Bay Area Air District

COMMUNITIES FOR A BETTER ENVIRONMENT
established 1978

Final Draft

Right to Breathe: East Oakland Community Air Quality Justice Plan

February 2026

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Executive Summary

Assembly Bill 617 (AB617), signed into law in 2017 and administered by the California Air Resources Board (CARB), directs local air districts to partner with community to develop emissions reductions plans. These plans focus on improving community health by reducing emissions from and exposure to local air pollution sources in the most impacted neighborhoods. In 2021, the Bay Area Air District (Air District) recommended East Oakland for the development of a Community Emissions Reduction Plan (CERP) due to the high health-burden of residents in East Oakland neighborhoods, who experience disproportionately high exposure to air pollution. Waste facilities, crematories, and small to medium industrial and manufacturing operations are located throughout the area. Along with the Oakland San Francisco Bay Airport, large warehouse distribution centers, high-volume freeways and roadways (I-880, I-238, I-580, Highway 92), truck routes, transit buses, industrial equipment, and freight and passenger rail all contribute to the pollution burden of the area.

The Air District began the work of developing the East Oakland Community Emissions Reduction Plan (Plan) by selecting Communities for a Better Environment (CBE), an environmental justice organization, as the co-lead for the project due to the organization's strong community ties and extensive experience building community capacity in air quality planning in East Oakland. The "Co-Leads" (Air District and CBE) then selected the East Oakland Community Steering Committee (CSC) members. The CSC is a diverse group of individuals who live, work, or go to school in the East Oakland community. CSC members represent a wide range of sectors, including faith-based organizations, youth, community-based organizations, local businesses, industry, government, residents, and seniors. Upon the selection of the CSC in 2022, the Co-Leads and the CSC began the process of developing a shared understanding of local air quality issues.

As an early step to understanding air quality issues, Communities for a Better Environment (CBE) and the CSC identified facilities of concern in East Oakland – industrial businesses with repeat violations, visible dust, or odors which may cause impacts on community members. A community mapping project enabled CSC members and community members to visit an online map and add pins and comments to provide further insight into the locations of air pollution concerns, community assets and gathering places important to residents in East Oakland. Additionally, several CSC meetings were dedicated to brainstorming activities to uncover community concerns.

The themes emerging from these activities, particularly the community mapping project, led to the six Plan **focus areas**. Focus areas are the overarching categories of the East Oakland community's pollution concerns that organized Plan strategy development, listed as follows:

1. **Built Environment and Land Use:** Older housing and proximity to polluting sources expose residents – especially sensitive receptors such as children – to harmful air pollutants, triggering asthma and other health problems. Addressing these conditions is vital for ensuring East Oakland residents have the same clean, safe, and healthy living environments as wealthier communities.

2. **Commercial and Industrial Sources:** East Oakland residents are disproportionately exposed to harmful air pollution from nearby commercial and industrial sources due to the historic industrial nature of the area and a legacy of discriminatory zoning. This focus area serves critical health-protective functions by reducing exposure to toxic emissions, fugitive dust, and localized air pollution in East Oakland neighborhoods.

3. **Illegal Dumping, Trash, and Odors:** Illegal dumping is a major concern for East Oakland residents, lowering quality of life, showing signs of institutional neglect and contributing to feeling unsafe in the community. The community is passionate about the importance of this focus area to address widespread trash, odors, and pollution through stronger enforcement and city collaboration.

4. **Public Health and Community Wellness:** East Oakland residents face health disparities – like lower life expectancy and higher rates of asthma, heart disease, and cancer. This focus area aims to improve community health through interagency collaboration.

5. **Transportation and Mobile Sources:** East Oakland residents are heavily impacted by air pollution from cars, trucks, and airport operations due to their proximity to major transit corridors like I-880 and the Oakland San Francisco Bay Airport. This focus area will help reduce harmful emissions and noise through cleaner technologies, policy changes, and proactive enforcement.

6. **Urban Greening and Workforce Development:** East Oakland faces a lack of tree cover and poorly maintained green spaces compared to wealthier areas, impacting residents' health, comfort, and access to nature. This focus area aims to advance environmental equity and economic opportunity through urban greening and local green job creation.

In addition to community-identified issues and challenges, the Plan is based on a comprehensive technical assessment. The Air District generated an emissions inventory for East Oakland that analyzed local stationary and mobile sources, included data for nearly 400 permitted facilities, and reported on Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs). These provide critical information about pollution and sources that supported the development of Plan strategies and actions.

The Plan documents the racial, ethnic and socio-economic composition of the area and provides an analysis of the health outcomes of East Oakland residents. East Oakland is predominantly Latinx/Hispanic and Black/African American, and it serves as a significant cultural hub. However, higher rates of illness and premature death persist. Asthma-related emergency visits and hospitalizations are more common among East Oakland residents than in the city or county as a whole, and rates of mortality due to heart disease, lung cancer and chronic obstructive pulmonary disease are higher in East Oakland.

At the core of the Plan are strategies and actions to reduce air pollution and improve health in East Oakland. Community concerns provided the foundation for strategy and action development. The technical analysis provided critical information about pollution and sources that supported the development of strategies and actions. Additionally, research into best practices and an inventory of current programs, policies and initiatives was assembled to create a package of strategies and actions to address East Oakland's unique air quality challenges. Through an iterative process, the Co-Leads presented the draft strategies and actions to CSC members for feedback between fall of 2024 and spring of 2025. The draft strategies and actions were also vetted with technical experts and implementing partners to help ensure alignment with the work of partner agencies such as the Port of Oakland, the City of Oakland, Alameda County Public Health Department (ACPHD), Caltrans and the California Office of Environmental Health and Hazard Assessment (OEHHA).

The Plan's 32 strategies and 105 actions aim to achieve the following goals:

- Goal #1: Reduce East Oaklanders' exposure to air pollution by decreasing emissions from sources identified by the community as top concerns.
- Goal #2: Prioritize actions that have the opportunity to reduce disproportionately high health impacts associated with air pollution affecting East Oakland residents to achieve improvements in community health.
- Goal #3: Empower East Oakland residents to participate in holding polluters accountable by combining their local knowledge with an understanding of emission sources, health impacts, air pollution regulations and reporting mechanisms.

Collaboration between the Air District and the CSC will continue throughout Plan implementation. Each year the Air District and the CSC will co-create an Implementation Schedule that outlines priority topics for the upcoming year and related strategies and actions. This schedule will be developed in coordination with relevant Air District, government agency, and partner implementors. Annual progress reports will serve as the primary tool for evaluating the implementation of the Plan, including providing an opportunity to update the Plan as needed to reflect progress and evolving priorities. At the fifth-year anniversary of Plan adoption, the Co-Leads, CSC, and selected agency partners will evaluate their work together and determine progress towards achieving the plan goals.

Chapter 1: Introduction

In 2017, the California Legislature passed Assembly Bill 617 (AB617) with the goal of improving air quality in communities most affected by pollution. The law requires local air districts to work collaboratively with these communities to develop a Community Emissions Reduction Plan (CERP) focused on identifying and implementing strategies to reduce harmful emissions and exposure.

In February 2022, the California Air Resources Board (CARB) approved a partnership between the Bay Area Air District (Air District) and the East Oakland community to begin developing a CERP. East Oakland is an area in the eastern part of the City of Oakland, which sits in the heart of the San Francisco Bay Area, a nine-county region in Northern California, along the San Francisco Bay waterfront in Alameda County. With support and resources from CARB, the Air District and local community leaders have since worked together to create the East Oakland Community Emissions Reduction Plan (Plan).

Developed through a collaborative process with strong community partnership, the Plan focuses on addressing the long-standing high air pollution burden, cumulative impacts, and health disparities experienced by East Oakland residents. Central to this effort was the formation of an East Oakland Community Steering Committee (CSC), composed of residents, leaders of community-based organizations, and local stakeholders, which played a lead role in shaping the priorities and direction of the Plan.

Through a collaborative process, the CSC confirmed the community boundary, adjusting the initial boundary to ensure the inclusion of committee-identified community assets, as these contribute to the economy and social fabric of the community. This collaborative effort determined that the Plan area is bordered by I-580 and MacArthur Boulevard to the north, the Oakland city limit to the southeast, Oakland San Francisco Bay Airport to the southwest, and 12th Avenue to the west.

Throughout the Plan process, the Bay Area Air District (Air District), in close collaboration with the community-based organization and Co-Lead partner Communities for a Better Environment (CBE), and partner local government agencies, worked to identify solutions that reflect community priorities and address long-standing environmental and health concerns. A key component of this work was the development of community concern statements, which capture the primary challenges and priority issues shared by residents across multiple focus areas. These statements are grounded in community experience, supported by technical information, and articulate each focus area’s connection to air quality and community health outcomes. They serve as a foundation for the Plan’s strategies and actions, helping ensure that proposed solutions are targeted, meaningful, and responsive to community needs.

Guided by these concerns, the Plan outlines objectives that define the desired outcomes for each focus area, strategies, and actions that detail the specific steps needed to achieve those objectives. Together, the objectives, strategies, and actions form a roadmap to reduce harmful emissions and improve conditions for East Oakland community members. Partnering with the CSC ensures that the Plan is both reflective of and responsive to the community’s priorities, and that the solutions put forward are informed by local knowledge, lived experience, and a shared vision for a healthier future.

East Oakland Community Emissions Reduction Plan Overview

Chapter 1 Introduction and Overview describes the purpose and scope of the Plan explaining the framework of Assembly Bill 617 (AB617) for reducing air pollution through state resources and local collaboration.

Chapter 2 Community Partnerships, Outreach and Engagement describes how the Air District partnered with Communities for a Better Environment (CBE) as a Co-Lead partner to facilitate community engagement and outreach and support the CSC in strengthening public participation in the development of the plan, and the CSC structure and process.

Chapter 3 Visions, Principles, and Plan-level Goals explains how the plan-level goals were developed through collaborative activities with the CSC used to guide implementation, measure progress, and advance environmental justice to achieve reductions in pollution exposure.

Chapter 4 Community Description describes the history of environmental and social justice in East Oakland and provides an analysis of population, socioeconomic, and health factors within the CERP community. It provides the geographic and physical context of land use patterns and identifies polluting sources and their impacts on community health.

Chapter 5 Air Pollution Overview identifies contributions to East Oakland air quality conditions by leveraging data from the Air District's East Oakland air monitoring site, community emissions inventory, and permitted facilities to assess federal compliance and changes in emission levels for fine particulate matter ($PM_{2.5}$), diesel particulate matter (DPM), ultrafine particles (UFP), and toxic air contaminants (TACs).

Chapter 6 Enforcement Overview and Findings identifies the responsibility of the Air District and the California Air Resources Board (CARB) in carrying out enforcement duties such as inspections to ensure regulatory compliance of stationery and mobile sources.

Chapter 7 Focus Areas, Strategies, and Actions explains how the Co-Leads collaborated with the CSC to prepare strategies and actions that achieve the plan-level goals by participating in a series of data-gathering activities such as the community mapping project, technical assessments, and identifying community facilities of concern. It details the framework for developing community concern statements and how they are used to determine focus areas: Built Environment and Land Use (BE), Transportation and Mobile Sources (T&M), Commercial and Industrial Sources (C&I), Public Health and Wellness (PH), Illegal Dumping, Trash, and Odors (ID), Urban Greening, and Workforce Development (UGW). It also lays out Plan strategies and actions arranged by focus area.

Chapter 8 CARB Statewide Strategies explains CARB's air quality and climate plan strategies for reducing emissions, addressing pollution concerns specific to East Oakland.

Chapter 9 Implementation and Reporting outlines the roles and responsibilities of the Air District and partner agencies in carrying out the implementation of the Plan strategies and actions, and how each agency will be leading efforts to meet the goals, vision, and principles of the Plan.

Appendices of the Plan detail the enforcement findings and include a list of permitted facilities within the CERP community boundary, data on the notice of violations, and reported air quality complaints.

Chapter 2: Community Partnership, Outreach and Engagement

Co-Lead Partnership and Community Outreach

In 2021, Communities for a Better Environment (CBE) and the Bay Area Air District (Air District) recommended that the California Air Resources Board (CARB) name East Oakland as the next Bay Area community to create an Assembly Bill 617 (AB617) CERP. CBE is an environmental justice organization that has worked in East Oakland for decades, building community capacity in air quality planning and reducing air pollution. The Air District selected CBE as a Co-Lead for this process because of CBE's strong community ties and extensive experience providing legal, scientific, policy, and technical support.

As the Air District's Co-Lead in the CERP development process to create the East Oakland Plan, CBE is responsible for supporting the Air District with community engagement, CSC member outreach, and CSC meeting preparation and facilitation. To assist with recruiting CSC members, CBE engaged local residents, its network of members and partners, and conducted extensive outreach in East Oakland.

The Air District and CBE conducted joint outreach to increase East Oakland community member engagement in the East Oakland Plan development and review process. Representatives from the Air District and CBE attended community events and conducted surveys. Additionally, the Air District provided grants to community-based organizations to increase public participation. To learn more about the community outreach process during Plan development, please see Appendix A: Community Steering Committee, Public Process, and Community Outreach.

CBE also supported the Air District with strategy research, writing and technical analysis during the strategy development phase of the East Oakland Plan.

Community Steering Committee

The CSC is a diverse group of individuals who live, work, or go to school in the East Oakland community. CSC members represent a wide range of sectors, including faith-based organizations, youth, community-based organizations, local businesses, industry, government, residents, and seniors.

In 2022, the Co-Leads selected CSC members through an application process. To ensure membership diversity, the membership application asked individuals to share their neighborhood of residency, interest in the project, community affiliations, and strategy interests.

The Co-Leads decided that the CSC would have a maximum number of 26 and a minimum number of 19 participants. Of these members, the CSC has up to 5 non-voting members representing local government, business, and Port of Oakland representatives. Table 2-1 below lists the CSC members in first name alphabetical order with their sector (as of March 2025). Sectors include community-based organizations (CBOs), youth organizations, non-profits, faith communities, education, government, health, and business representatives from the East Oakland area.

Table 2-1: CSC members in first-name alphabetical order, with their affiliations/sector (as of March 2025)

Name	Sector
Aiyahnna Johnson (Co-Chair)	Faith-Based
Andrea Pineda	Youth
Andria Blackmon	Resident
Carol Corr	Resident
Charles Reed (Co-Chair)	CBO
Cynthia Gutierrez	Resident
Danny Scott	Resident
Erika Pascual	Youth
Gabrielle Sloane-Law	CBO
Jamaica Sowell	CBO
Jamie Schecter	Resident
Khalilha Haynes (non-voting member)	Government
Marina Muñoz	Resident
Merika Goolsby	Local Business
Ms. Cecilia Cunningham	Senior
Mykela Patton (Co-Chair)	Youth
Njeri McGee-Tyner	CBO
Shamar Theus	Resident
Susan Goolsby	Senior
Huan (Katie) Liang	Youth
Rebecca Bantum	Youth
William Crotinger (non-voting member)	Industry/Workforce
Kimi Watkins-Tartt (non-voting member)	Government (Alameda County Department of Public Health (ACPHD))
Tram Nguyen (Kimi Watkins-Tartt Alternate) (non-voting member)	Government (Alameda County Department of Public Health (ACPHD))
Colleen Liang (non-voting member)	Government (Port of Oakland)

After CSC member selection, the CSC adopted the East Oakland Community Steering Committee Charter Agreement ("Charter"). The Charter describes the CSC's statement of purpose, roles and responsibilities, and meeting procedures. For the complete Charter language, see Appendix B: Community Steering Committee Charter.

The CSC selected three Co-Chairs to guide and lead the CSC and Co-Leads. Throughout the East Oakland Plan development process, Co-Chairs met with the Co-Leads weekly to provide input on monthly CSC meetings, set meeting agendas and review meeting materials.

Community Steering Committee Meetings

In September 2022, the CSC began meeting remotely, due to the COVID pandemic. In March 2024, the Co-Leads began hosting monthly meetings in a hybrid format at Youth UpRising in East Oakland. Virtual participants continue to join on Zoom. The CSC did not meet in January 2023, 2024, and 2025.

CSC meetings are public meetings from 6:00 PM to 8:00 PM on the second Thursday of the month. Co-Leads share meeting agendas, presentations and other supporting information with the CSC in advance of CSC meetings and provide printed copies to in-person meeting participants. All materials are posted on the Air District webpage in English, Spanish and Chinese. The Air District posts video recordings of CSC meetings on the Air District webpage.

The Air District partnered with Just Cities, a racial equity planning firm, to help coordinate logistics, facilitate, and provide translation and interpretation for monthly CSC meetings.

To learn more about the CSC, please see Appendix A: Community Steering Committee, Public Process and Community Outreach.

Community Perspectives

East Oakland has a rich history of environmental justice advocacy (see Chapter 4). In Fall 2023, five members of the CSC—Ms. Cecilia Cunningham, Co-Chair Aiyahnna Johnson, Marina Muñoz, Co-Chair Mr. Charles Reed, and Gabrielle Sloane-Law—were interviewed to honor East Oakland's legacy of environmental justice activism and to learn from their collective experience as community leaders and CSC members.

These interviews offered a powerful window into the lived experiences and deep-rooted commitments of CSC members. Each leader spoke about their personal connection to East Oakland, and the impact of air pollution on the health of their families and neighbors. They offered valuable insights on how community members, agency partners, and organizations can work together to improve air quality in East Oakland.

During the interviews, CSC members shared vivid accounts of how air pollution directly affects their lives and the lives of those around them. They described firsthand the harmful effects on children, seniors, and other vulnerable groups. While recounting the toll pollution has taken on their families, friends, and neighbors, they also identified deeper systemic causes—such as racism and historic discriminatory practices like redlining. They expressed deep concern about the long-term health consequences and emphasized the urgent need for action to protect the health and well-being of the most vulnerable.

Although a long history of systemic racism has created deep mistrust in institutions, the leaders expressed cautious optimism, emphasizing that the CSC could become a valuable platform for

residents to actively influence decisions impacting their neighborhoods. Through this platform, they envision a transformed East Oakland—one with cleaner air, improved infrastructure, affordable housing, and better access to green spaces. They stressed that achieving this vision depends on inclusive community engagement, shared power, and collaboration.

CSC members also noted that lasting change requires reducing barriers to participation and engaging a broad spectrum of voices. They highlighted the importance of honoring the community's linguistic diversity and supporting leadership that reflects it. They also called for using clear, accessible language when discussing technical topics, so all residents can fully engage in decision-making processes. Additionally, they emphasized the crucial role of community-based organizations and the responsibility of government agencies to listen to and recognize the lived experiences of East Oakland residents.

Together, these community leaders' stories illustrate the tangible impacts pollution has on the health of community members and stress the importance of sustained efforts to improve air quality. Through their voices, we come to understand the critical importance of collective action, community empowerment, and accountability in the fight for clean air and a healthier East Oakland.

Ms. Cecilia Cunningham, CSC Member

“If you can't breathe, you're in trouble. You got to be able to breathe clean air.”

Ms. Cecilia Cunningham is a dedicated advocate for clean air and a healthy environment. She has lived in Oakland for over six decades and is also a member of Communities for a Better Environment (CBE). She emphasizes the negative impact of pollution on community members' health, specifically mentioning the devastating prevalence of asthma and emphysema.

Ms. Cecilia is experienced and committed to collective action for a healthier, pollution-free environment in East Oakland. She opposes polluting industries that release toxic emissions, recognizing the severe health consequences they have on community members. Ms. Cecilia calls for collaborative efforts among community leaders, government partners, and the media. She brings attention to the needs of seniors, children, and future generations in her advocacy for a pollution-free environment.

Aiyahnna Johnson, Co-Chair

Co-Chair Aiyahnna Johnson is deeply connected to East Oakland and has witnessed firsthand the struggles that individuals with respiratory illnesses face on a daily basis.

Aiyahnna is concerned about the enduring repercussions of air pollution and wonders if community members will be able to maintain their homes in East Oakland. She emphasizes the need for agencies to understand how pollution directly affects the daily lives of community members, advocating for a more empathetic and inclusive approach to policy making.

Aiyahnna envisions the East Oakland Plan as a catalyst for positive change, emphasizing the importance of collaboration between community members and agencies.

"My family's been a long intricate part of the East Oakland community for a couple of decades, since about the sixties. It's a place where everybody knows your name. This is my people; this is my home."

Gabrielle Sloane-Law, CSC Member

“I think the first priority is making sure we can breathe. You can't do anything else, if you don't do that.”

Gabrielle’s activism in East Oakland began in 2016 with the Alliance of Californians for Community Empowerment (ACCE), and later with Communities for a Better Environment (CBE).

Gabrielle witnessed the profound impact of air pollution on her and her child's health. Their struggles with respiratory issues, exacerbated by noxious odors, became an urgent call to action. Following the closure of the AB&I foundry, Gabrielle's health took a turn for the better. Her family can now enjoy time outdoors – gardening and growing vegetables – free from the burden of noxious odors.

Gabrielle highlights institutional neglect and racism experienced by the community, which manifests in the built environment as unsafe roads, dirty parks, and the persistent presence of police helicopters.

Marina Muñoz, CSC Member

“We need a big change for our communities because we need to live without pollution. We need to live with clean air.”

Marina Muñoz, a community leader in East Oakland, is committed to environmental health and the well-being of her community. Her personal experiences with pollution, including allergies and her daughter's severe asthma, propelled her through 22 years of advocacy.

