical & policy issues; role is to “advise and consult ... in effectuating the purposes of this division.”

Regulation of Criteria Air Pollutants



- Environmental Protection Agency (EPA) / California Air Resources Board (CARB) set air quality standards based on specified “criteria”
 - National Ambient Air Quality Standards (NAAQS) and California AAQS
 - Ozone, PM₁₀/PM_{2.5}, CO, SO₂, NO₂, Pb
- Attainment Planning – Districts adopt Clean Air Plans and SIPs
- Reducing Emissions from *Existing* Stationary Sources
 - Best Available Retrofit Technology (BARCT)

Regulation of Criteria Air Pollutants (Cont.)



- Preventing Emissions from *New Stationary Sources*
 - New Source Performance Standards (NSPS)
 - New Source Review (NSR)
- Mobile source measures

Regulation of Toxic Air Contaminants



- Toxic Air Contaminants (TACs) / Hazardous Air Pollutants (HAPs)
- Federal Regulations
 - National Emission Standards for Hazardous Air Pollutants (NESHAPs)
 - Requires “Maximum Achievable Control Technology” (MACT)
- State Programs
 - Air Toxic Control Measures (ATCMs)
 - Air Toxics Hot Spots program (SB 2588)
- Air District Regulations
 - Permit requirement for new or modified sources (Toxics NSR)
 - Regulation 11 – Hazardous Pollutants

Regulation of Greenhouse Gases



- California Leads the Way – Primarily at the State Level
 - State Greenhouse Gas (GHG) Reduction Goals: Assembly Bill (AB) 32 (2020); Senate Bill (SB) 32 (2030); Executive Orders (EOs) (2045, 2050)
 - CARB Scoping Plan
 - Various Legislation & Related Programs (RPS, Cap and Trade, LCFS, etc.)
- Federal Story More of a Mixed Bag
 - Motor Vehicle Tailpipe Emission Standards
 - Clean Power Plan Regulation
 - Permit Requirements for “Major” Stationary Sources

Regulation of Greenhouse Gases (Cont.)



- Air District Role
- Implements Federal Permit Requirements (Best Available Control Technology)
- Fees and Information Reporting Requirements
- Regulatory Authority Over CO₂ Limited by AB 398 (Cap-and-Trade extension)

Addressing Other Air Quality Problems



- Public Nuisances
- Visible emissions (opacity)

Permit Programs



- Air District Permit Program – Regulation 2
 - Authority to Construct before installing new or modified source
 - Permit to Operate on an ongoing basis thereafter
 - Limited exemptions – generally must be below 5 tons per year

Permit Programs (Cont.)



- Federal “Title V” Operating Permit Program
 - “Major” Sources (100tpy criteria pollutant, 10/25tpy HAP, 100,000tpy CO₂e)
 - Does not impose substantive requirements
 - Collects all regulatory requirements in one comprehensive permit document
 - Ensures that there is sufficient monitoring in place to ensure compliance
 - Improves transparency, public awareness/participation, and enforceability

Cal. Environmental Quality Act (CEQA)



- CEQA requires California governmental agencies to:
 - Evaluate potential impacts from any **discretionary** decision;
 - Make the decision in a way that will avoid **significant** environmental impacts
- Air District must comply with CEQA when making discretionary decisions:
 - Issuing permits
 - Adopting regulations
- Air District provides guidance for other agencies for analyzing impacts
 - Air quality impacts
 - Climate impacts

Environmental Justice



- Environmental Justice defined [Gov't Code § 65040.12(e)]
 - “Environmental justice” means the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.
- Gov't Code § 11135 & Anti-Discrimination Laws
- AB 617
 - Identify overburdened communities
 - Develop community-led action plans to reduce toxic health risk
- SB 1000 – Requires Environmental Justice policies in General Plans



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AGENDA: 8

Overview of Air District Programs

**Advisory Council Meeting
September 13, 2021**

**Henry Hilken
Director of Planning and Climate Protection
hhilken@baaqmd.gov**

Presentation Overview

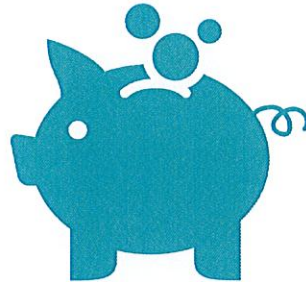


Air quality and climate plans and programs are informed and supported by technical analyses, community perspectives, legal authority and technical innovation.

Focus on Communities: Collaborative Relationships to Support Air District Mission



**Assembly
Bill (AB) 617**



**James Cary
Smith
Community
Grants**



**Community
Advisory
Council**



**Community
Engagement
Support and
Training**

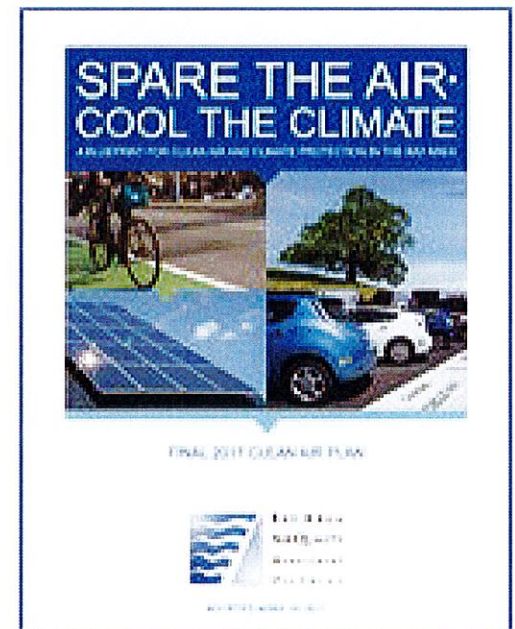
Plans: 2017 Clean Air Plan



Regional Air Quality plan prepared pursuant to California Clean Air Act
Multi-pollutant plan to reduce ozone, particulate matter (PM), air toxics and GHGs