Marina champions holding companies accountable and enforcing strong environmental regulations to protect the community's health. She calls for pollution-emitting industries to offer benefits to people who become ill due to exposure to those pollutants. This could include funds to help pay for medications, prioritizing green jobs for youth and other community members, as well as access to healthy, organic and affordable food.

She underscores the importance of a holistic monitoring approach that accounts for cumulative health burdens, in addition to monitoring emissions from traditional sources of air pollution, such as the freeway, airport, and the crematorium.

Mr. Charles T. Reed, Co-Chair

Co-Chair Mr. Charles T. Reed, a native of East Oakland, is dedicated to his community. Mr. Charles' activism took root in the Emerald New Deal campaign, a movement to direct marijuana tax funds towards marginalized areas affected by the War on Drugs.

Motivated by a profound love for Oakland, Mr. Charles emphasizes the necessity of genuine community engagement, and using everyday language to define technical terms, making policymaking processes more accessible.

For Mr. Charles, power sharing is a fundamental aspect of policy change. He envisions a future where community voices and leadership become the driving force behind environmental change.

“Agencies’ true commitment to Environmental Justice and Communities of Concern should reflect in the faces of their Community Engagement teams and hiring policies. Otherwise, the process and the People will continue to suffer from a lack of Cultural Communication and Understanding!"

Chapter 3: Vision, Principles, and Plan-level Goals

Development and Use of Vision and Principles

The CSC began learning about how to develop the Plan's Vision and Principles at CSC Meeting #6 (March 2023). The Vision empowers the community by illustrating their future and identifying their purpose, values, and shared aspirations for the Plan. The Principles provide core process guidance on how to operationalize the Plan's vision. Together, the Vision and Principles speak to the shared values of strengthening the community to create the change that they would like to see, fostering unity and trust by reflecting what matters most to the community, and identifying Plan priorities to help guide continued investments.

The Vision and Principles were then developed through a collaborative process. Co-Chairs partnered with Air District staff to facilitate a Vision and Principles brainstorming activity. This activity prompted CSC members to discuss ways the CSC would work together, share past experiences as leaders and/or participants that would help guide their work, and reflect on the vision for improving air quality in East Oakland. Co-Leads and Co-Chairs reviewed the thoughts and reflections shared by the CSC, developed draft Vision and Principles statements, and presented these during CSC Meeting #8 in May 2023.

CSC members were asked to consider what was missing or if there was anything included that was unacceptable. The CSC then voted to approve the final Vision and Principles statements at CSC Meeting #9 in June 2023.

CSC Meeting #36 in May 2025 CSC Members, Co-Leads, and members of the public and partner agencies

Vision and Principles Guide Plan Development and Implementation

During the development of the Plan, the Vison and Principles provided a framework for decision-making to ensure alignment and consistency with the Plan's core values and objectives.

Upon approval and adoption of the Plan, the Vision and Principles will serve as the roadmap for adhering to the Plan's core values. The Principles will uphold the Plan's aspirations to advance environmental justice and equity by uplifting community voices, fostering community collaboration, and ensuring accountability and restorative justice for East Oakland residents.

As the Plan enters implementation, the Air District and partner agencies will work to address community needs by carrying out the strategies and actions. This work will be informed by the Vision and Principles.

Vision Statement

We seek to create a future East Oakland that includes health, accountability, transparency, and justice. Our vision includes healthy and clean air, streets, schools, industries, and parks. In this vision, industry and other polluters are held accountable for their actions and are committed to reducing the harm they have caused to impacted and neglected East Oakland neighborhoods. Government agencies are accountable to us and transparent in their actions by enforcing health-protective laws and collaborating with us to remove existing pollution and future pollution sources from our neighborhoods. We prioritize justice and equity in our community by working to end structural racism, such as the impacts of redlining, and to create a more equitable society where everyone benefits from progress and environmental justice. Ultimately, we envision a future where transparency, trust, and mutual responsibility is realized, and where every resident can live, work, and play in a healthy and sustainable East Oakland.

Principles

The CSC is committed to these Principles as a foundation for our work together and building an East Oakland Community Emissions Reduction Plan (Plan) that expresses:

Justice and Equity

We believe in the Principles of Environmental Justice, [1] our right to raise our children in a healthy environment, and supporting those who have been harmed by pollution in East Oakland. We seek equitable investment in communities and respect for East Oakland neighborhood identity and culture. We recognize what we do now affects future generations.

Collaboration and Communication

We are stronger when we work together. Our partners include all members of the East Oakland community, government agencies, and industry. The Plan is a community-driven decision-making process. We are working together to define equity and build a cleaner and healthier future for all.

Information Sharing and Transparency

We are committed to building trust and understanding through education, transparency, and information sharing. We value the different experiences and perspectives of our fellow community members. To build our Plan, we strive to have clear communication about timelines,

[1] First National People of Color Environmental Leadership Summit, The Principles of Environmental Justice (EJ): https://www.ejnet.org/ej/principles.pdf.

resources, and logistics that are effectively communicated and relayed back to community members.

Accountability and Solutions

We believe in holding individuals, government, and industries accountable for their actions. By promoting transparency and mutual responsibility, we can move towards our shared goals and a Plan that addresses community concerns and identifies strategies that reduce pollution in East Oakland.

Plan-Level Goals

Plan-Level Goals capture the outcomes or results of what the CSC envisions for the Plan to achieve. At the fifth-year anniversary of Plan adoption, the Co-Leads, CSC, Air District, and selected agency partners will evaluate their work together and determine progress towards achieving the Plan-level Goals.

During CSC Meeting #12 in September 2023, the CSC was introduced to the concept of Plan-Level Goals. This meeting explained the purpose of the goals and provided examples of goals prepared for other CERPs. Later, Co-Leads facilitated group activities to support the development of Plan-Level Goals during CSC Meeting #28 in April 2025. The Co-Leads and CSC Co-Chairs' designed an activity to invite CSC members to envision the future of East Oakland through open-ended questions. To guide their responses, CSC members were asked to answer the following questions:

- When I think about the future of East Oakland air quality, I see…_____
- I hope that the CERP can address this community concern first: _____

CSC responses helped prioritize issues captured in the community concern statements and ensured the Plan-Level Goals aligned with the Vision and Principles.

Goal #1: Reduce East Oaklanders' exposure to air pollution by decreasing emissions from sources identified by the community as top concerns.

Goal #2: Prioritize actions that have the opportunity to reduce disproportionately high health impacts associated with air pollution affecting East Oakland residents to achieve improvements in community health.

Goal #3: Empower East Oakland residents to participate in holding polluters accountable by combining their local knowledge with an understanding of emission sources, health impacts, air pollution regulations and reporting mechanisms.

Chapter 4: Community Description

East Oakland has a remarkable sense of community. The ability to form connections and share stories across differences in life experiences and perspectives is a source of pride for the community. East Oakland residents proudly assert that it feels like they've known each other for a lifetime. It is a place where history, creativity, and diversity combine to create a vibrant culture that makes East Oakland truly unique. This profound sense of connection fosters resilience in the community, even in the face of a rising cost of living, gentrification pressures, and environmental racism.

In East Oakland, support for one another is a way of life. Families in need find a network of caring neighbors ready to lend a helping hand. The elderly have access to reliable transportation options – such as Bay Area Rapid Transit (BART), Paratransit, and AC Transit – which are important resources that help them remain independent and continue living in their own homes and communities. This foundation of support provides a safety net that community members value.

Communities in East Oakland have been deeply impacted by racist policies like redlining, which restricted Black, Indigenous, and People of Color (BIPOC) to living in areas near major sources of air pollution such as freeways and heavily polluting industries. As a result, families have few alternatives but to send their children to schools and rely on outdoor spaces located in heavily polluted areas, further amplifying health and environmental injustices. These policies also led to disinvestment in public services and over-policing in predominantly BIPOC neighborhoods in both East and West Oakland.

However, the East Oakland community has responded with resilience and activism, and this history is deeply valued. The persistent community organizing and advocacy of organizations like Communities for a Better Environment (CBE) have led to important victories in the fight for clean air. Other organizations, such as Cypress Mandela, have played pivotal roles in expanding access to employment opportunities. In addition, the activism of East Oakland residents and community-based organizations has led to a legacy of progressive change in housing rights, and community-driven planning, such as the Healthy Development Guidelines and the East Oakland Neighborhoods Initiative (EONI).

The community members of East Oakland demonstrate resilience and innovation in response to systemic issues and are ready to drive transformational change.

Section 1: Community Location

East Oakland is an area in the eastern part of the City of Oakland, which sits in the heart of the San Francisco Bay Area, a nine-county region in Northern California. Located along the East Bay waterfront in Alameda County (see Figure 4-1), East Oakland is connected to the broader region by major transportation corridors, including Interstates 580 and 880, as well as BART, the Bay Area's regional rail system, and AC Transit, the local bus network.

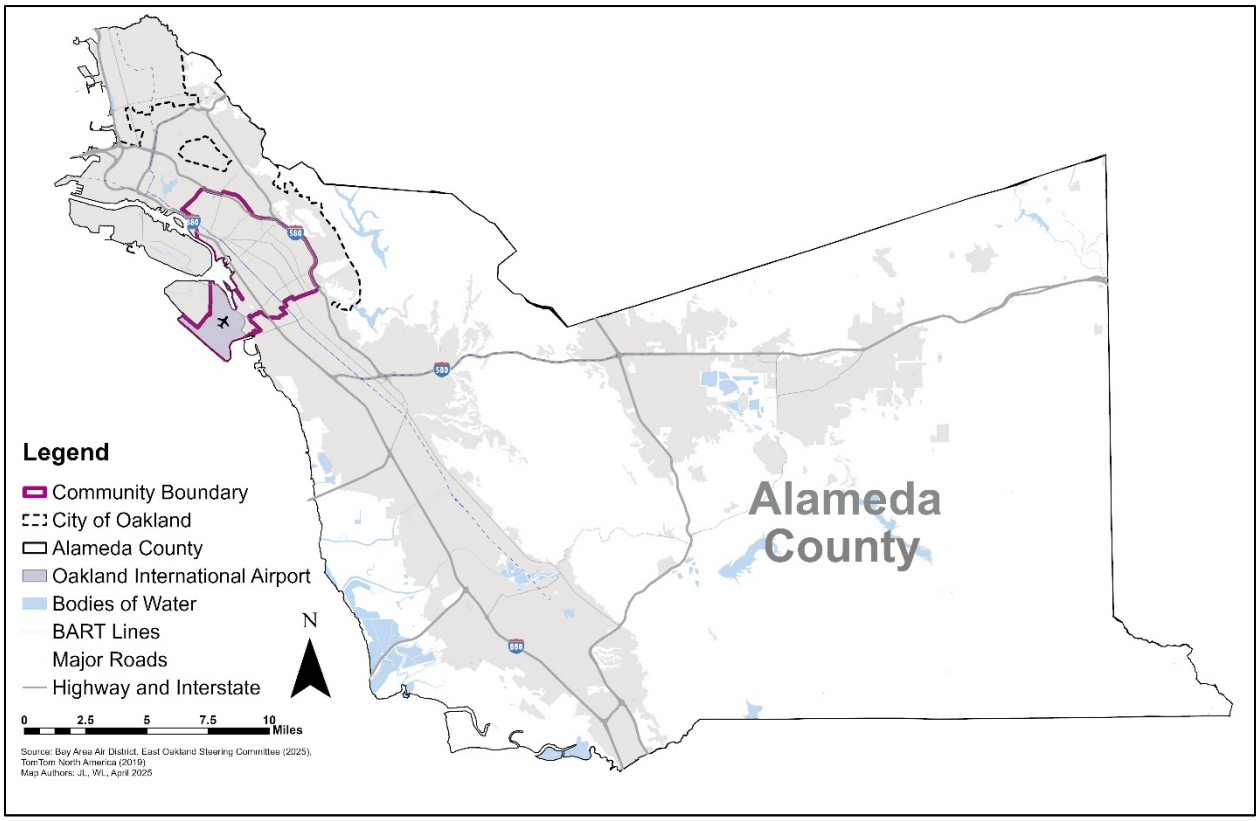

Figure 4-1: East Oakland CERP Community Boundary. Map showing the East Oakland CERP Community Boundary, highlighted with a bold dark magenta outline, located within Alameda County. Sources: See the reference list at the end of this chapter.

East Oakland CERP Community Boundary

The map below (see Figure 4-2) outlines the CERP Community Boundary, which spans 20.1 square miles, approximately 36% of Oakland's total land area of 55.9 square miles.[2] In this chapter, all references to East Oakland specifically refer to the area within this boundary. The defined area is bordered by I-580 and MacArthur Boulevard to the north, the Oakland city limit to the southeast, Oakland San Francisco Bay Airport to the southwest, and 13th Avenue to the west.

[2] U.S. Census Bureau. "QuickFacts: Oakland City, California." Accessed March 4, 2025. https://www.census.gov/quickfacts/fact/table/oaklandcitycalifornia/PST045224.

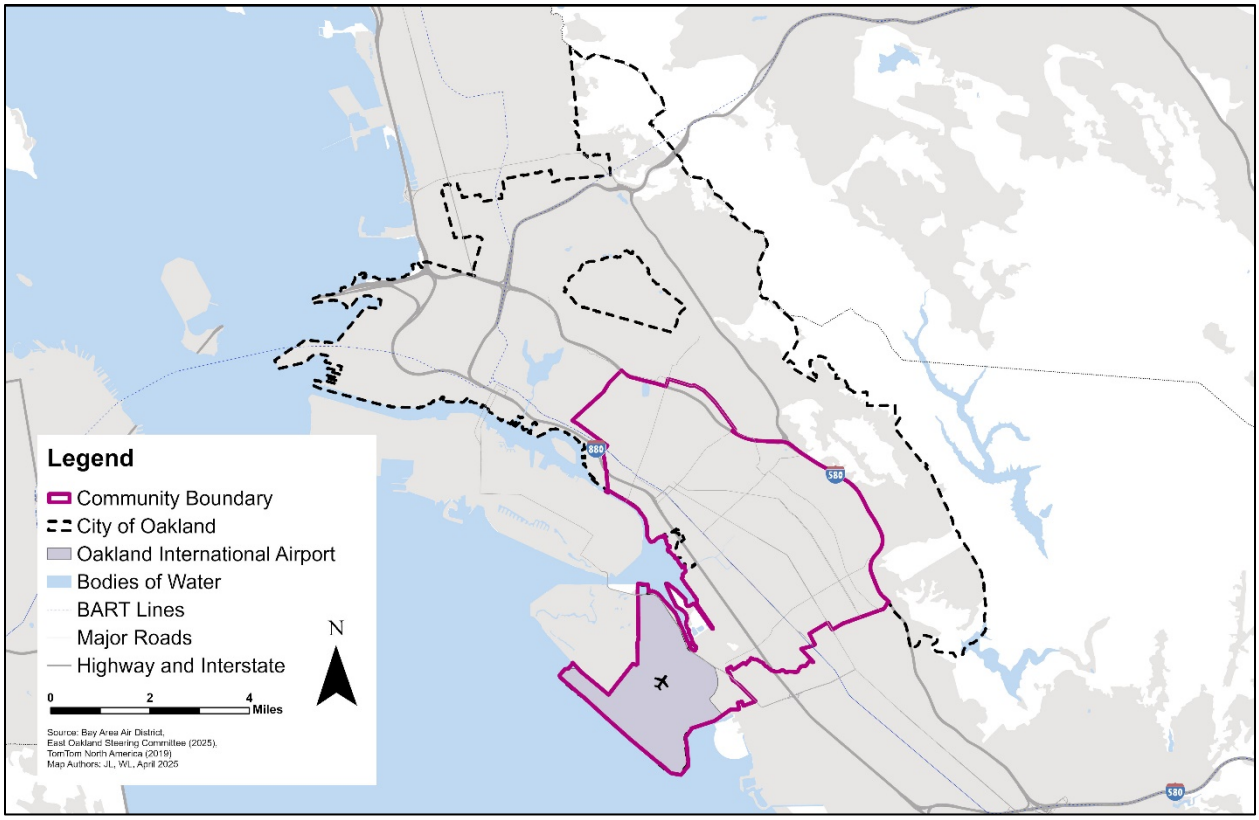

Figure 4-2: Detailed View of the East Oakland CERP Community Boundary, within the City of Oakland. Map providing a more detailed view of the East Oakland CERP Community Boundary, highlighted with a bold dark magenta outline, situated within the City of Oakland's jurisdiction. Sources: See the reference list at the end of this chapter.

East Oakland is home to a major freight corridor where goods are transported by rail and via congested freeways and truck routes located near residential neighborhoods. East Oakland also includes key transportation infrastructure, such as freeways, railways, and an international airport, alongside industrial and logistics businesses. It is defined by extensive freight activity, numerous truck routes, and industrial zones with businesses that generate high levels of truck activity.

For a more detailed overview of the land use patterns and transportation infrastructure in East Oakland, please see Section 6: Land Use, Transportation, and Housing Conditions.

Neighborhoods

East Oakland is a diverse and culturally vibrant area with unique neighborhoods, each with its own history, character, and challenges. It is one of the most culturally rich parts of the Bay Area, home to Indigenous, Latinx/Hispanic, Black/African American, Southeast Asian, and other communities.

The I-880 freeway, also called the Nimitz Freeway, runs through the western portion of East Oakland, significantly affecting the neighborhoods along its route. These areas face distinct challenges due to their proximity to a major highway with a high volume of diesel freight trucks, which are banned from using the nearby I-580. Some of the neighborhoods adjacent to I-880 in

East Oakland include Elmhurst, Columbia Gardens, Melrose, Fruitvale, Brookfield Village, Sobrante Park, and the Coliseum neighborhood.

Section 2: Community History: Then and Now

Environmental racism harms BIPOC communities in many ways. Dr. Robert Bullard, the father of Environmental Justice, defines environmental racism as “any policy, practice, or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups, or communities based on race.” [3]

Across the U.S., BIPOC communities face higher levels of air pollution, no matter their income. Research shows that even though air quality in the U.S. has generally improved in recent decades, Black and Latinx/Hispanic Americans are still exposed to more air pollution than the national average. [4] For many years, racist policies and practices, including discriminatory siting of hazardous facilities, have led these communities to live in areas with high pollution levels. They often live near major roads, toxic waste sites, landfills, or chemical plants. They are also more likely to live in lower-quality housing, which means greater exposure to harmful conditions. [5] Over time, this pollution builds up and leads to serious health risks. These inequalities, like many other environmental justice issues, come from a long history of systemic racism and exclusion.

To better understand the root causes of racial and place-based inequities in pollution burdens and health outcomes, it is important to study the history of policymaking and development that have contributed to these disparities. It is equally important to recognize the long history of community resistance and activism in response to these injustices. Highlighting these efforts not only honors the leadership and resilience of impacted communities but also helps inform more just and effective solutions moving forward.

Oakland's Indigenous Roots

Oakland, founded in 1852, sits on land originally inhabited by the Chochenyo-speaking Ohlone people, who have lived here for thousands of years. [6] This land remains deeply significant to the Ohlone, whose culture and traditions continue to thrive despite the impacts of colonization and genocide. The Ohlone are part of a group of around 50 tribes, each with its own language, with Chochenyo being spoken in the East Bay. [7]

Colonization in California began with Spanish military expeditions and Catholic missions in the 1700s, which forcibly removed Indigenous people from their land. After California became part of the U.S. in 1850, the state government supported violent policies that led to the mass genocide of Indigenous peoples, particularly after the Gold Rush. By 1852, the Ohlone

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[3] Bullard, Robert D. “Environment and Morality: Confronting Environmental Racism in the United States.” United Nations Research Institute for Social Development, 2004. https://www.csu.edu/cerc/documents/EnvironmentandMorality-ConfrontingEnvironmentalRacismInTheUnitedStates-Bullard2004.pdf.

[4] Lane, Haley M., Rachel Morello-Frosch, Julian D. Marshall, and Joshua S. Apte. “Historical Redlining Is Associated with Present-Day Air Pollution Disparities in U.S. Cities.” Environmental Science and Technology Letters 9, no. 4 (April 12, 2022): 345–50. https://pubs.acs.org/doi/10.1021/acs.estlett.1c01012.

[5] Kaufman, Joel D., and Anjum Hajat. “Confronting Environmental Racism.” Environmental Health Perspectives 129, no. 5 (May 20, 2021): 051001. https://ehp.niehs.nih.gov/doi/10.1289/EHP9511.

[6] Schwarzer, Mitchell. Hella Town: Oakland’s History of Development and Disruption. University of California Press, 2021.

[7] UC Berkeley. “Ohlone Land.” Centers for Educational Justice and Community Engagement. Accessed March 4, 2025. https://cejce.berkeley.edu/ohloneland.

population had dropped by 90%, and by the 1880s, the Bay Area Ohlone population was severely reduced.[8] Despite enduring violence, forced labor, and the suppression of their identity, the Ohlone persisted, rebuilding communities after and continuing their struggle for sovereignty.[9]

In the 1950's, the U.S. government designated the Bay Area as one of several relocation sites under the Indian Relocation Act of 1956, which aimed to move Native Americans from reservations to urban areas with promises of job training, housing, and employment—promises that largely went unfulfilled. As a result, tribes from across the country migrated to the Bay Area, contributing to one of the largest Intertribal Indian populations in the country. This displacement led to the founding of Intertribal Friendship House, one of the nation's oldest urban Indian community centers, which became a vital gathering place for Indigenous people seeking connection and social services. Intertribal Friendship House remains active in Oakland today.[10]

Native communities are actively working to preserve and revitalize their cultures. For the Ohlone people, one powerful path toward healing from centuries of oppression is land rematriation—the process of returning Indigenous land to its original caretakers. This effort is not only about reclaiming territory but also about restoring cultural practices disrupted by settler colonialism.[11]

Sogorea Te' Land Trust, an urban Indigenous women-led organization, is leading this work by facilitating the return of land to Indigenous people. In East Oakland, the Lisjan site—a traditional Ohlone village—became the first piece of land rematriated by Sogorea Te' within the territory of Huchiun, which includes present-day Oakland, Berkeley, Alameda, Piedmont, Emeryville, and Albany.[12]

A History of Disinvestment and Segregation in Oakland

Throughout Oakland's history, social, economic, and environmental disparities have persisted, especially during periods of industrial growth. As factories and industrial jobs expanded, so did policies that reinforced racial segregation in housing.[13]

"I think [the steering committee] presents a chance for people that have lived here for generations who have experienced years of racism and redlining. That's really who needs to decide what happens here." - Gabrielle Sloane-Law, CSC Member

Oakland was once a popular place for working-class people and immigrants because it had plenty of jobs and affordable housing. During the Great Migration, many African Americans moved from the South to cities like Oakland, hoping for better job opportunities and living conditions. This movement, which peaked between the two World Wars, played a big role in shaping Oakland's workforce and communities. Between 1940 and 1950, Oakland's Black population grew from 8,462 to 47,562 and reached 83,618 by 1960.[14] Although census data is

[8] Bay Area Equity Atlas. "Indigenous Populations in the Bay Area." Accessed March 18, 2025. https://bayareaequityatlas.org/about/indigenous-populations-in-the-bay-area.
[9] Stanford University. "First Inhabitants: The Ohlone of the Peninsula." Cantor Arts Center. Accessed March 4, 2025. https://museum.stanford.edu/exhibitions/melancholy-museum-love-death-and-mourning-stanford/first-inhabitants-essay.
[10] Bay Area Equity Atlas. "Indigenous Populations in the Bay Area." Accessed March 18, 2025. https://bayareaequityatlas.org/about/indigenous-populations-in-the-bay-area.
[11] Sogorea Te' Land Trust. "What Is Rematriation?," November 5, 2024. https://sogoreate-landtrust.org/.
[12] Sogorea Te' Land Trust. "Lisjan," November 5, 2024. https://sogoreate-landtrust.org/lisjan/.
[13] City of Oakland. "Environmental Justice and Racial Equity Baseline," March 2022. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Equity-Baseline_revised4.15.22.pdf.
[14] Montojo, Nicole. "Understanding Rising Inequality and Displacement in Oakland." PBS, September 13, 2017.

limited, records show that other communities of color, including Latinx/Hispanics and Asians/Pacific Islanders, also grew during this time. [15] However, racist housing policies deliberately excluded Back people – and other communities of color – from living in many parts of the city, forcing them into specific neighborhoods that later became important cultural and ethnic hubs.

In the 1930s, a discriminatory practice called redlining was introduced. In 1933, the federal government created the Home Owners' Loan Corporation (HOLC) to help more people buy homes as part of the recovery from the Great Depression. To decide who could get a mortgage, HOLC created racially-coded maps of at least 239 U.S. cities. [16] These maps used color codes to rate neighborhoods based on how risky they were for investment (see Figure 4-3).

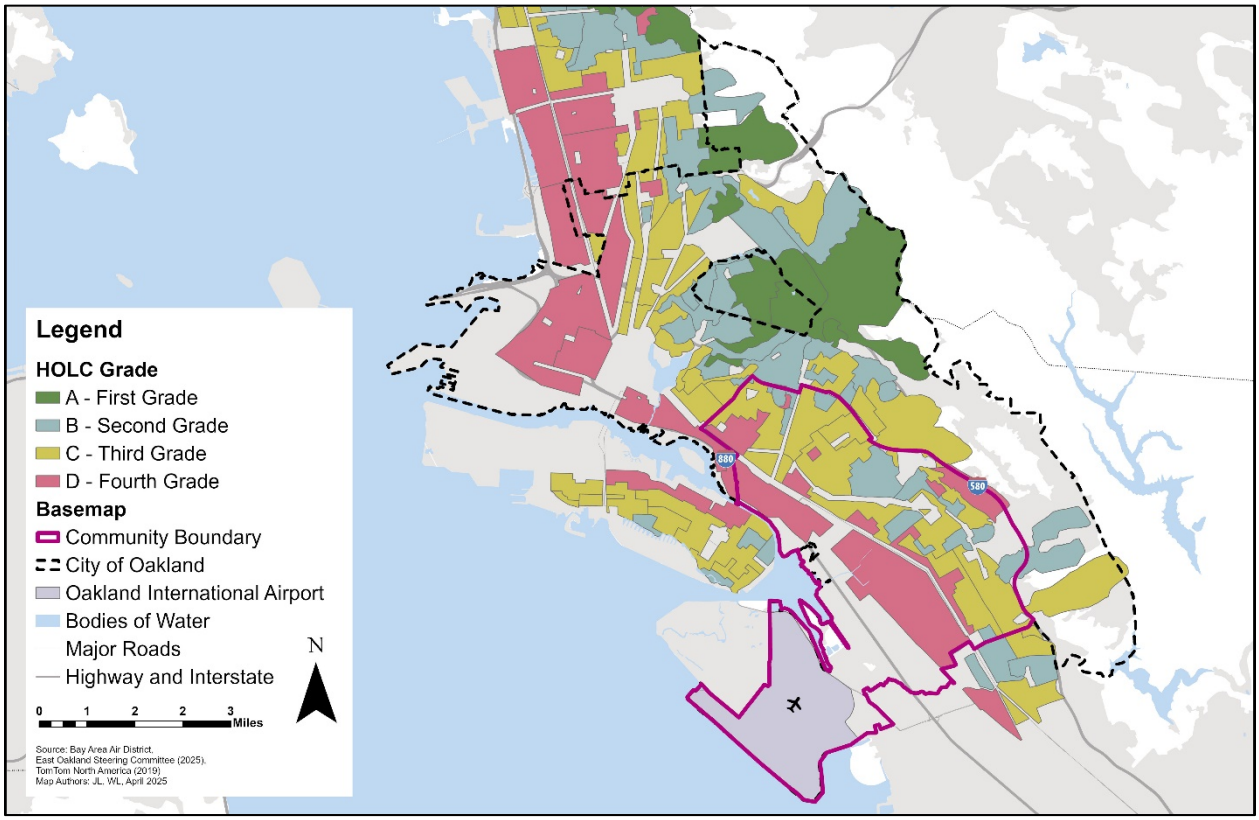

Figure 4-3: Historical Home Owners' Loan Corporation (HOLC) Redlining Map of Oakland. This map shows how neighborhoods in East Oakland were rated by the Home Owners' Loan Corporation. Areas outlined in red were labeled as "high-risk" or "Hazardous," a practice known as redlining. Sources: See the reference list at the end of this chapter.

Predominantly Black, Latinx/Hispanic, and Asian neighborhoods were marked in red and labeled as "hazardous." In contrast, mostly white neighborhoods were marked in green and labeled as "best," making it easier for residents there to get home loans and investments. [17] In Oakland, like in many cities across the nation, these policies entrenched racial segregation and made it harder for BIPOC residents to get mortgages, leaving them vulnerable to unfair loan

https://www.pbssocal.org/shows/city-rising/understanding-rising-inequality-and-displacement-in-oakland.

[15] Ibid.

[16] Decades of Disinvestment: Historic Redlining and Mortgage Lending Since 1981. National Community Reinvestment Coalition. May 2024, https://www.ncrc.org/decades-of-disinvestment/.

[17] Ibid.

terms and preventing them from building wealth through homeownership.[18] Because of redlining, BIPOC living in areas like West Oakland and East Oakland were denied home loans and financial support. This led to a cycle of disinvestment, economic decline, and long-term poverty.

At the same time, white homeowners and real estate developers created racially restrictive covenants, which were legal agreements that prevented Black people and people of color from buying homes in certain neighborhoods. These barriers further concentrated racial segregation.[19]

In the 1950s and 1960s, many historically Black, Asian, and immigrant communities in Oakland faced another major challenge: urban renewal projects. The construction of freeways, BART rail lines, and new developments tore through neighborhoods like West Oakland and Chinatown. As a result, families lost their homes, businesses were forced to close, and tight-knit communities were broken apart. During this time, many African American families were displaced from West Oakland and moved to East Oakland, particularly the Elmhurst district and nearby areas. At the same time, Latinx/Hispanic families relocated to the Fruitvale neighborhood.[20]

While Black, Latinx/Hispanic, and Asian families began moving into more areas of East and North Oakland in the 1950s, these neighborhoods were already suffering from disinvestment. The decline of industrial jobs meant fewer employment opportunities. Main commercial streets that once thrived with businesses saw empty storefronts as wealthier white residents moved elsewhere to live and shop.[21]

From the 1950s to the 1990s, Oakland experienced decades of disinvestment. Factories closed, stores shut down, and large areas remained vacant for years. Most redevelopment efforts focused on downtown and transportation projects rather than improving housing or community spaces. In many flatland neighborhoods, single-family homes were abandoned, public housing deteriorated, and redlining continued, making it difficult for residents to access loans and insurance.[22]

These economic struggles led to worsening living conditions: poorly maintained streets, underfunded schools, high unemployment, limited healthcare access, and rising crime. The government's response to drug-related issues, such as the War on Drugs and the crack cocaine epidemic, disproportionately led to the mass incarceration of Black community members. Public health crises like HIV/AIDS also deeply affected the community, with few resources available to help those in need.[23]

Oakland's history of segregation and disinvestment still affects many communities today. This history helps explain the structural and systemic factors driving inequities experienced by BIPOC communities and the ongoing need for policies that promote racial and environmental

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[18] Bailey, Zinzi D., Justin M. Feldman, and Mary T. Bassett. "How Structural Racism Works — Racist Policies as a Root Cause of U.S. Racial Health Inequities." *New England Journal of Medicine* 384, no. 8 (February 25, 2021): 768–73. https://doi.org/10.1056/NEJMms2025396.
[19] City of Oakland. "Environmental Justice and Racial Equity Baseline," March 2022. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Equity-Baseline_revised4.15.22.pdf.
[20] City of Oakland. "Oakland's History of Resistance to Racism." Accessed February 20, 2025. https://www.oaklandca.gov/topics/oaklands-history-of-resistance-to-racism.
[21] City of Oakland. "Environmental Justice and Racial Equity Baseline," March 2022. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Equity-Baseline_revised4.15.22.pdf.
[22] Ibid.
[23] Ibid.

justice.

Building Community Power: Environmental Justice and Activism in East Oakland

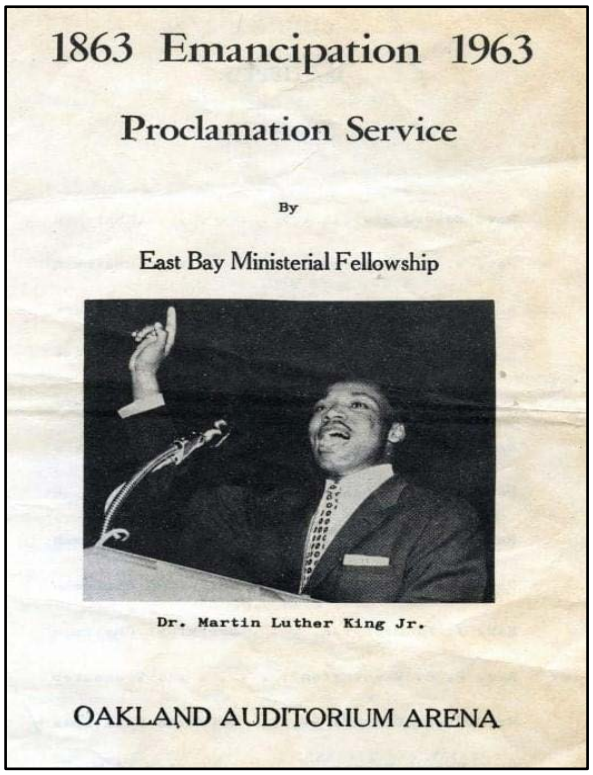

Figure 4-4: Program from Dr. Martin Luther King Jr.'s Emancipation Proclamation address at the Oakland Auditorium Arena on January 1, 1963. Source: African American Museum and Library at Oakland, Vertical File Collection (MS 179), Oakland Public Library.

East Oakland has long been a hub for social and environmental justice advocacy in response to decades of racial segregation, disinvestment, over-policing, and discriminatory land use policies. This section highlights the ongoing work of both historic and contemporary organizations partnering with the community to foster a healthier, more equitable environment.

Oakland played a pivotal role in both the Civil Rights and Black Power movements, becoming a national center for activism, self-determination, and community empowerment. In the 1960s, large protests and civil unrest led to the passage of the Civil Rights Act, which outlawed discrimination in employment and housing based on race, color, sex, religion, or national origin. During this time, Dr. Martin Luther King Jr. visited Oakland multiple times and delivered a historic address at the Oakland Civic Auditorium on January 1, 1963, before an audience of more than 7,000 people (see Figure 4-4). [24]

Although the passage of the Civil Rights Act was a landmark achievement, it soon became evident that deeper action was needed to dismantle the structural inequities created by decades of exclusionary policies. [25]

Black communities in Oakland mobilized to challenge racial discrimination, police violence, and economic inequality, giving rise to influential organizations that played a vital role in advocating for social and economic justice. Among these was the Black Panther Party (BPP), founded in 1966 by Huey Newton and Bobby Seale, students at Merritt College. [26] The BPP became one of the most impactful organizations of the era.

Alongside the BPP, groups such as Oakland Community Organizations, Unity Council, and

[24] Dickerson, Sean. “Dr. King Visits Oakland.” Oakland Public Library, January 14, 2022. https://oaklandlibrary.org/blogs/post/dr-king-visits-oakland.
[25] City of Oakland. “Oakland’s History of Resistance to Racism.” Accessed February 20, 2025. https://www.oaklandca.gov/topics/oaklands-history-of-resistance-to-racism.
[26] National Archives. “The Black Panther Party.” African American Heritage, August 25, 2016. https://www.archives.gov/research/african-americans/black-power/black-panthers.

Intertribal Friendship House emerged to fight for equal access to jobs, housing, transportation, and essential services, while addressing the lasting effects of systemic discrimination and economic disinvestment. [27]

One of the Black Panther Party's most significant contributions to education was the establishment of the Oakland Community School (OCS) in September of 1973. Located at 6118 East 14th Street in East Oakland, the school focused on addressing the systemic educational inequities faced by Black children. [28]

Multimedia: This **video** explores the Oakland Community School, a school founded by the Black Panther Party. It features a student-led interview with Huey P. Newton and a tour of the school, highlighting its unique programs in Black history, self-defense, and multilingual learning. [29]

The impact of the Black Power movement in Oakland continues to resonate today. Many local organizations still draw inspiration from the Panthers' legacy, advocating for racial justice, police reform, and economic opportunities for Black communities across the country.

Figure 4-5: César Chávez, Bobby Seale, and Richard Ybarra (from left) greeting children in Oakland. Source: César Chávez Foundation. [30]

Latinx/Hispanic communities, particularly in neighborhoods like Fruitvale, have also played a vital role in Oakland's history of organizing, power-building, and movement-building. Although the U.S. Census did not officially recognize "Hispanic" as a racial and ethnic category until the 1970s, Latinx/Hispanic people were already an integral part of Oakland's social fabric. [31]

By the 1960s and '70s, Chicano activism flourished in Fruitvale, with leaders like César Chávez and Dolores Huerta frequently visiting East Oakland (see Figure 4-5 of

[27] City of Oakland. "Oakland's History of Resistance to Racism." Accessed February 20, 2025. https://www.oaklandca.gov/topics/oaklands-history-of-resistance-to-racism.
[28] Harshaw, Pendarvis. "Celebrating The Black Panthers' Oakland Community School." KQED, January 11, 2024. https://www.kqed.org/arts/13940221/black-panthers-oakland-community-school-50th-anniversary.
[29] "Oakland Community Learning Center [founded by the Black Panther Party] 1977." Accessed July 9, 2025. https://www.youtube.com/watch?v=9dYsjDqUdr0&t=9s.
[30] "A Shared Vision: Cesar Chavez and the Black Panthers", 2024. César Chávez Foundation. https://chavezfoundation.org/2024/02/19/cesar-chavez-and-the-black-panthers.
[31] Cohn, D'Vera. "Census History: Counting Hispanics." *Pew Research Center* (blog), March 3, 2010. https://www.pewresearch.org/social-trends/2010/03/03/census-history-counting-hispanics-2/.

César Chávez, Bobby Seale, and Richard Ybarra greeting children in Oakland). The Oakland chapter of the Community Service Organization (CSO) played a key role in training leaders, providing voter education, and offering legal and community organizing support. [32]

Frustrated by government inaction in addressing demands for better access to education and social services, many Latinx/Hispanic students and activists took matters into their own hands, establishing essential social services for their communities. Two key organizations that emerged during this time in East Oakland were Centro Legal de la Raza and La Clínica de la Raza, both of which continue to serve the community today. [33]

The legacy of these movements endures, shaping ongoing conversations around racial justice, activism, and community empowerment in East Oakland and beyond.

Community-Driven Planning

Local organizations in East Oakland have been instrumental in addressing inequities in planning outcomes that disproportionately impact communities of color. Groups like Communities for a Better Environment (CBE) and others have collaborated for years on community-driven planning initiatives. These initiatives have strengthened community capacity and resilience through projects such as the Healthy Development Guidelines (HDG), and the East Oakland Neighborhoods Initiative (EONI).

"We can help influence policy. That's how you empower people, as long as our voice is actually being valued, listened to, and acted upon and not just heard but ignored. We've been through that for too long." – Mr. Charles Reed, Co-Chair

The Healthy Development Guidelines (HDG) were created, in 2014, by a coalition of residents, community organizers, and leaders, spearheaded by East Oakland Building Healthy Communities (EOBHC). The HDG aims to empower community members to address planning, policy, and public health challenges in their neighborhoods, with the goal of ensuring that no community or demographic group bears the negative effects of development that worsens health disparities. In addition to directly contributing to the development of the City of Oakland's first-ever Environmental Justice Element, the Oakland City Council recognized the guidelines through a resolution, applauding the coalition's collaborative efforts and active engagement with the community. [34]

The East Oakland Neighborhood Initiative (EONI), completed in 2019, was a community-driven planning process carried out in partnership with the City of Oakland. The plan outlines key goals and action steps to address important issues such as public safety, affordable housing, job opportunities, and education. It also includes strategies for enhancing the neighborhood's environment, expanding parks and green spaces, adding sustainable infrastructure, and improving transportation options. [35]

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[32] Ibid.
[33] East Bay Community Foundation. "Oakland: The Home of Latinx-Led Power Building," September 30, 2022. https://www.ebcf.org/post/oakland-the-home-of-latinx-led-power-building/.
[34] Lee, Anna, Nehanda Imara, Mario Balcita, Esther Goolsby, Sophia DeWitt, and Darin Ranelletti. "Healthy Development Guidelines: A Process for Equity in Oakland." Governor's Office of Planning and Research, 2020. https://lci.ca.gov/docs/20200624-Healthy_Development_Guidelines-case-study.pdf.
[35] City of Oakland. "East Oakland Neighborhoods Initiative." Accessed March 6, 2025. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/Neighborhood-and-Citywide-Plans/East-Oakland-Neighborhoods-Initiative.

Multimedia: The *History of Oakland Virtual Walking Tour*, created by David Peters as part of the Oakland General Plan Update (GPU), highlights the city's cultural heritage, activism, and hidden landmarks. [36]

[36] Peters, David. “History of Oakland Virtual Walking Tour.” City of Oakland, Cultural Strategist-In-Government Program, 2023. https://storymaps.arcgis.com/stories/94ea4517030446889 74dee148298dc8e.

Section 3: Cumulative Impacts

Many low-income communities, like East Oakland, continue to face a disproportionate burden of pollution. These communities often experience additional hardships, such as socioeconomic stressors and pre-existing health conditions, which increase their vulnerability to the impacts of pollution. [37]

"What devices are we going to need to be able to measure all this pollution? I would like us to put those devices, those computers that would be monitoring, in multiple places. We can tell the neighbors to lend us a space. They also need to know what we are doing, that we care about their health." - Marina Muñoz, CSC Member

According to the Office of Environmental Health Hazard Assessment (OEHHA), cumulative impacts mean the "exposures and public health or environmental effects from all sources of pollution in a geographic area. Cumulative impacts also take into account groups of people that are especially sensitive to pollution's effects, such as young children and people with asthma, and socioeconomic factors, such as poverty, race and ethnicity, and education." [38]

The U.S. EPA defines cumulative impacts as "the totality of exposures to combinations of chemical and non-chemical stressors and their effects on health, well-being, and quality of life outcomes." [39] Chemical and non-chemical stressors can come from the built, natural, and social environments. Chemical stressors affect people through exposure to pollutants in the air, water, and land, while non-chemical stressors impact individuals and communities by limiting access to essential social determinants of health, such as safe housing, healthy food, and green spaces. Non-chemical stressors also include the negative effects of extreme weather events, such as heatwaves, flooding, and wildfires, which are becoming more frequent and severe due to climate change. [40]

Now that we have defined cumulative impacts, let's explore how they can affect different people and communities, and how we can measure these effects at various scales.