A comprehensive strategy of 85 measures to:

- Reduce ozone and PM throughout the region
- Reduce PM and air toxics in impacted communities
- Reduce GHGs toward long-range targets
 - 40% below 1990 levels by 2030
 - 80% below 1990 levels by 2050



Source: [Bay Area Air Quality Management District](#)

Plans: Shifting to Local Focus - AB 617



Source: [California Air Resources Board](#)

- Responds to history of environmental injustice in low-income, communities of color.
- Partner with community to address solutions to higher levels of air pollution in historically disadvantaged communities.
- Reduce exposure to harmful air pollutants in impacted communities.

AB 617 Bay Area Communities



Designated Communities

- West Oakland Community Action Plan adopted 2019
- Richmond-North Richmond-San Pablo Monitoring Plan completed 2020; Community Emission Reduction Plan underway

Communities Pending Designation

- East County (Contra Costa)
- East Oakland
- Eastern SF
- San Leandro
- San Jose
- Tri-Valley
- Vallejo



AB 617: A Community Centered Program



Build community knowledge about air quality, best practices. Build Air District capacity to work in community.

Gather what we know about community and air quality. Improve what we know.

Track progress on strategies. Report progress on strategies. Track and report on progress of entire program.

Implement emission reduction strategies and enforcement measures.

Work with community to tell story about community. Perform root cause analysis to ensure "right" problems addressed.

Form and support community decision making partnership. Develop committee charter and community engagement plan.

Set community goals and targets. Select emission reduction strategies and enforcement measures.



Toolkit: Rule Development



Adopt and Implement Rules Applicable at New and Existing Sources

- Regulation 1: General Provisions & Definitions (1)
- Regulation 2: Permitting Rules (10)
- Regulation 5: Open Burning (1)
- Regulation 6: Particulate Matter (6)
- Regulation 8: Organic Compound (49)
- Regulation 9: Inorganic Gaseous Pollutants (14)
- Regulation 10: Standards of Performance for New Stationary Sources (1)
- Regulation 11: Hazardous Pollutants (18)
- Regulation 12: Miscellaneous Standards of Performance (16)
- Regulation 14: Mobile Source Emissions Reduction Measures (1)

Toolkit: Rule Development

What's Currently in the Rulemaking Queue?



Regulation/Rule Under Development	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Q2 22
Rule 13-5: Hydrogen Plants	BH					
Regulation 1: Definition of Refinery	BH					
Rule 2-5: Toxic New Source Review		BH				
Rule 9-4: Residential Furnaces Rule 9-6: Gas-Fired Water Heaters				BH		
Rule 8-8: Rule Petroleum Wastewater Treating (AB 617 BARCT)					BH	
Rule 8-18: Refinery Heavy Liquids Leaks (AB 617 BARCT)						BH
Rule 8-5: Organic Liquid Storage Tanks (AB 617 BARCT)						BH

BH = Board Hearing

Toolkit: Permits



Engineering Staff Issues Air Quality Permits for New & Modified Sources

- Permitting for over 10,000 facilities with over 23,000 sources
- Evaluate 1,200 applications per year for new and modified source
- Conduct 300 health risk assessments per year for new and existing facilities
- Issue Authorities to Construct, Permits to Operate, Registrations & Exemptions
- Maintain emissions inventory for permitted facilities: greenhouse gases (GHG), criteria pollutants and toxics
- Maintain Federal Title V Permits for 83 facilities
- Protects public health by setting stringent health risk action levels for new and modified sources and existing facilities

Toolkit: Compliance and Enforcement



Compliance and Enforcement Staff Assures Air District Rules and Permits are Implemented Effectively

- Issue compliance advisories
- Compliance assistance – small & green business assistance
- Industry Compliance School
- Conduct inspections
- Investigate complaints
- Issue notices of violations
- Variances
- Partner with communities to identify sources of concern
- Partner with interagency environmental task force programs

Toolkit: Collaborating Statewide and Regionally



- Work with California Air Resources Board (CARB), Office of Environmental Health Hazard Assessment (OEHHA), other state agencies, and other air districts
 - Participate in CARB rulemaking
 - Assist enforcement of CARB rules
 - Work with CARB & OEHHA staff on policy, funding, advocacy, science
 - Coordinate with other districts via California Air Pollution Control Officers Association (CAPCOA)

Toolkit: Collaborating Statewide and Regionally (cont.)



- Work with Bay Area Regional Collaborative (BARC), Metropolitan Transportation Commission (MTC)/Association of Bay Area Governments (ABAG), Bay Conservation & Development Commission (BCDC) to coordinate regional programs
- Support and implement Plan Bay Area
- Coordinate policy and funding re: ports, other mobile source programs
- Implement Commuter Benefit Program
- Collaborate on climate, e.g., solar ordinance, building decarb., vehicle miles traveled (VMT) reduction

Toolkit: Collaborating with Cities and Counties



- Implement California Environmental Quality Act (CEQA)
 - CEQA Guidelines
 - Review & comment on CEQA docs
- Support local plans, policies, and programs
 - Plan & policy guidance, best practices, technical support
 - Climate action plans, GHG data & policies
- Grants & incentives support local clean air projects
- Collaborate on AB 617 planning and other community capacity-building efforts
- Wildfire response, industrial incidents

Toolkit: Climate Protection Program