Cumulative impacts take into account the "totality of exposures" experienced over a person's lifetime. [41] Some communities may face a higher concentration of stressors—like pollution, limited healthcare access, poverty, or inadequate housing—compared to others. Cumulative impacts can affect people both directly and indirectly. They can be assessed within specific geographic areas (such as neighborhoods or cities), or across distinct population groups (such as those defined by age, race, or income). [42]

To help address the cumulative impacts facing California communities, the Office of Environmental Health Hazard Assessment (OEHHA) developed CalEnviroScreen (CES). [43] This

[37] "CalEnviroScreen 4.0." 2021. Office of Environmental Health Hazard Assessment. https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf.
[38] About CalEnviroScreen. "What Are Cumulative Impacts?" Office of Environmental Health Hazard Assessment (OEHHA). Accessed March 17, 2025. https://oehha.ca.gov/calenviroscreen/about-calenviroscreen.
[39] U.S. Environmental Protection Agency. "Cumulative Impacts Research: Recommendations for EPA's Office of Research and Development," September 30, 2022. https://19january2025snapshot.epa.gov/system/files/documents/2022-09/Cumulative%20Impacts%20Research%20Final%20Report_FINAL-EPA%20600-R-22-014a.pdf.
[40] Ibid.
[41] Ibid.
[42] Ibid.
[43] State of California Office of Environmental Health Hazard Assessment. "CalEnviroScreen 4.0". 1 May 2023. https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40.

tool uses a place-based cumulative impacts framework to identify overburdened communities across the state, guiding the development and implementation of targeted policies, investments, and programs designed to reduce pollution burdens for the most vulnerable and marginalized communities.

Figure 4-6 shows that 17 of East Oakland's 43 census tracts have CalEnviroScreen (CES) scores at or above the 70th percentile—the threshold used by the Air District to designate Overburdened Communities in the Bay Area.[44] These high-scoring tracts are located near I-880 and areas zoned for industrial use.

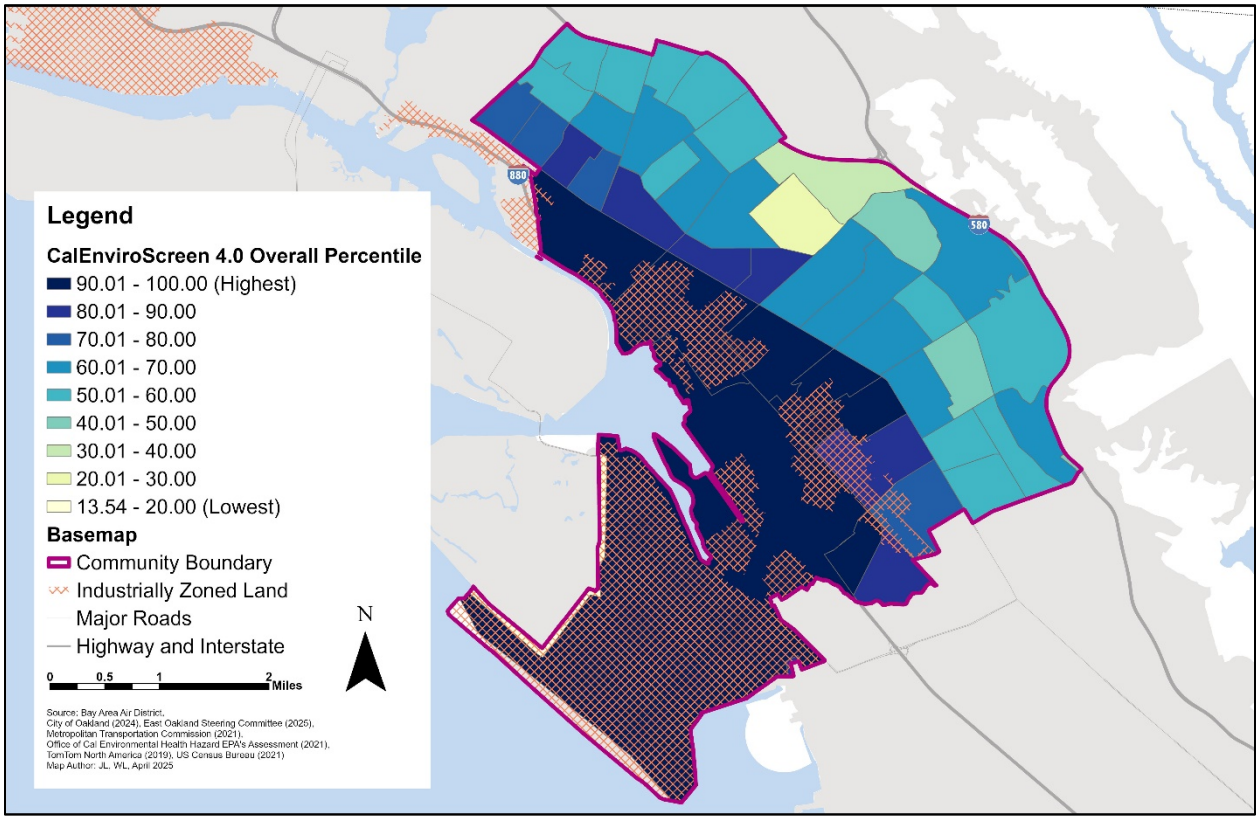

Figure 4-6: CalEnviroScreen Scores and Industrial Zoning in East Oakland. This map shows CalEnviroScreen scores for East Oakland, highlighting areas with industrial zoning in an orange hatch pattern. Census tracts shaded in dark blue experience the highest pollution burden and cumulative impacts, while those in light yellow are the least impacted. Sources: See the reference list at the end of this chapter.

The neighborhoods of Melrose, Columbia Gardens, and Lockwood-Tevis are in three East Oakland census tracts that rank among the top 5% most polluted and impacted tracts in California, according to CalEnviroScreen 4.0. See Appendix C: CalEnviroScreen 4.0 Percentile Scores for East Oakland Census Tracts for a complete list of East Oakland census tracts and their CalEnviroScreen 4.0 scores, ranked relative to other areas in the state.

In the following three sections, we examine local conditions in East Oakland—including

[44] Air District Rule 2-1 defines an Overburdened Community as an area located (i) within a census tract identified by the California Communities Environmental Health Screening Tool (CalEnviroScreen), Version 4.0, as having an overall CalEnviroScreen score at or above the 70th percentile, or (ii) within 1,000 feet of any such census tract. Learn more at https://www.baaqmd.gov/en/news-and-events/page-resources/2021-news/121521-permit-rule.

socioeconomic factors, health outcomes, land use patterns, transportation infrastructure, and housing conditions—that contribute to and reflect the cumulative impacts experienced in the community.

Section 4: Population and Economic Profile

About 195,000 people live in East Oakland.[45] This makes up 45 percent of Oakland's total population of approximately 438,000 people.[46] The population in this area is relatively young. As shown in Figure 4-7, approximately 27% of the population is under the age of 20, while an additional 24% falls between the ages of 20 and 35. Seniors aged 65 and older represent the smallest of the age groups shown below, making up about 11% of the population.

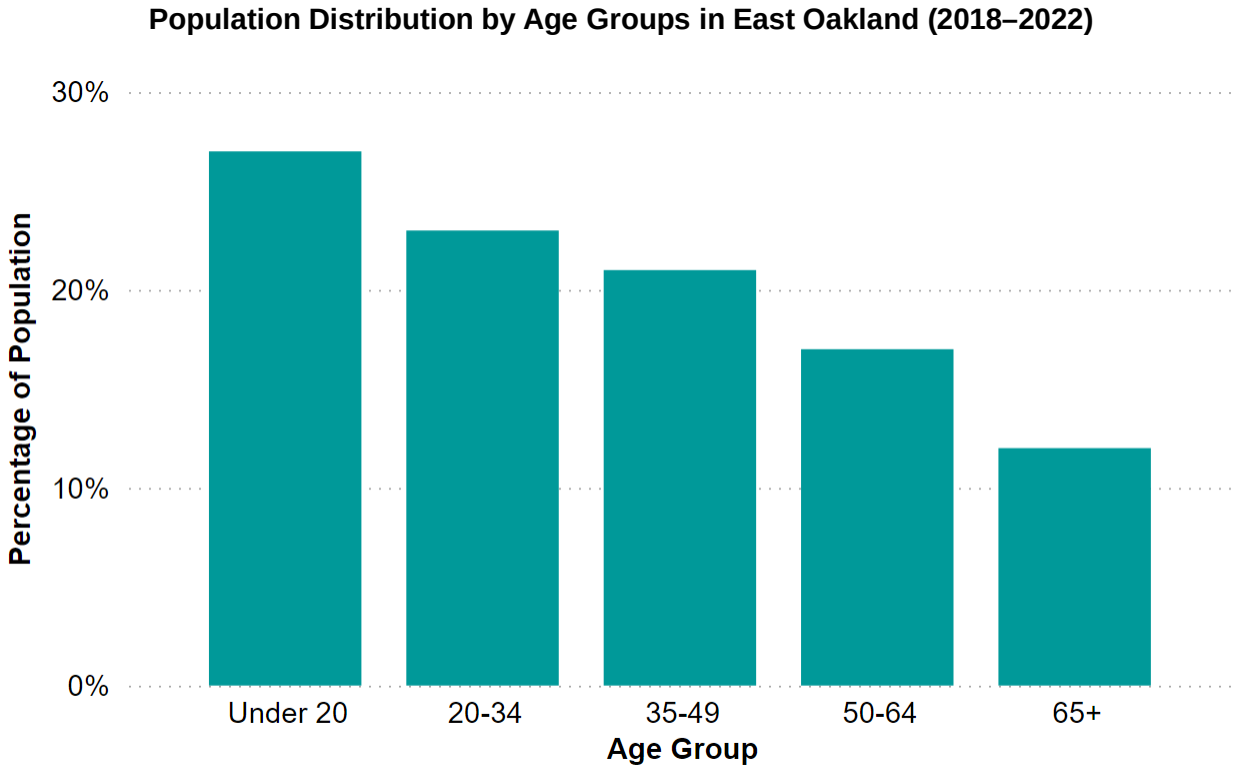

Figure 4-7: This chart shows the percentage of East Oakland residents in each age group. Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table S0101, Age and Sex. Retrieved from https://data.census.gov/.

The East Oakland community is racially and ethnically diverse. As illustrated in Figure 4-8, East Oakland has a considerably higher proportion of Latinx/Hispanic and Black residents compared to Alameda County or the broader Bay Area. Latinx/Hispanic residents make up 45% of East Oakland's population, compared to about 22% of Alameda County's population and 24% of the Bay Area population. Black residents make up 25% of East Oakland's population, compared to about 10% of Alameda County's population and 6% of the Bay Area population.

This disproportionately high concentration of Latinx/Hispanic and Black residents in East

[45] U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table B03002, Hispanic or Latino Origin by Race. Retrieved from https://data.census.gov/.
[46] Ibid.

Oakland underscores the ongoing effects of racial segregation. Systemic racism and historical factors—such as redlining, discriminatory housing practices, economic inequality, and unequal access to resources—have shaped this demographic pattern. These systemic barriers often limit opportunities for BIPOC communities to move to areas with greater economic resources, lower levels of environmental pollution, and access to health-promoting infrastructure, such as parks and walkable streets.

At the same time, East Oakland's demographics highlight its role as a cultural hub, where Latinx/Hispanic and Black communities have built a sense of belonging and established spaces to preserve and celebrate their identities, traditions, and cultures, even in the face of systemic oppression.

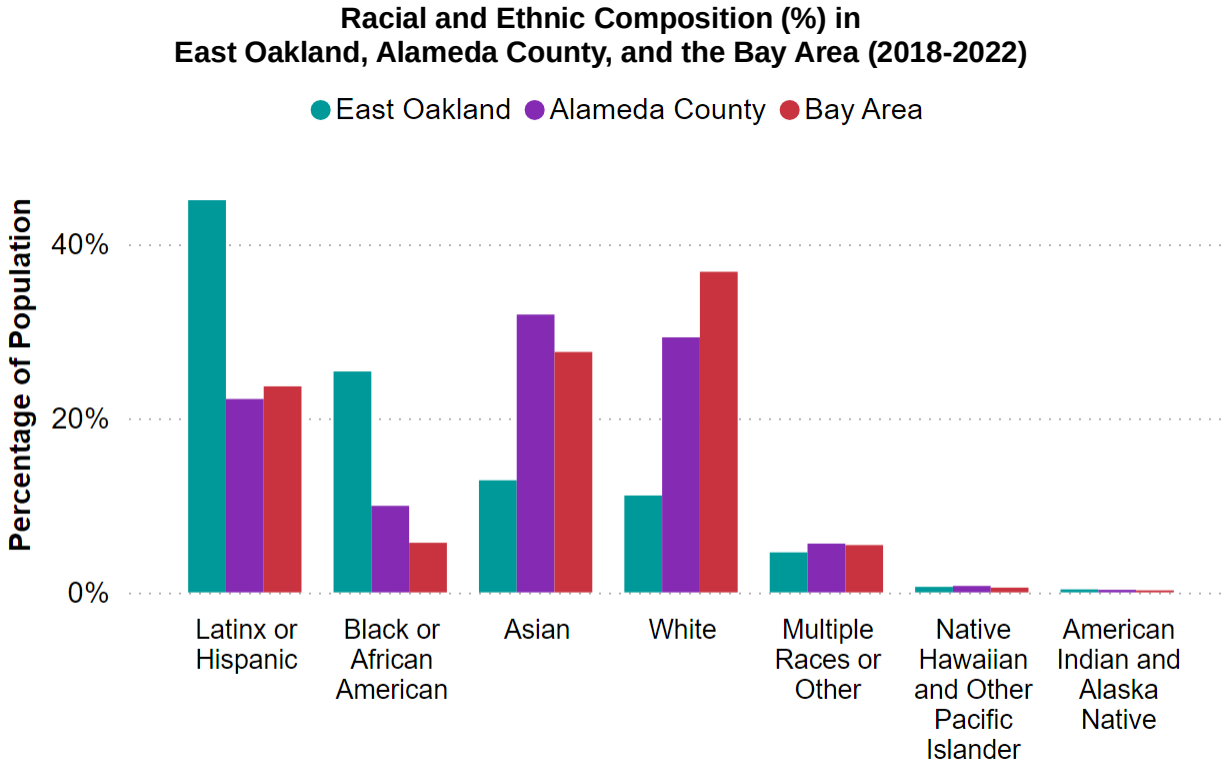

Figure 4-8: This chart shows the percentage of people from different racial and ethnic backgrounds living in East Oakland (green), Alameda County (purple), and the Bay Area (red). From left to right: Latinx or Hispanic, Black or African American, Asian, White, Multiple Races or Other, Native Hawaiian and Other Pacific Islander, and American Indian or Alaska Native. U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table B03002, Hispanic or Latino Origin by Race. Retrieved from https://data.census.gov/.

East Oakland residents experience higher rates of poverty, unemployment, and lower educational attainment compared to Alameda County and the Bay Area overall. This points to substantial economic and educational inequities, highlighting unequal access to opportunities. Approximately 40% of East Oakland's population lives below 200% of the federal poverty level, more than double the rate in Alameda County or the Bay Area (see Figure 4-9).

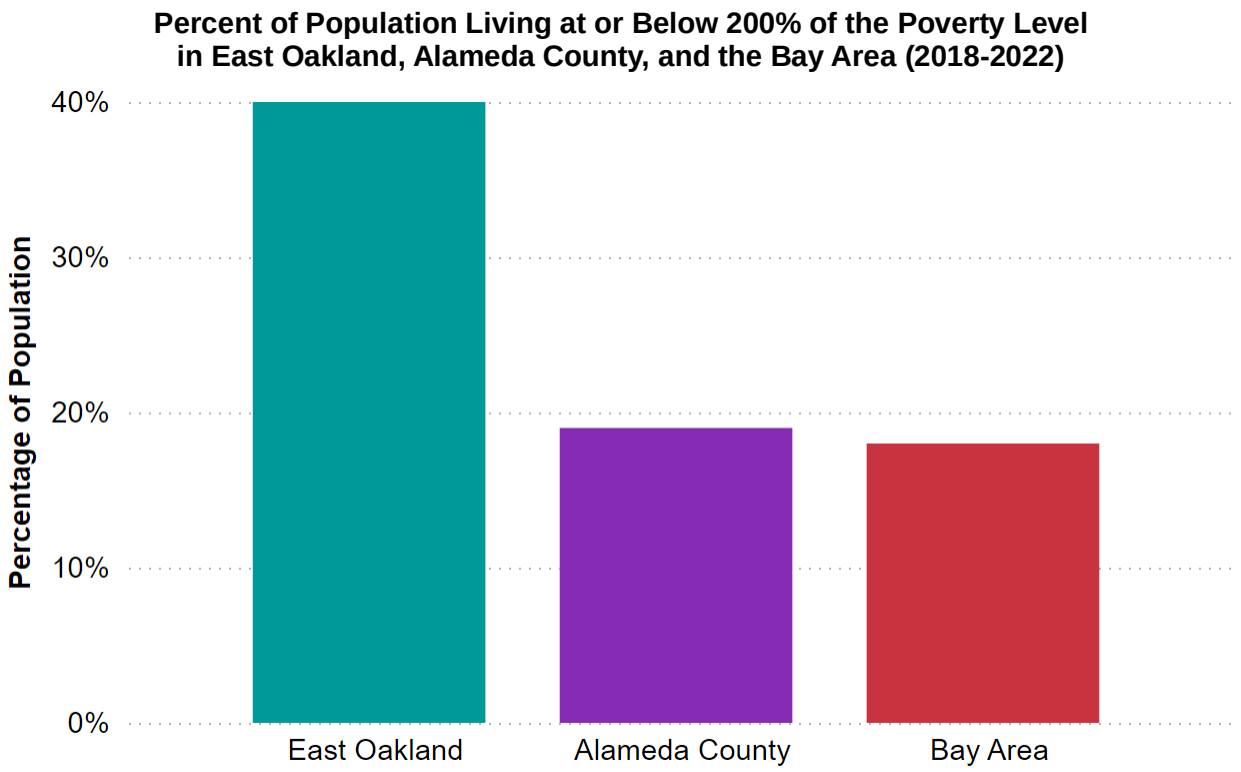

Figure 4-9: Source: This chart illustrates the percentage of residents living at or below 200% of the federal poverty level in East Oakland, Alameda County, and the Bay Area. U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table C17002, Ratio of income to poverty level in the past 12 months. Retrieved from https://data.census.gov/.

The unemployment rate in East Oakland is higher at 4.3%, compared to 3.3% in Alameda County and 3.4% in the Bay Area, highlighting the economic hardship faced by the community (see Figure 4-10). The unemployment rate represents the percentage of people aged 16 and over in the workforce who are unemployed. [47] According to the U.S. Census, people are considered unemployed if they are 16 or older and (A) did not work during the "reference week", (B) were actively looking for a job in the past four weeks, and (C) were available to start working. This also includes people who were laid off and waiting to return to their job, as long as they were available to work. [48]

Overall, the higher poverty and unemployment rates in East Oakland indicate that residents are economically marginalized, facing limited job opportunities and other barriers to employment.

[47] The unemployment rate does not include people who are not part of the workforce, such as students, stay-at-home parents, retired individuals, seasonal workers not looking for work during the off-season, people in institutions, or those doing unpaid family work for less than 15 hours in the "reference week."

[48] The "reference week" is the calendar week just before the date when the Census survey was completed or the interview took place. Source: U.S. Census Bureau. "American Community Survey and Puerto Rico Community Survey 2023 Subject Definitions," 2023. https://www2.census.gov/programs-surveys/acs/tech_docs/subject_definitions/2023_ACSSubjectDefinitions.pdf.

Unemployment Rates in East Oakland, Alameda County, and the Bay Area (2018-2022)

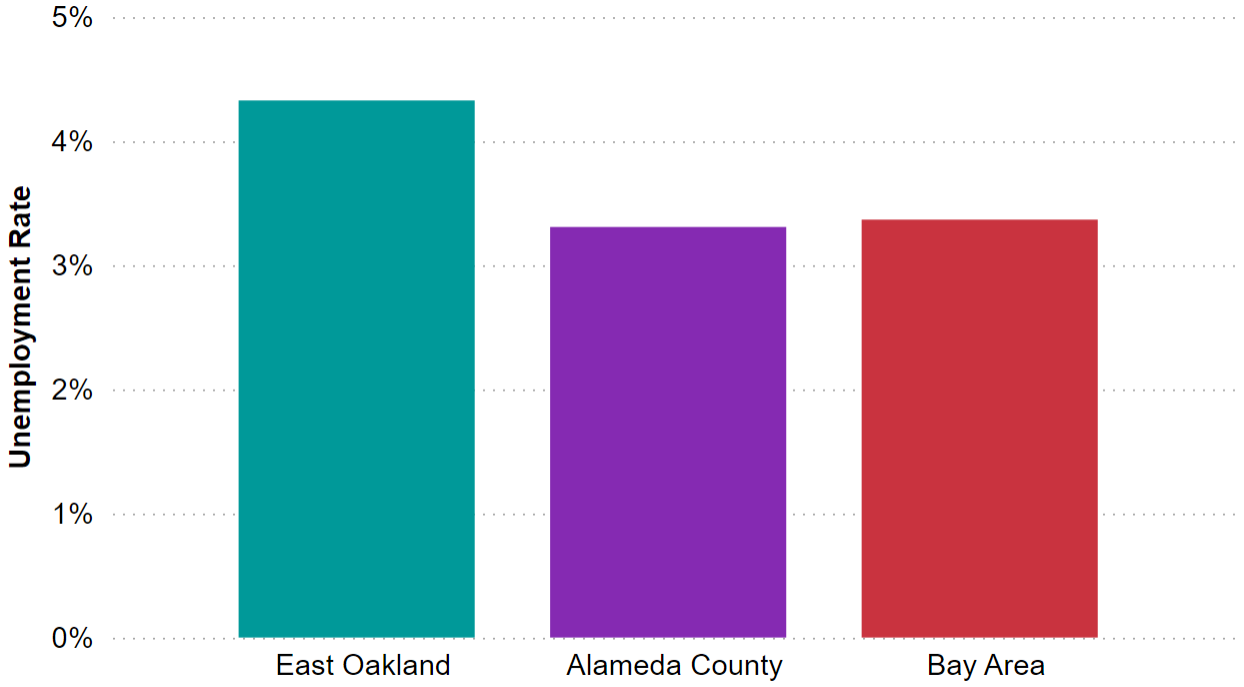

Figure 4-10: This chart illustrates unemployment rates in East Oakland, Alameda County, and the Bay Area. The unemployment rate represents the percentage of people aged 16 and over in the workforce who are unemployed. Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, DP03, Selected Economic Characteristics. Retrieved from https://data.census.gov/.

Educational Attainment in East Oakland, Alameda County, and the Bay Area (2018-2022)

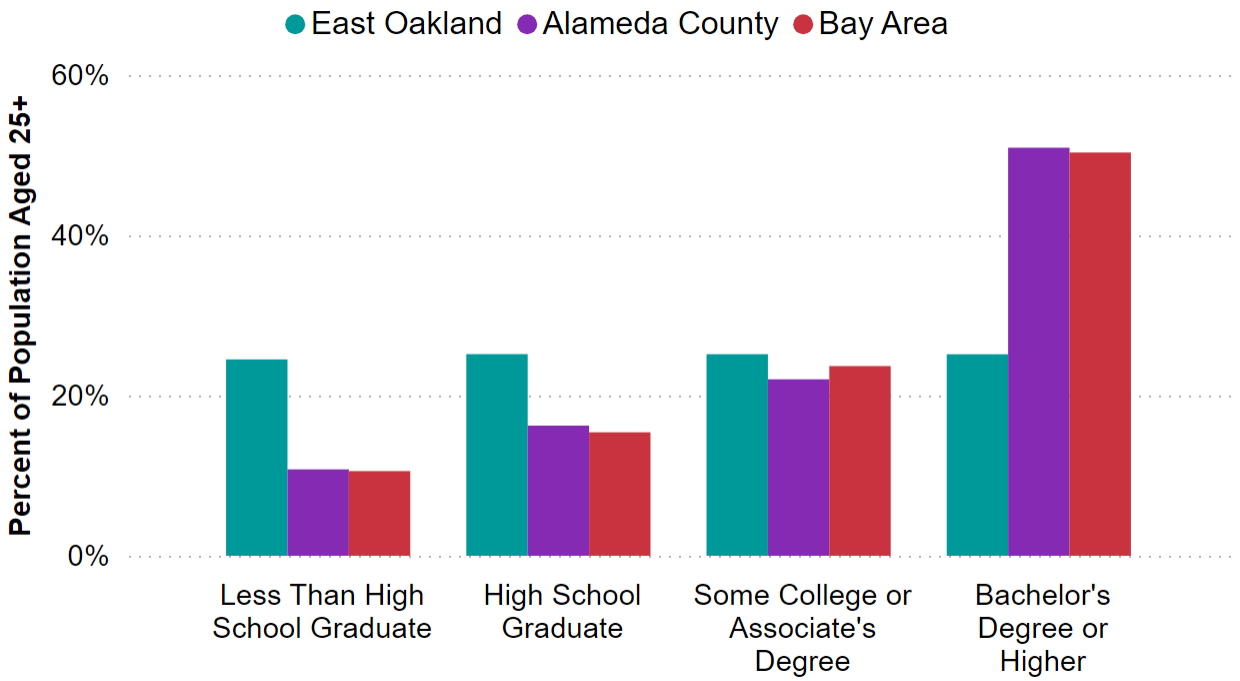

Figure 4-11: This chart shows educational attainment in East Oakland (green), Alameda County (purple), and the Bay Area (red). From left to right: Less than High School Graduate, High School Graduate, Some College or an Associate's Degree, and Bachelor's Degree or Higher. Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table S1501, Educational Attainment. Retrieved from https://data.census.gov.

Census data regarding educational attainment further illustrates the economic disparities facing East Oakland. Educational attainment refers to the highest level of education an individual has completed, and is a common measure used to understand links between education and economic opportunity. [49]

Data on East Oakland reveals lower educational attainment among adults aged 25 and older compared to Alameda County and the Bay Area (see Figure 4-11). Around 25% of East Oakland adults lack a high school diploma, compared to 11% in both Alameda County and the Bay Area. Additionally, 25% of East Oakland adults have only a high school diploma, compared to 16% in Alameda County and 15% in the Bay Area. In contrast, only 25% of East Oakland adults hold a bachelor's degree or higher, compared to 51% in Alameda County and 50% in the Bay Area. Notably, the percentage of adults with some college education or an associate degree is relatively consistent across East Oakland (25%), Alameda County (22%), and the Bay Area (24%). These differences point to a persistent educational gap that is closely tied to limited economic opportunity and contributes to ongoing economic segregation.

[49] The Census measures educational attainment among adults who are at least 25 years of age.

Section 5: Health Conditions Related to Air Pollution

This section presents local public health data from the Alameda County Public Health Department (ACPHD) to describe health conditions linked to air pollution and to compare East Oakland to Oakland and Alameda County overall. For a more comprehensive discussion of health outcomes and community well-being indicators, please refer to the Healthy Alameda County [50] dashboard, created by the ACPHD.

"I'm thinking about our future. What's happening now definitely affects our future and how we govern ourselves as a community. Right now, we have issues with respiratory problems within our community. But what does that turn into long term?" - Aiyahnna Johnson, Co-Chair

Decades of research have shown that air pollution can worsen lung and heart diseases and contribute to other serious health issues. [51] When people inhale air pollution, harmful pollutants can enter the nose, throat, and lungs, and in some cases travel to other organs, causing short-term and/or long-term damage over time. [52]

Chapter 5 provides a detailed look at the sources of air pollution in East Oakland and the health effects of specific pollutants. For example, the Overview of Air Pollution and Health Effects section discusses how particulate matter (PM) is a major health concern. Fine particles can travel deep into the lungs and bloodstream, contributing to serious conditions such as heart disease, emphysema, and even premature death. Short-term effects may include bronchitis and asthma attacks. The section also highlights concerns about toxic air contaminants (TACs), also known as air toxics, which are pollutants linked to cancer and other serious health issues affecting the nervous, reproductive, developmental, cardiovascular, and respiratory systems.

Some people face higher risks of illness or premature death from air pollution due to increased exposures, greater vulnerability, or both. A person's vulnerability to air pollution is shaped by various factors, including activity levels, genetics, pre-existing health conditions, nutrition, and social and economic circumstances. The social and economic factors are often shaped by systemic racism, which affects access to healthcare and reinforces racial segregation. As a result, BIPOC communities are more likely to live in more polluted areas that have historically lacked government investment in services and infrastructure. For example, research shows that BIPOC communities and low-income communities experience higher exposure to air pollution and, as a result, face an increased risk of negative health effects. [53] Children, seniors, pregnant women, and individuals with pre-existing heart and lung conditions are especially vulnerable to the harmful effects of air pollution. [54]

For a detailed explanation of air pollution in East Oakland, including how it impacts health, please refer to Chapter 5.

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[50] "Healthy Alameda County." 2025. https://www.healthyalamedacounty.org/.
[51] United States Environmental Protection Agency (US EPA). "Research on Health Effects from Air Pollution," October 28, 2020. https://19january2025snapshot.epa.gov/air-research/research-health-effects-air-pollution/index.html.
[52] "Common Air Pollutants." California Air Resources Board. Accessed March 12, 2025. https://ww2.arb.ca.gov/resources/common-air-pollutants.
[53] US EPA. "Study Finds Exposure to Air Pollution Higher for People of Color Regardless of Region or Income," September 20, 2021. https://19january2025snapshot.epa.gov/sciencematters/study-finds-exposure-air-pollution-higher-people-color-regardless-region-or-income/index.html.
[54] US EPA. "Research on Health Effects from Air Pollution," October 28, 2020. https://19january2025snapshot.epa.gov/air-research/research-health-effects-air-pollution/index.html.

A Note on the Impact of the COVID-19 Pandemic

The COVID-19 pandemic intensified existing disparities in life expectancy and mortality in Alameda County. During the first two years of the pandemic (2020–2021), overall life expectancy declined, and gaps widened across racial, ethnic, and socioeconomic groups. COVID-19 mortality rates varied significantly by race and ethnicity, with Pacific Islander, Native American, Latinx/Hispanic, and African American/Black residents experiencing death rates three to five times higher than those of white residents. [55]

However, Alameda County experienced a smaller increase in overall mortality and had a lower COVID-19 mortality rates compared to California and the U.S. as a whole. Contributing factors included high vaccination rates, widespread mask use, and equity-focused efforts—such as hyperlocal outreach in African American/Black and Latinx/Hispanic communities—to expand access to COVID-19 testing, vaccination, and care for groups hit hardest by the pandemic. [56]

This section of the Community Description includes health data from 2019 through 2023, which reflects a year's worth of pre-pandemic conditions but also, in large part, reflects the immediate impacts and longer-term consequences of the pandemic. This context should be considered when the Community Description is updated, see Chapter 9 for more information.

Life Expectancy at Birth

Life expectancy, like all-cause mortality, [57] is a measure of the overall health of a population—as mortality rates go down, life expectancy goes up. [58] A lower average life expectancy at birth (LEB) for a community means that, on average, people living there are not living as long as people in other communities.

Life expectancy data can be helpful in making high-level comparisons across population groups or areas. However, this data cannot predict precisely how long individuals born today will live. [59] Life expectancy is influenced by many factors, including diet, lifestyle, genetics, diseases, and environmental exposures. Disparities in life expectancy often reflect social, economic, and racial disparities, as well as disparities in other factors related to the places where people live. [60]

[55] Alameda County Public Health Department and Alameda County Health Care Services Agency. "Alameda County: Examining Increases in Mortality and Disparities from 2018-2019 to 2020-2021," 2024. https://acphd-web-media.s3-us-west-2.amazonaws.com/media/data-reports/docs/mortality-disparities-report-feb2025.pdf.
[56] Ibid.
[57] According to the Alameda County Public Health Department, "all-cause mortality rate" represents the overall rate of all deaths in a population, regardless of the cause of death.
[58] "An Introduction to Measures of Mortality: Assessing Overall Health, Cause of Death Rankings, Health-Adjusted Life Expectancy, and Socioeconomic Conditions in Alameda County." Alameda County Public Health Department, November 2017. https://acphd-web-media.s3-us-west-2.amazonaws.com/media/data-reports/city-county-regional/docs/mofm.pdf.
[59] Life expectancy is a hypothetical estimate rather than a literal prediction of future lifespan. The estimates of LEB presented in this section assume that current age-specific and group-specific mortality rates remain constant over time, which is not the case in reality. (Ibid.)
[60] US Environmental Protection Agency (EPA). "Indicators of Environmental Health Disparities: Life Expectancy," January 2, 2025. https://19january2025snapshot.epa.gov/environmentaljustice/indicators-environmental-health-disparities-life-expectancy/index.html.

Life Expectancy at Birth (in Years) by Race and Ethnicity for East Oakland, Oakland, and Alameda County (2019–2023).

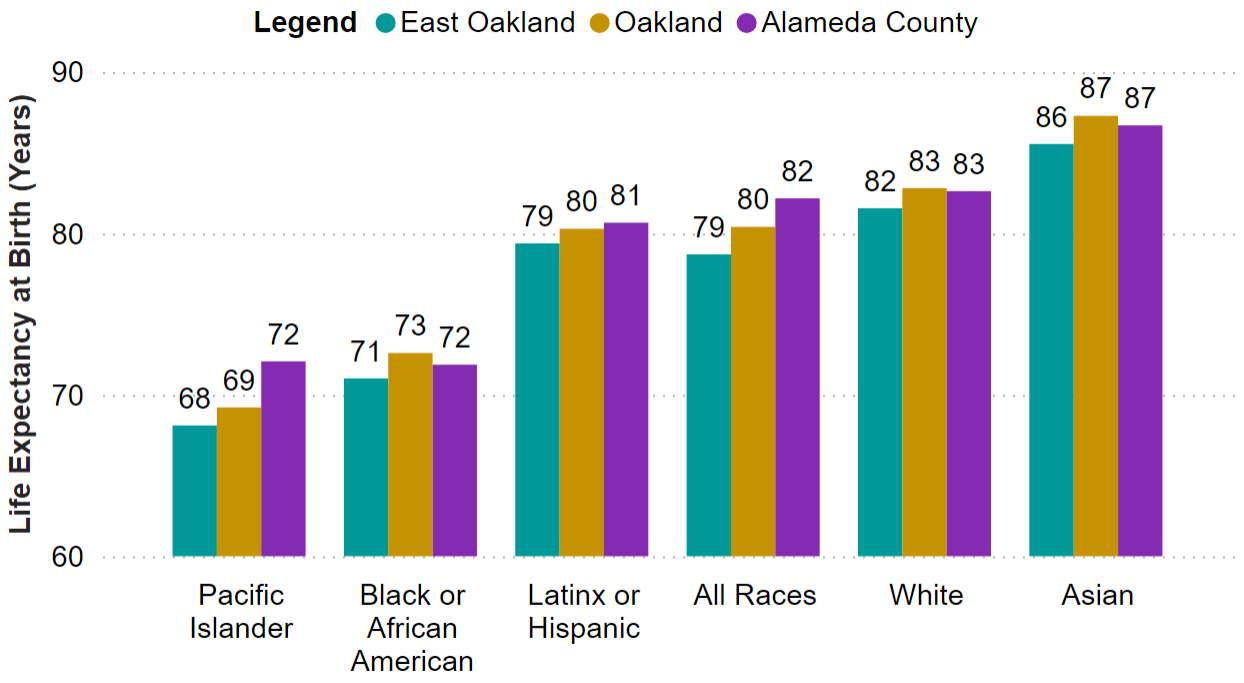

Figure 4-12: This chart shows the average life expectancy at birth (LEB) by race and ethnicity, comparing East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from Alameda County vital statistics files 2019-2023.

The average life expectancy at birth (LEB) for East Oakland residents is now 78.7 years (see Figure 4-12). This is based on observations of actual mortality rates during 2019–2023 among various groups of people. Average LEB for East Oakland is 1.7 fewer years than the estimate for Oakland overall (80.4 years) and 3.5 fewer years than the estimate for Alameda County (82.2 years).

However, inequities in average life expectancy at birth (LEB) persist across racial and ethnic groups, even within the same geographic area, such as East Oakland. For instance, the average LEB for the Pacific Islander population in East Oakland is estimated at 68.1 years, which is 14.1 years lower than the average LEB for all racial and ethnic groups in Alameda County.[61] Life expectancy at birth for Black/African American residents in East Oakland is 71.0 years, which is 11 years lower than the Alameda County estimate for all racial and ethnic groups. Latinx/ Hispanic residents in East Oakland have an average life expectancy of 79.4 years, which is 2.8 years lower than the countywide estimate for all racial and ethnic groups.

[61] Please note that, due to small population sizes, the life expectancy estimate for Pacific Islander residents should be interpreted with caution. These rates are less statistically reliable and come with wide margins of error. Although the charts do not show margins of error, this information is included in the full dataset, which is available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.

These disparities by race and ethnicity are consistent with trends observed throughout Oakland and Alameda County.[62]

In contrast, East Oakland's white[63] and Asian residents have the highest life expectancies. The average life expectancy for white residents in East Oakland is 81.6 years, while Asian residents have the highest among all racial and ethnic groups at 85.5 years. However, despite having the longest life expectancies in East Oakland, both groups still experience lower life expectancy compared to their counterparts in Oakland overall and Alameda County. In other words, life expectancy for white and Asian residents is lower in East Oakland than in other parts of the city and county. This further highlights the powerful influence of place on health—where people live can have a major impact on their health outcomes, regardless of their race or ethnicity.

Unfortunately, Indigenous/Native American populations are not represented in Figure 4-12 due to the inability to produce a statistically reliable life expectancy estimate for this group in East Oakland, stemming from the small population size. This absence reflects ongoing challenges in accurately capturing the health experiences of underrepresented populations.

Asthma Emergency Department Visits and Hospitalizations

Asthma is a chronic disease that causes inflammation in the lungs and airways, affecting over 25 million people in the U.S., including 4 million children.[64] An asthma attack occurs when the airways become swollen and clogged, making it difficult to breathe. These attacks can range from mild to life-threatening, and chronic asthma can impact a child's physical, cognitive, social, and emotional development. Environmental triggers such as secondhand smoke, dust mites, mold, air pollution, pet dander, and pests like cockroaches can worsen asthma or cause attacks. Air pollution can both exacerbate existing asthma and increase the risk of developing it.[65]

Asthma does not affect all groups equally. Some of the most impacted populations include children, older adults, BIPOC communities, and individuals with lower incomes. These disproportionate impacts may result from environmental factors associated with socioeconomic status, such as housing conditions or living in close proximity to pollution sources.[66]

Asthma is especially concerning for young children due to their small and still-developing airways. Children also breathe faster and take in more air for their size than adults. Across the country, children of color have higher rates of asthma and asthma-related emergencies. These disparities are also shaped by systemic inequities, such as limited access to medical care, living closer to pollution sources, poor housing conditions, and higher levels of chronic stress.[67]

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[62] The average LEB for Alameda County as a whole is about 82.2 years (Figure 4-12). However, this overall average masks significant disparities across racial and ethnic groups. For Black/African American and Pacific Islander residents, the average LEB is notably lower: 71.9 and 72.1 years, respectively. In comparison, Latinx/Hispanic residents have an average LEB of 80.7 years. The average LEB for white and Asian residents is even higher, at 82.6 years and 86.7 years, respectively.

[63] In this context, 'white' refers to 'Non-Hispanic White'—people who identify as white and are not of Hispanic or Latino origin, based on the Census definition. This group includes individuals with European ancestry, such as English, German, Irish, Italian, Polish, Scottish, and others.

[64] US EPA. "Indicators of Environmental Health Disparities: Childhood Asthma," 2024. https://19january2025snapshot.epa.gov/environmentaljustice/indicators-environmental-health-disparities-childhood-asthma/index.html.

[65] Ibid.

[66] Ibid.

[67] US EPA. "Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities," May 2012. https://19january2025snapshot.epa.gov/asthma/coordinated-federal-action-plan-reduce-racial-and-ethnic-asthma-disparities.

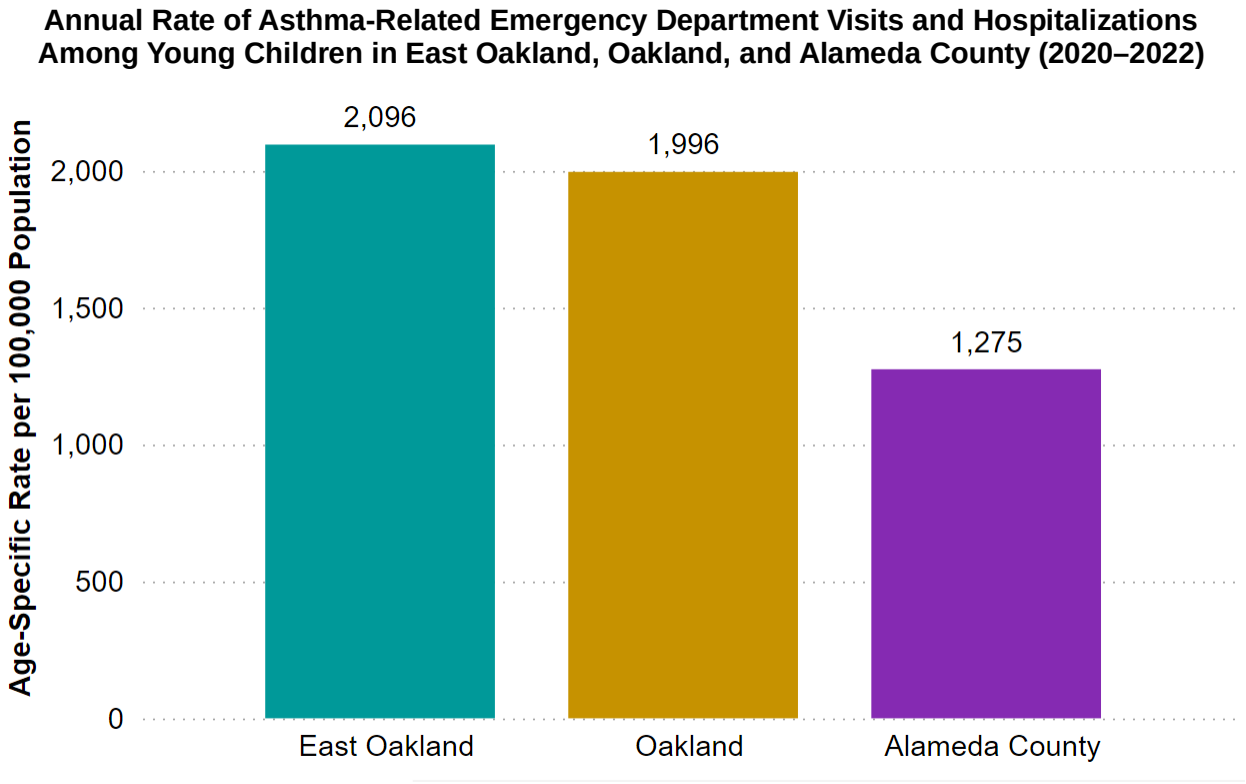

Figure 4-13: This chart compares the yearly rates (per 100,000 children under age 5) of emergency department visits and hospitalizations due to asthma in East Oakland, the broader city of Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), data from HCAI (2020-2022).

Asthma-related emergency visits and hospitalizations are more common among East Oakland residents than in the City or County as a whole. During a recent three-year period (2020–2022), there were approximately 1,000 asthma-related emergency department visits and hospitalizations in East Oakland involving children under the age of 5 (data not shown). [68] To make this comparable to the city and county, the chart above (see Figure 4-13) converts emergency department visits and hospitalizations to an annual rate of about 2,100 visits per 100,000 children per year. [69] For comparison, in Alameda County, the annual rate is about half of that (1,300 per 100,000). This considerable difference highlights health inequities and reinforces what many in the community have long understood: that children in East Oakland experience higher exposure to environmental causes of asthma and asthma attacks, as well as limited access to preventive care, and/or other systemic challenges related to asthma onset and management. [70]

[68] Although the chart does not show this data, this information is included in the full dataset, which is available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.
[69] There are fewer than 100,000 children under 5 in East Oakland, but 100,000 is a standard number to use.
[70] Given that the margins of error for asthma-related emergency department visits and hospitalizations among young children in both East Oakland and Oakland overall are wide enough to overlap, we cannot confidently conclude that the rates in Oakland are actually lower than those in East Oakland. Although the charts do not show margins of error, this information is included in the full dataset, which will be available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.

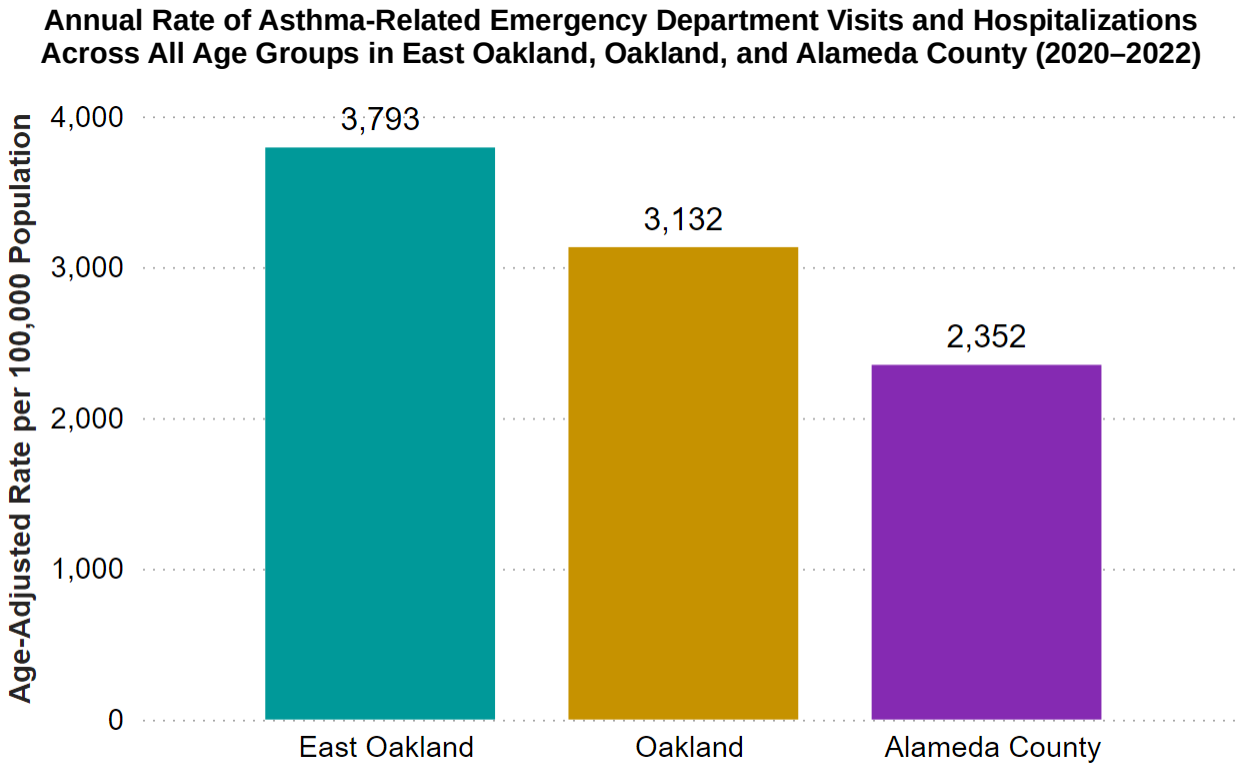

Figure 4-14: This chart shows the annual rates (per 100,000 residents) of emergency department visits and hospitalizations due to asthma for all age groups in East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from HCAI 2020-2022.

Asthma is strongly linked to age, so the rates in Figure 4-14 are "age-adjusted." This helps to see whether areas like East Oakland may have higher asthma rates due to factors other than having a younger population (Fig 4-7).

Between 2020 and 2022, there were approximately 29,000 asthma-related emergency department visits and hospitalizations in East Oakland across all age groups (data not shown). [71] To make this comparable to the city and county, the chart above (see Figure 4-14) converts emergency department visits and hospitalizations to an age-adjusted annual rate of about 3,800 asthma-related emergency visits and hospitalizations per 100,000 people. This rate is higher than Oakland's rate of about 3,100 per 100,000 people and substantially higher than Alameda County's rate of approximately 2,400 per 100,000 people. This highlights the potential that systemic factors in East Oakland are contributing to more frequent asthma-related emergencies.

[71] Although the chart does not show this data, this information is included in the full dataset, which is available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.

Mortality Rates

Mortality rates refer to the number of deaths in a specific population over a set period of time, usually expressed per 100,000 people. Communities facing social inequalities, like poverty or limited access to quality healthcare, often experience higher mortality rates. Lower mortality rates typically suggest a healthier community with better access to resources and care. Like asthma, mortality rates are closely linked to age. To make meaningful comparisons between different areas, mortality rates can also be age-adjusted.

This section contains charts of age-adjusted mortality rates for selected health conditions. These conditions have been linked to air pollution through extensive research. While air pollution is not the only cause of these conditions, its impact is especially concerning in communities already overburdened by other forms of environmental pollution and socioeconomic factors that increase vulnerability. (See Section 3: Cumulative Impacts for more information).

- **Cardiovascular disease:** Cardiovascular disease is a broad term for conditions that affect the heart and blood vessels. This includes coronary heart disease, which can limit the amount of blood and oxygen supplied to the heart, causing chest pains or heart attacks. It also includes problems with blood vessels in the brain, which can also lead to reduced blood flow, or to bleeding (strokes). [72] Research by the U.S. EPA and others has found that exposure to increased concentrations of fine particulate matter ($PM_{2.5}$) over a few hours to weeks can trigger cardiovascular disease-related heart attacks and death. Longer-term exposure can lead to increased risk of cardiovascular mortality and decreases in life expectancy. [73]
- **Lung Cancer**: A malignant tumor that originates in the lungs. Long-term exposure to many toxic air contaminants, such as diesel particulate matter (DPM), is known to increase the risk of developing cancers, including though not limited to lung cancer.
- **Chronic Obstructive Pulmonary Disease (COPD)**: Also known as chronic lung disease, COPD affects the lungs by damaging lung tissue or blocking airflow in the airways that lead to the air sacs. The most common types of COPD are chronic bronchitis and emphysema. [74] Short-term exposure to particulate matter has been linked to worsening COPD symptoms, leading to hospitalizations and emergency department visits. [75]
- **Lower Respiratory Infections**: These are infections, such as bronchitis or pneumonia, that occur in the lungs and airways. Research shows that exposure to air pollution can lead to emergency room visits or hospital admissions for respiratory infections. [76]

Of the conditions listed above, cardiovascular disease was the leading cause of mortality in East Oakland between 2019 and 2023. As seen in Figure 4-15, the age-adjusted annual mortality rate from cardiovascular disease in East Oakland was approximately 212 deaths per 100,000

[72] Centers for Disease Control (CDC). “Cardiovascular Disease.” https://www.cdc.gov/cdi/indicator-definitions/cardiovascular-disease.html.
[73] U.S. Environmental Protection Agency (EPA). “Air Pollution and Cardiovascular Disease Basics.” 2024. https://19january2025snapshot.epa.gov/air-research/air-pollution-and-cardiovascular-disease-basics/index.html
[74] U.S. EPA. “Chronic Obstructive Pulmonary Disease Prevalence and Mortality”. 2015. https://cfpub.epa.gov/roe/indicator.cfm?i=76.
[75] California Air Resources Board (CARB). “Inhalable Particulate Matter and Health.” 2025. https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health.
[76] U.S. EPA. “Particle Pollution and Respiratory Effects.” 2014. https://19january2025snapshot.epa.gov/pmcourse/particle-pollution-and-respiratory-effects/index.html.

people, notably higher than the rates in Oakland overall (192 per 100,000) and Alameda County (171 per 100,000).

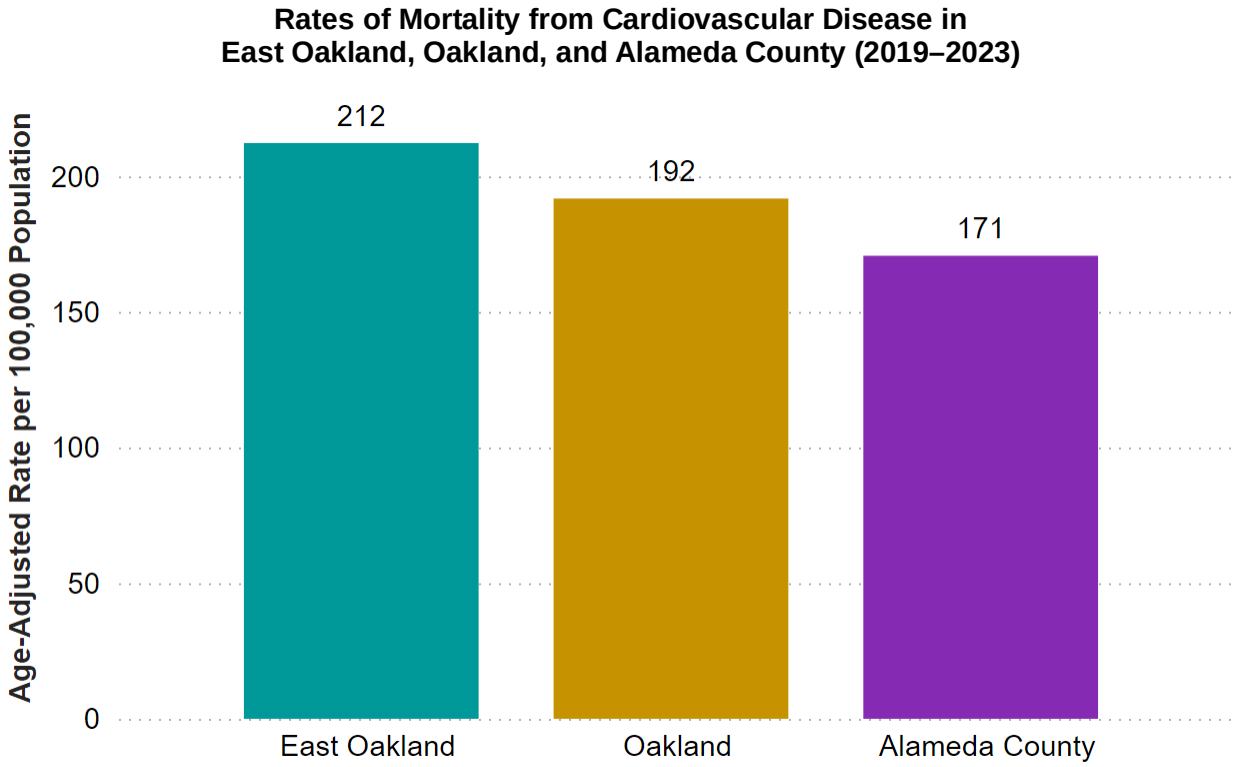

Figure 4-15: This chart displays the mortality rates (per 100,000 residents) due to cardiovascular disease in East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from Alameda County vital statistics files 2019-2023.

When comparing mortality rates in East Oakland, Oakland, and Alameda County, it's important to account for the margins of error in each estimate. [77] When the margins of error overlap, this indicates that the differences in mortality rates are unlikely to be statistically significant. [78]

As shown in Figure 4-16, between 2019 and 2023, the mortality rate for lung cancer in East Oakland (24 per 100,000 people) was higher than the rate in Alameda County (20 per 100,000 people). Similarly, the Chronic Obstructive Pulmonary Disease (COPD) mortality rate in East Oakland (21 per 100,000 people) was higher than in Alameda County overall (18 per 100,000 people). These are the only two respiratory disease mortality rates in these data where there

[77] The margin of error reflects the uncertainty in an estimate, typically due to factors like sample size. A wider margin of error suggests less precision in the estimate. Small population sizes tend to have larger margins of error because they are more sensitive to variability. If the margins of error overlap, it means the differences between the two estimates may not be statistically significant. This indicates that the estimates may not be significantly different from each other. Even if the ranges overlap, you can compare the relative sizes of the margins of error, where a smaller margin of error indicates a more reliable estimate. To determine if East Oakland's estimates are, in fact, different from those for Oakland or Alameda County, we compare the lower limit of East Oakland's margin of error with the upper limit of the margin of error for Oakland or Alameda County. If the lower limit of East Oakland's estimate is greater than the upper limit of the other areas' estimates, this suggests a significant difference.

[78] Although the charts do not show margins of error, this information is included in the full dataset, which will be available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.

appears to be a clear and measurable difference between East Oakland and the County, indicating that East Oakland experiences higher rates of mortality related to lung cancer and COPD.

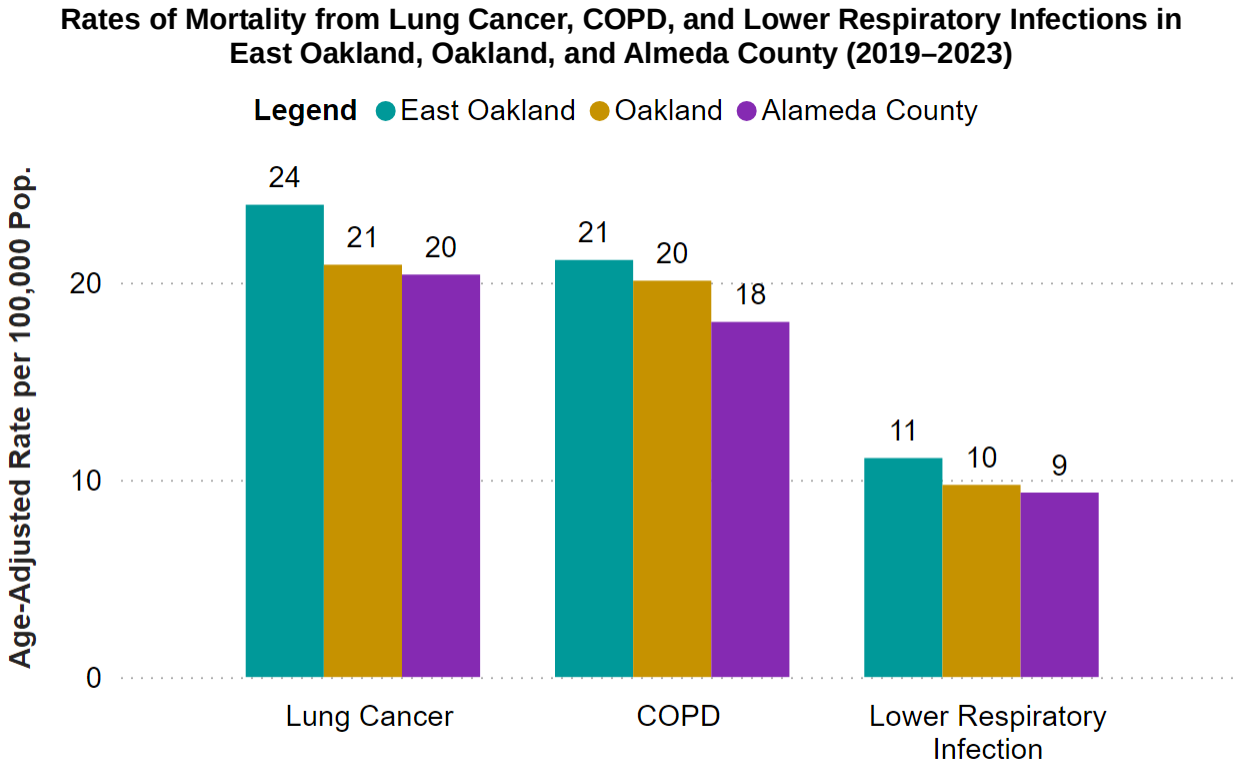

Figure 4-16: This chart shows annual mortality rates (per 100,000 residents) for (in order) lung cancer, chronic obstructive pulmonary disease (COPD), and lower respiratory infections in East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from Alameda County vital statistics files 2019-2023.

However, the overlap in margins of error between East Oakland and Oakland prevents us from concluding that the lung cancer and Chronic Obstructive Pulmonary Disease (COPD) mortality rates in East Oakland are truly higher than in Oakland overall. Likewise, we cannot confidently assert a meaningful difference in the mortality rate from lower respiratory infections between East Oakland, Oakland, and Alameda County.

Even when there isn't enough data to establish "significant" differences in mortality rates for a specific cause, the patterns we observe across a broad range of causes can still offer a valuable description of community health. Finally, it's important to acknowledge that every death—whether from cardiovascular disease, lung cancer, Chronic Obstructive Pulmonary Disease (COPD), or lower respiratory infections—represents a profound loss for families and communities.

Birth Outcomes

Low birth weight and premature births are important community health indicators, as they can signal underlying health disparities and environmental stressors.

A premature birth, also known as preterm birth, is when a baby is born before 37 weeks of gestation. Birth weight is considered “low” if the baby weighs less than 5 pounds and 8 ounces (2,500 grams).[79] Both premature birth and low birth weight are linked to a range of health problems that can affect the child from infancy into adulthood. These issues can include trouble with breathing, feeding, development, and even hearing or vision.[80]

Many factors can lead to premature birth and low birth weight, such as the mother's health conditions and lack of prenatal care. According to the U.S. EPA, environmental exposures may contribute to low birth weight, including maternal exposures to lead and exposures to toxic substances in air, water, or food. Research also suggests that pollutants like fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), and nitrogen oxides (NO_x) may contribute to premature birth and low birth weight.[81]

Between 2019 and 2023, approximately 6.5% of babies born in East Oakland had a low birth weight (see Figure 4-17).[82] Although this rate may not be notably higher when compared to Oakland (6.4%) or Alameda County (6.2%), the number of affected babies – around 1,000 over five years – is still concerning. This is important to recognize because infants born with low birth weight face a higher risk of adverse health conditions, some of which can increase their vulnerability to environmental pollution later in life.[83]

[79] United States Environmental Protection Agency (US EPA). “Indicators of Environmental Health Disparities: Underweight and Pre-Term Births,” 2025. https://19january2025snapshot.epa.gov/environmentaljustice/indicators-environmental-health-disparities-underweight-and-pre-term-births/index.html.
[80] Ibid.
[81] Ibid.
[82] This data only includes singleton births, as multiple births (such as twins) are often more likely to be premature or have low birth weight.
[83] Office of Environmental Health Hazard Assessment (OEHHA). “CalEnviroScreen 4.0.” Office of Environmental Health Hazard Assessment, October 2021. https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf.

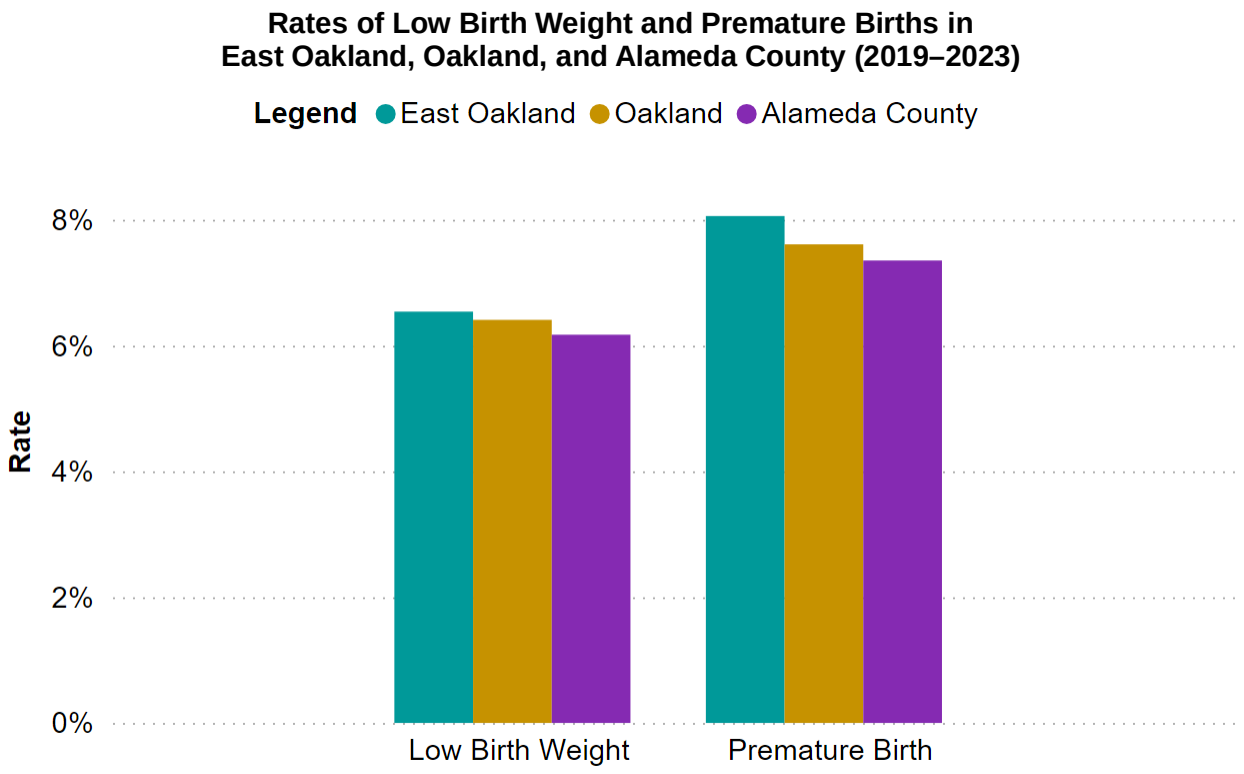

Figure 4-17: This chart displays the rates of low birth weight (left) and premature births (right) in East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from 2019-2023 vital statistics files.

In addition, nearly 8.1% of babies born in East Oakland were premature (see Figure 4-17). [84] The premature birth rate in East Oakland is appreciably higher than the rate in Alameda County (7.6%). This points to the possibility that systemic factors in East Oakland may be contributing to a higher frequency of premature births.

Section 6: Land Use, Transportation, and Housing Conditions

Social determinants of health (SDH) refer to the social, economic, cultural, environmental, and political factors that influence health outcomes and contribute to health inequities. These include the conditions in which people are born, grow up, live, work, and age, as well as their access to money, resources, and opportunities. Examples of SDH include employment, education, exposure to pollution, housing conditions, and access to healthy food. [85]

"We want our kids to be able to enjoy the playgrounds, be able to go and play games, pickleball, any type of game they want to play, without worrying about pollution."

- Ms. Cecilia Cunningham, CSC Member

[84] This data only includes singleton births, as multiple births (such as twins) are often more likely to be premature or have low birth weight.
[85] World Health Organization (WHO). "Operational Framework for Monitoring Social Determinants of Health Equity," January 2024. https://www.who.int/publications/i/item/9789240088320.

Over a person's lifetime, social determinants of health (SDH) interact and build upon each other, shaping health outcomes based on social status. Social status is influenced by factors such as race and ethnicity, immigration status, education, gender, gender identity, income, occupation, and sexual orientation. Thus, the root causes of health inequities lie in the unequal distribution of money, resources, and opportunities, which lead to disparities in SDH and, ultimately, differences in health outcomes. [86]

Sensitive Receptors: Populations Especially Vulnerable to Air Pollution.

Certain groups of people are more vulnerable to the harmful effects of air pollution. These individuals, known as "sensitive receptors," are more likely to experience adverse health effects because their bodies are less able to defend against or cope with pollutants. [87]

Sensitive receptors include, but are not limited to:

- **Children** – Their lungs are still developing, and they breathe more air relative to their body weight than adults, making them more susceptible to pollution.
- **Older adults** – Aging can weaken the body's ability to fight off the effects of air pollution.
- **People with respiratory diseases (e.g., asthma, bronchitis)** – Air pollution can worsen their conditions and make breathing more difficult.
- **People with cardiovascular diseases** – Pollutants can increase the risk of heart attacks or strokes.
- **Pregnant people** – Exposure to certain pollutants during pregnancy can affect fetal development.

In addition to individual sensitive receptors, there are designated "sensitive receptor locations." These include places such as hospitals, schools, daycare centers, community centers, parks, and even densely populated residential areas. [88] Figure 4-18 shows the locations of daycare centers, hospitals, clinics, libraries, nursing homes, assisted living facilities, schools, and parks and recreation centers in relation to industrially zoned land. [89]

[86] Ibid.
[87] Reid, Stephen, Laura C. Cackette, Virginia Lau, Sarah Chen Small, Carly Cabral, and Beth Altshuler Muñoz. 2024. "East Oakland Emissions Inventory: A Closer Look at Permitted Sources." Prepared for the East Oakland AB617 Steering Committee. Bay Area Air Quality Management District, and Communities for a Better Environment. https://drive.google.com/file/d/1oe_6_LBhNBYH3zQQWR3fbjTLOkONE9v3/view?usp=sharing.
[88] Ibid.
[89] Ibid.

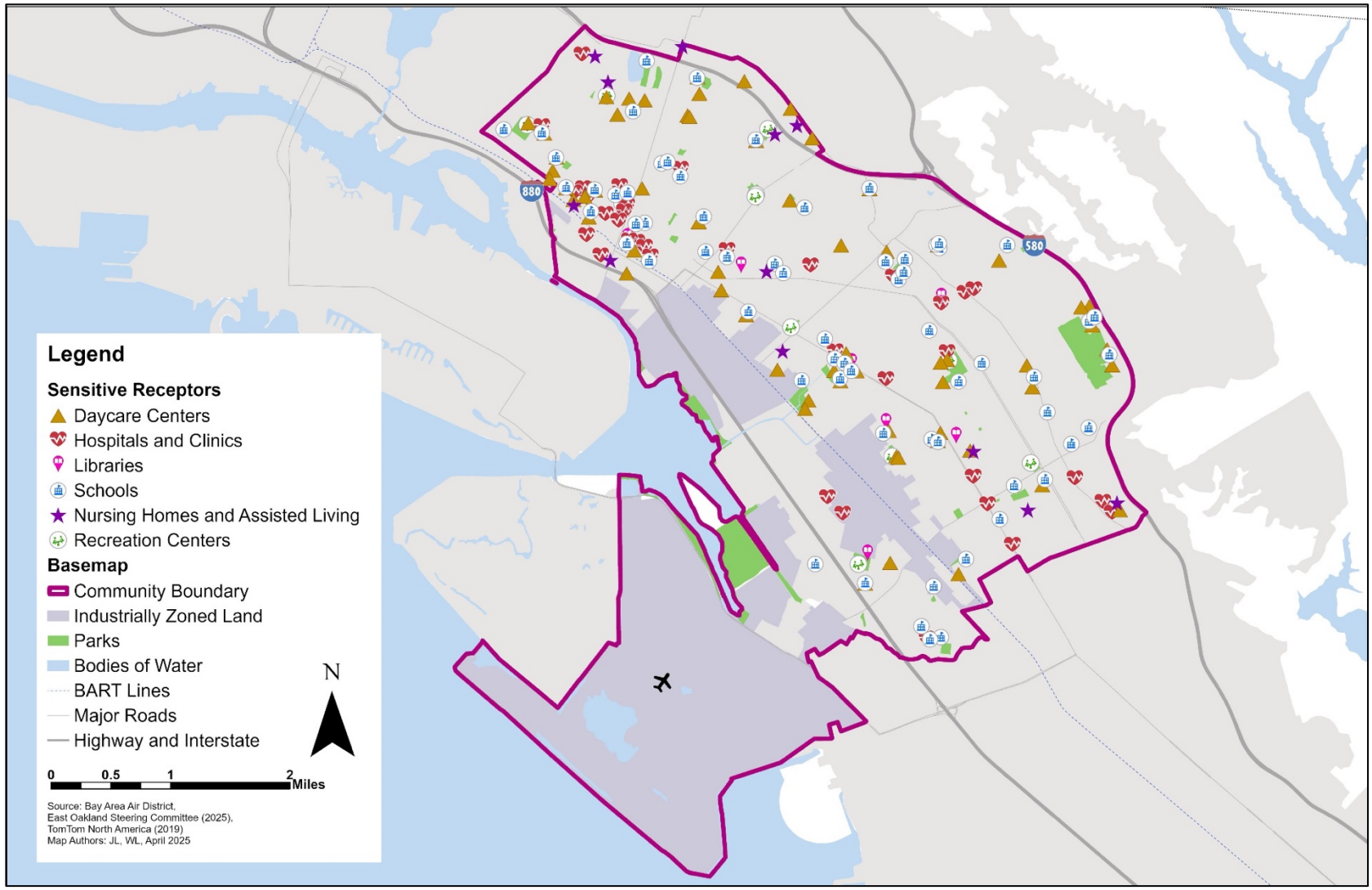

Figure 4-18: Sensitive Receptor Locations in East Oakland. This map shows places in East Oakland where people may be especially vulnerable to the health effects of air pollution. Symbols on the map represent: gold triangles for daycare centers, red hearts for hospitals and clinics, pink pins with books for libraries, blue buildings within white circles for schools, purple stars for nursing homes and assisted living facilities, and green seesaws within white circles for recreation centers. Light purple areas indicate industrial zoning, and green areas show parks. Sources: See the reference list at the end of this chapter.

Zoning & Land Use

Zoning is a tool cities and counties use to decide how land can be used in different parts of a city or county, and it plays an important role in protecting public health. By separating homes from sources of pollution like factories or busy highways, zoning can reduce residents' exposure to harmful air and noise. It can also promote healthier communities by making space for parks, grocery stores, clinics, and safe housing. In this way, zoning helps shape the conditions that support or harm people's health where they live, work, and play.

Land use conflicts occur when different types of land uses are placed in close proximity, leading to potentially negative impacts on the health, safety, and well-being of community members. As shown in Figure 4-19, many locations where vulnerable populations gather—such as schools, daycare centers, recreation centers, and health clinics—are located near industrially zoned areas in East Oakland. This proximity raises concerns about potential exposure to air pollution for these vulnerable groups.

One example of a land use conflict raised by the CSC is the Sterling Environmental Corporation (Sterling Environmental), a facility that temporarily stores asbestos waste from cleanup projects. The facility is located next to Esperanza Elementary School, Korematsu Discovery Academy, Stonehurst Child Development Center, and the Stonehurst Edible Schoolyard—where students grow food in a school garden. The close proximity of this facility to educational and recreational spaces raises community fears about hazardous materials that could affect the health of children and families.

Similarly, the CSC raised the issue of air pollution from the Evergreen Crematory, situated amidst homes, schools, and a park. Community members fear the crematory could negatively impact vulnerable populations—including infants, children, the elderly, individuals with pre-existing conditions (e.g., asthma), pregnant women, and athletes (due to higher breathing rates)—who are especially at risk for adverse health effects from air pollution.

Another example of the CSC citing an issue with land use conflicts is Argent Materials, a concrete and asphalt recycling facility located less than a mile upwind from Acorn Woodland Elementary School, the 81st Avenue Branch Library, and the Tassafaronga Recreation Center, where students, families, and community members gather.

Current Industrial Zoning in Oakland

Oakland has several designated industrial zones, with Commercial Industrial Mix – 2 (CIX-2) and General Industrial (IG) being the most prominent in East Oakland (see Figure 4-19).

- **CIX-2 (Commercial Industrial Mix - 2):** This zone functions as a general industrial area, supporting both commercial and industrial businesses. It permits operations with potential off-site impacts, such as noise or emissions. Allowed businesses include manufacturing and warehousing. However, businesses with greater impacts, such as trucking operations, crematories, and transfer stations, require a Conditional Use Permit (CUP) to operate.
- **IG (General Industrial):** The IG zone is a high-impact industrial area designed for manufacturing, transportation, warehousing, and other industrial activities that may produce noise, odors, or traffic. IG zones are typically located near major transportation hubs like freeways, rail lines, ports, and airports. Permitted businesses include manufacturing, warehousing, trucking, and rail yards. Activities involving hazardous

materials, along with high-impact operations such as crematories, landfills, and transfer stations, require a Conditional Use Permit (CUP) in this zone.

In addition, the S-19 Health and Safety Protection Combining Zone is a zoning overlay designed to regulate activities involving hazardous materials. The S-19 Zone applies to specific industrial areas, such as the IG and CIX-2 zones, as well as other industrial zones. In areas within the S-19 zone (typically within 300 feet of residential areas), there are additional regulations for how hazardous materials can be used, stored, and handled to reduce potential risks.

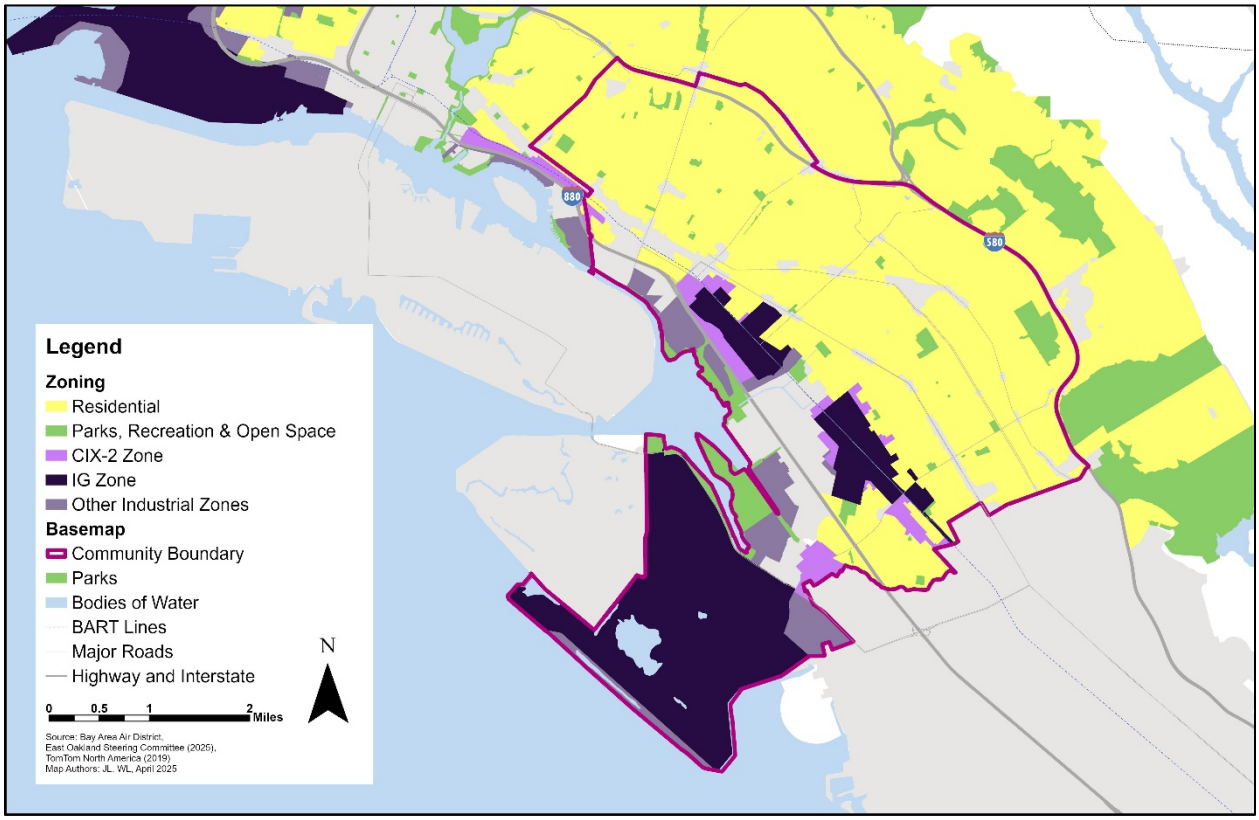

Figure 4-19: Map of Industrially Zoned Areas in East Oakland. Areas zoned for industrial use (CIX-2, IG, and other industrial zones) are shown in purple, residential zones in yellow, and parks or open space in green. Sources: See the reference list at the end of this chapter.

Oakland's industrial zones play a key role in supporting the transportation and manufacturing sectors. According to a study commissioned by Oakland's Economic and Workforce Development Department (EWD), industrial businesses employ approximately 33,553 people across nearly 1,100 businesses. These jobs account for 18.4% of the city's total wage and salary employment, all concentrated on less than 6% of the city's land. [90]

About one-third of industrial jobs are in transportation and material-moving occupations. Approximately 80% of industrial jobs—around 26,700—are middle-wage positions accessible to workers without a college degree. One in four workers in Oakland's industrial sector are city

[90] Haynes, Khalilha, and Alicia Parker. "History of Industrial Activities and Industrial Zoning in Oakland." City of Oakland, February 23, 2022. https://cao-94612.s3.amazonaws.com/documents/History-of-Industrial-Activities-and-Industrial-Zoning-in-Oakland.pdf.

residents, and the industrial workforce is predominantly white (66%) and male (65%). [91]

Case Study: Concentration of Solid Waste Facilities and Operations in East Oakland

Many of the stationary sources regulated by the Air District are located in Oakland's industrial zones. Figure 4-20 provides a map of these permitted sources. For a more comprehensive discussion of permitted sources, please refer to Chapter 5.

One type of stationary source regulated by the Air District are solid waste disposal sites—such as landfills and transfer stations—which are significant sources of methane and volatile organic compounds (VOCs) emissions. [92] These facilities also rely on a steady flow of heavy vehicles to transport waste, increasing truck activity in surrounding areas. For example, the Davis Street Transfer Station in San Leandro consolidates waste into larger loads, reducing the number of trips to disposal sites but concentrating truck traffic around the facility. Poor siting or management of solid waste disposal sites can heighten air pollution and create safety risks for nearby communities. Effective planning and regulation are essential to minimize these impacts.

A recent analysis for Oakland's Environmental Justice (EJ) Element found that solid waste facilities are unevenly distributed across the city. As of February 2025, Oakland had 17 solid waste facilities—active, inactive (not certified closed), or planned—with the largest cluster in East Oakland, north of the Coliseum. [93] CalRecycle's Solid Waste Information System (SWIS) identified six active facilities: four in East Oakland (two operated by Bee Green Recycling and Supply, one by Asphalt Shingle Recyclers, and one by Independent Recycling Services) and two in West Oakland (operated by California Waste Solutions). The analysis revealed that predominantly Latinx/Hispanic census tracts in Oakland have nearly five times more solid waste sites than predominantly white tracts, with the highest concentrations in the Melrose, Port Upper, and Lockwood/Coliseum/Rudsdale neighborhoods. [94]

Urban Greening

Trees improve air quality by providing shade that cools surrounding areas and by directly removing certain pollutants from the air. In urban environments, trees and other vegetation help reduce the local heat island effect [95] and offer additional environmental and health benefits—especially for those most vulnerable to the health impacts of air pollution. [96]

However, Oakland's tree canopy is not equitably distributed, leaving many low-income, vulnerable communities with significantly less tree cover than wealthier areas. While the city's overall canopy coverage is 21.5%—higher than some similar Bay Area cities—tree cover in certain neighborhoods is as low as 9%, compared to 43% in affluent Oakland Hills communities. [97] Between 2014 and 2018, the city lost 277 acres of tree canopy while gaining

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[91] Ibid.
[92] Cackette, Laura. "Regulation 8: Organic Compounds Rule 34: Solid Waste Disposal Sites Concept Paper." Bay Area Air Quality Management District, May 2019. https://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-8-rule-34/documents/20190606_cp_0834-pdf.pdf?rev=7f07d0903fd14568a8ed07481eb5db72&sc_lang=en.
[93] CalRecycle. "SWIS Facility Activity Search." Accessed February 9, 2025. https://www2.calrecycle.ca.gov/SolidWaste/Activity.
[94] City of Oakland. "Environmental Justice (EJ) Element," Adopted: September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.
[95] According to the EPA, "heat islands" are urban areas that become significantly hotter than nearby rural or less developed areas.
[96] U.S. Environmental Protection Agency. "Benefits of Trees and Vegetation," March 29, 2024. https://19january2025snapshot.epa.gov/heatislands/benefits-trees-and-vegetation/index.html.
[97] City of Oakland. "Urban Forest Plan," December 16, 2024. https://www.oaklandca.gov/Community/Community-

1,296 acres of impervious surfaces like roads and buildings. East Oakland's Council District 5, in particular, saw a canopy loss of more than 5%. Decades of budget cuts have severely limited tree maintenance, with 92% of street and park trees requiring pruning. [98]

Development/Sustainability-Environment/Sustainability-Plans/Oakland-Urban-Forest-Plan.
[98] Ibid.

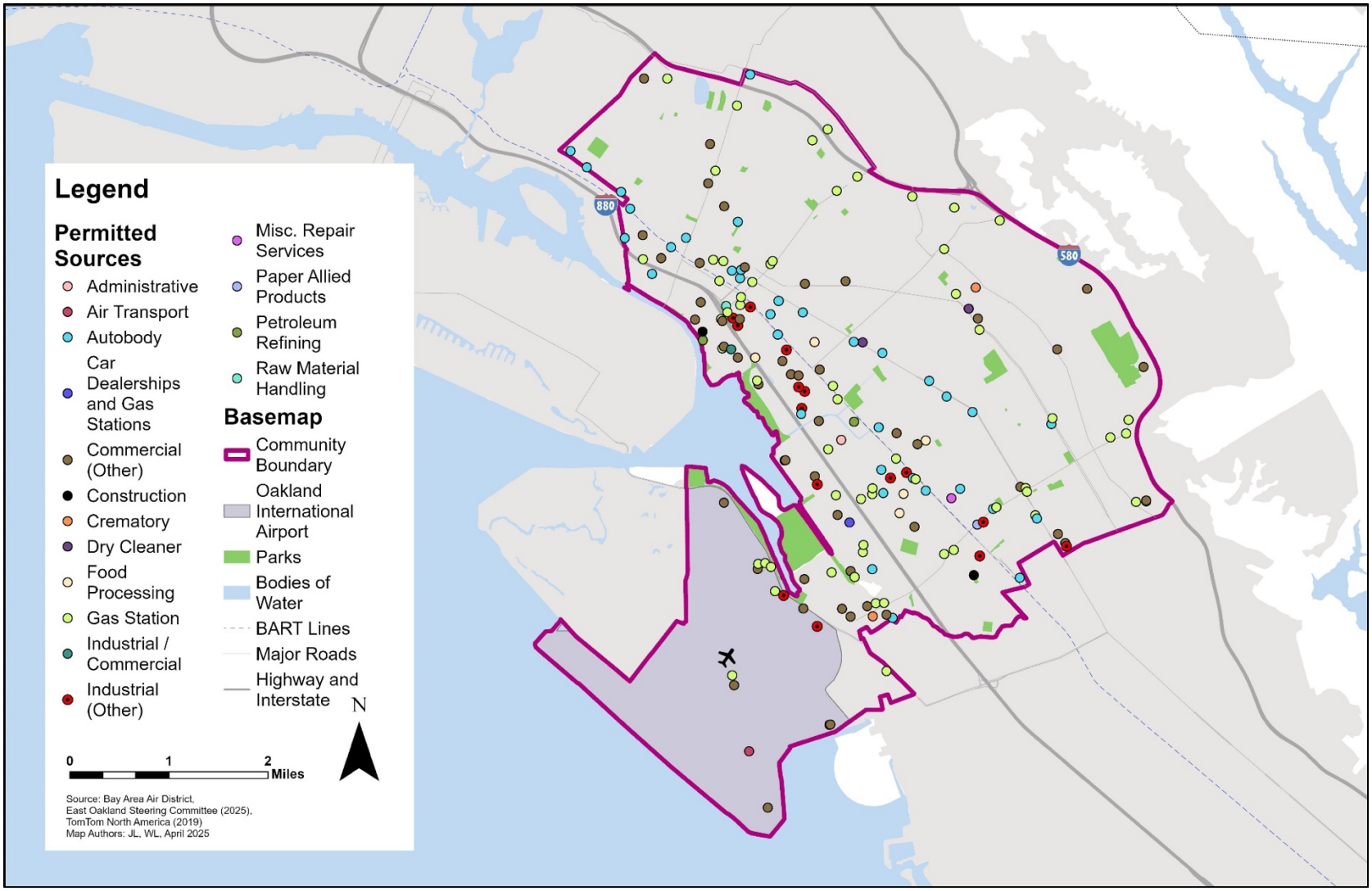

Figure 4-20: Map of Air District-Permitted Facilities in East Oakland, Categorized by Source Type. Each dot represents a facility with a permit from the Air District. The most visible sources on the map include autobody shops (light blue), gas stations (yellow), industrial facilities (red with a black center), commercial sources (brown), and crematories (orange). Sources: See the reference list at the end of this chapter.

Transportation

East Oakland's expansive transportation infrastructure—including major roadways, public transit systems, an international airport, and vital freight corridors—has significantly shaped the community's mobility, economic development, and public health. While these systems enhance accessibility and regional connectivity, they also contribute to air pollution from vehicle and freight traffic, which can lead to harmful health effects for residents. Additionally, the overlap of residential and industrial land uses along multimodal corridors—where pedestrian, bicycle, automobile, transit, and freight routes intersect—is creating growing land use conflicts.

Truck-attracting businesses—such as warehouses, distribution centers, and freight hubs—contribute to air pollution, traffic congestion, and public health concerns. In East Oakland, these businesses are primarily concentrated in commercial and industrial zones along San Leandro Boulevard. However, the truck traffic they generate must travel along designated truck routes that pass through or near residential neighborhoods (see Figure 4-21). Notably, 59% of East Oakland's truck routes are located in close proximity to residential areas. [99]

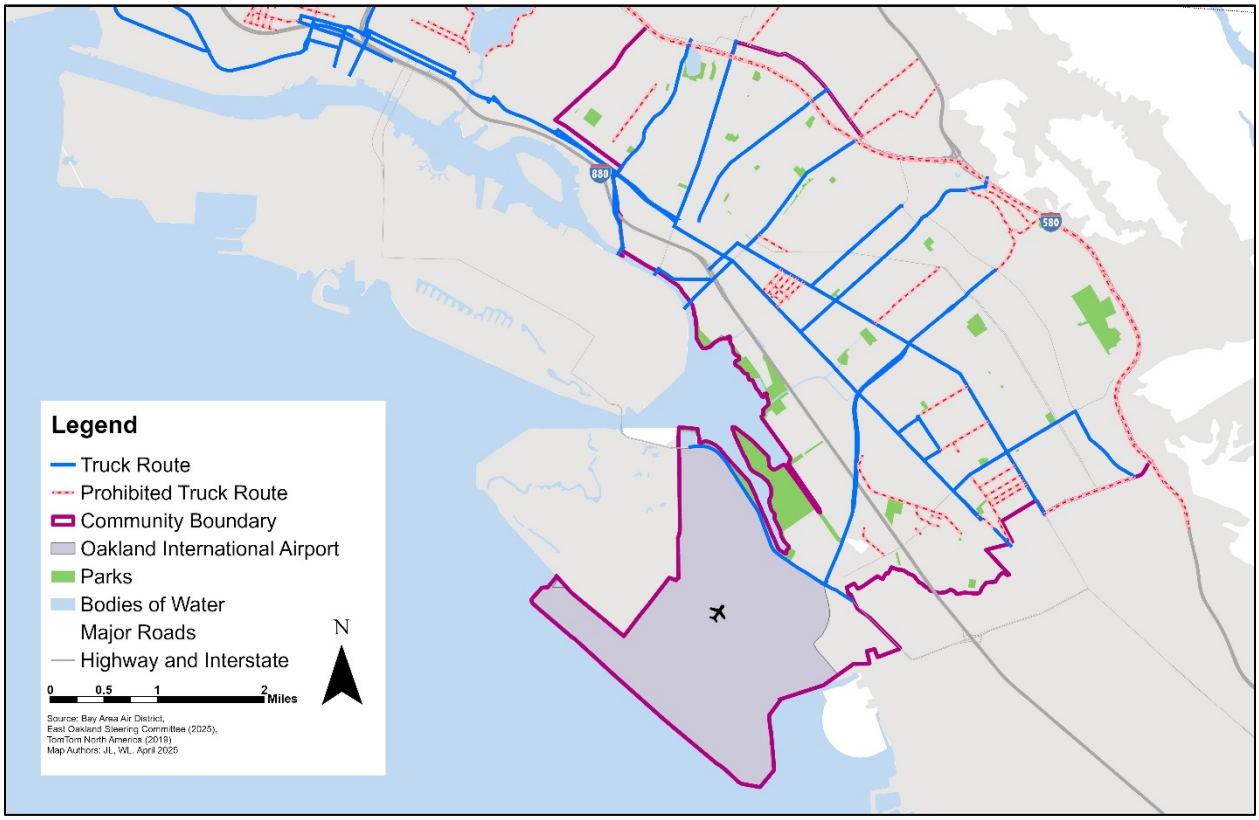

Figure 4-21: Map of Truck Routes in East Oakland. Blue lines indicate roads where trucks are permitted, while red lines show roads where truck traffic is prohibited. The map also highlights the I-580 truck ban, which applies to an 8.7-mile stretch of the highway, from Foothill Boulevard in San Leandro to Grand Avenue in Oakland. Sources: See the reference list at the end of this chapter.

[99] City of Oakland. (2021). East Oakland mobility action plan. https://cao-94612.s3.amazonaws.com/documents/EOMAP-Final-Plan_2022-05-12-170448_vgrv.pdf.

Truck traffic from economically active areas across the region travels along Interstate 880 (I-880)—a major freight corridor with high truck volumes—en route to the Port of Oakland. [100] This heavy flow of freight trucks leads to increased levels of diesel pollution, fine particulate matter, and black carbon in both West and East Oakland, with the highest concentrations found along the I-880 corridor, where truck traffic is heaviest. [101]

The concentration of truck traffic can be partially attributed to a truck ban on I-580. The I-580 truck ban applies to an 8.7-mile stretch of the highway, from Foothill Boulevard in San Leandro to Grand Avenue in Oakland. Trucks weighing more than 9,000 pounds are not allowed on this segment, with exceptions made for passenger buses and paratransit vehicles. As a result, freight trucks are redirected onto I-880 and designated truck routes on local roads. [102]

Truck restrictions on I-580 date back to 1951, when truck traffic was banned on MacArthur Boulevard. Despite years of efforts to lift the restriction, the California State Legislature officially included the I-580 truck ban in the California Vehicle Code through Assembly Bill 500 (AB500). In 2025, Caltrans initiated a long-awaited truck access study to assess the potential impacts on neighborhoods in East Oakland. [103]

Advancing Environmental Justice Through Land Use Reform: Recent Planning Code Updates in Oakland

Oakland's land use planning history reflects its shift from an industrial hub to a diverse urban city shaped by economic and demographic change. Early growth was driven by railroads, the port, and shipbuilding, followed by mid-20th century highway construction and urban renewal projects that reshaped neighborhoods, contributing to racial segregation and systemic disinvestment in BIPOC communities. Today, Oakland is advancing planning efforts focused on sustainability, equity, and resilience through initiatives like the ongoing General Plan Update, as well as recently completed Environmental Justice (EJ) Element (adopted in 2023), the Urban Forest Master Plan (adopted in 2024), and the Oakland 2030 Equitable Climate Action Plan (ECAP) (adopted in 2020).

In 2023, the City of Oakland adopted an ordinance aimed at addressing the impact of truck-attracting businesses on air quality and public health. The Planning Code Amendments adopted included several key changes for East Oakland:

1. A new Planning Code section has been created to address truck-intensive industrial businesses (Planning Code Section 17.103.065):
    a. A new industrial activity type called "Truck-Intensive Industrial Activity" has been added. This category includes businesses such as General Manufacturing, Heavy/High Impact Manufacturing, Construction Operations, Warehousing, Storage and Distribution, Regional Freight Transportation (Rail Yards), Trucking and Trucking-Related, and Recycling and Waste-Related. Stricter rules now

[100] City of Oakland. "Environmental Justice (EJ) Element," September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.
[101] Reid, Stephen, Laura C. Cackette, Virginia Lau, Sarah Chen Small, Carly Cabral, and Beth Altshuler Muñoz. 2024. "East Oakland Emissions Inventory: A Closer Look at Permitted Sources." Prepared for the East Oakland AB617 Steering Committee. Bay Area Air Quality Management District, and Communities for a Better Environment.
[102] California Department of Transportation. Special route restriction history – Route 580. https://dot.ca.gov/programs/traffic-operations/legal-truck-access/restrict-route-580.
[103] California Department of Transportation. Interstate 580 truck access study. https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/d4-580-truck-access-study.

apply to businesses classified as "Truck-Intensive Industrial Activity" (Planning Code Section 17.103.065).

   b. A new definition for "Sensitive Receptor Locations" has been created. This includes locations like schools, parks, senior centers, and homes. The definition helps to assess the impact of "truck-intensive" businesses on nearby communities.
   c. A new requirement for a Conditional Use Permit (CUP) has been introduced for "truck-intensive" businesses located within 500 feet of residential areas. Businesses in this category must meet new CUP criteria related to “truck-intensive" activities. This gives the Planning and Building Department (PBD) the authority to review potential impacts from new industrial businesses and require mitigations to address truck-related impacts.

2. The timeframes for discontinuing non-conforming "Truck-Intensive Industrial Activity" have been updated. If a business involved in Truck-Intensive Industrial Activity stops operating for any reason, even for just one day, and the closure is intentional or due to abandonment, it will lose the right to continue that type of activity. In other words, when the business leaves, the use will end (Planning Code Section 17.114.050).
3. Similarly, the termination timeframe for conditionally permitted "truck-intensive" businesses has been updated. These businesses, which were originally allowed through a Conditional Use Permit (CUP), will have 6 months during which a new industrial business can continue operating as a "truck-intensive" business. After 6 months, this right will expire, and the new business will need to apply for a new CUP (Planning Code Section 17.134.130).
4. The permitted activities in the CIX-2 Zone have been updated. Some truck-related and recycling businesses that were previously allowed by right are now conditionally permitted in the zone (Planning Code Section 17.73.020).

Housing

Housing is a fundamental social determinant of health, influencing both physical and mental well-being. The affordability, quality, and location of housing play a crucial role in shaping health outcomes. Stable, high-quality housing can provide a safe and healthy environment, whereas inadequate housing conditions—such as poor ventilation, exposure to indoor air pollutants, and structural deficiencies—can contribute to adverse health effects among at-risk populations. [104]

Housing quality is often influenced by factors like:

- The age of the building
- How well it is maintained
- The presence of household hazards, such as lead paint and mold
- Outdated utilities

Housing Conditions and Indoor Air Quality

Although the primary objective of this plan is to reduce ambient air pollution, indoor air pollution is also a significant concern because it adds to the overall pollution burden. In addition to outdoor air pollution from regional and local sources, individuals are also exposed to pollutants within their homes. Further, research has shown that people typically spend around 90% of their

[104] Robert Wood Johnson Foundation. “Where We Live Matters for Our Health: The Links Between Housing and Health,” September 30, 2008. https://nchh.org/resource/rwjf_where-we-live-matters-for-our-health_the-links-between-housing-and-health/.

time indoors. [105] This dual exposure intensifies the total pollution burden, underscoring the importance of addressing both indoor and outdoor sources of pollution in order to more effectively protect health.

Moreover, certain groups of people, such as children, the elderly, and those with chronic illnesses—especially respiratory or heart conditions—are most likely to be exposed to indoor air pollution for extended periods, making them more vulnerable to its harmful effects. [106]

Household products such as building materials, tobacco smoke, and furniture release harmful chemicals that contribute to indoor air pollution. Appliances like water heaters, space heaters, clothes dryers, and stoves that run on natural gas further impact air quality. Older, poorly maintained buildings often lack proper ventilation and have deteriorating infrastructure, increasing residents' exposure to pollutants. Prolonged exposure can lead to eye and throat irritation, asthma, respiratory diseases, and even cancer. [107]

Proximity to Pollution Sources and Health Risks

In addition to housing quality, proximity to pollution sources presents another major health risk. Many homes in East Oakland are located near significant pollution sources, such as truck routes, I-880, and industrial zones like CIX-2 and IG. [108]

The combination of poor housing conditions, indoor air pollution, and proximity to pollution sources exacerbates health risks. Older homes near major pollution sources, with inadequate ventilation, are more likely to have higher levels of outdoor pollutants that can enter indoor spaces, further degrading indoor air quality. Without sufficient resources for repairs or upgrades, residents in these neighborhoods face heightened exposure to both indoor and outdoor air pollution, leading to long-term health consequences. [109]

Age of Housing

Older housing often reflects substandard living conditions. In Oakland, more than 80% of the housing was built before 1980, meaning much of the city's housing is over 40 years old. This is also the case for East Oakland (see Figure 4-22). Without proper maintenance or rehabilitation, older buildings tend to deteriorate, leading to issues like inadequate ventilation, structural hazards, unsafe mechanical systems, and conditions that fail to meet the state’s minimum standards for living. [110]

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[105] U.S. Environmental Protection Agency. “The Inside Story: A Guide to Indoor Air Quality.” Overviews and Factsheets, August 28, 2014. https://19january2025snapshot.epa.gov/indoor-air-quality-iaq/inside-story-guide-indoor-air-quality/index.html.
[106] Ibid.
[107] Ibid.
[108] City of Oakland. “Environmental Justice (EJ) Element,” September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.
[109] Ibid.
[110] City of Oakland. “Environmental Justice (EJ) Element,” September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.

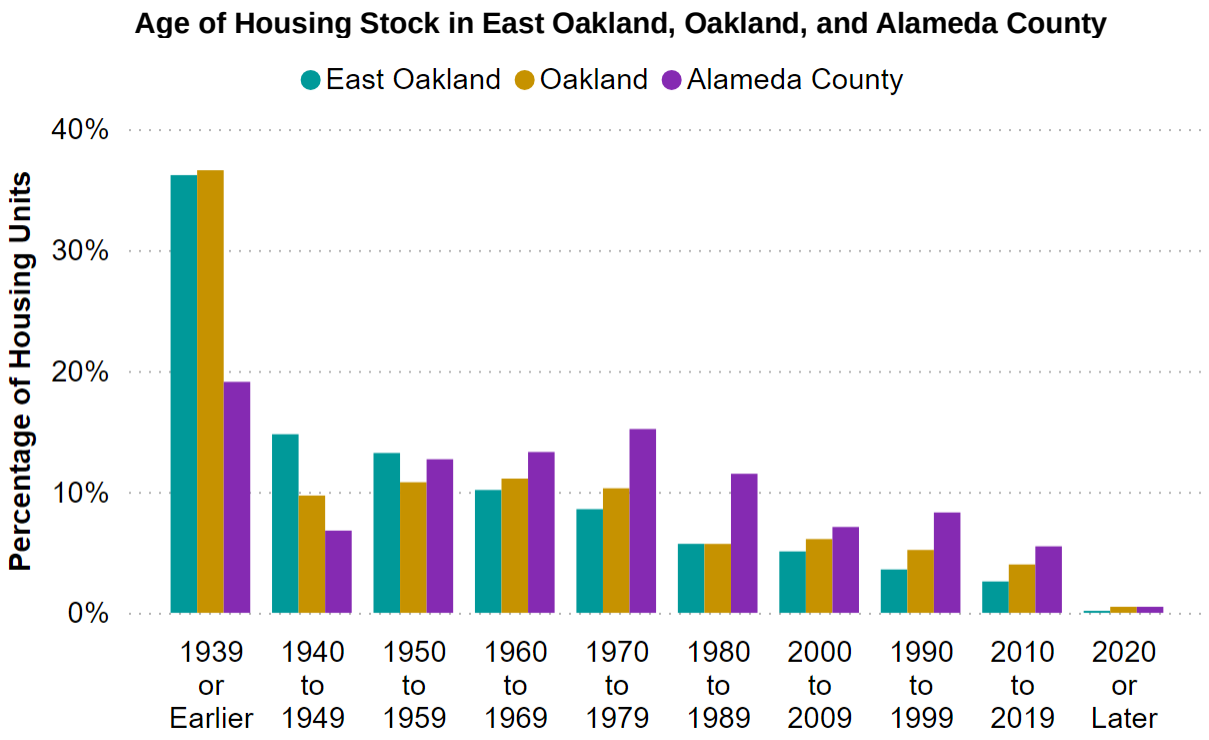

Figure 4-22: This chart shows the percentage of housing units built in various time periods, ranging from before 1939 to after 2020. Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table DP04 – Selected Housing Characteristics. Retrieved from https://data.census.gov.

As in the rest of Oakland, East Oakland's housing stock is notably older than that of Alameda County. Nearly 36% of homes in East Oakland were built in 1939 or earlier, compared to 19% across the county. Additionally, only 3% of East Oakland's housing was built in 2010 or later, while about 7% of Alameda County's housing stock falls into this category.[111] Aging housing stock refers to homes built before 1980.[112] In East Oakland, approximately 83% of the housing falls into this category, putting residents at higher risk of exposure to indoor air pollutants, such as lead-based paint dust, mold, and outdated ventilation systems.

The limited number of newly constructed homes means fewer modern, energy-efficient options with improved air filtration and ventilation systems. The city has limited capacity to address housing rehabilitation needs, and identifying substandard housing can be challenging. Low-income renters may hesitate to report unsafe conditions due to concerns about eviction or potential rent increases.[113]

[111] Ibid.
[112] Camero, Edgar. "Pathways to Improved Housing Quality in Rural Places." ChangeLab Solutions. Accessed April 25, 2025. https://www.changelabsolutions.org/blog/pathways-improved-housing-quality-rural-places.
[113] Ibid.

The Affordable Housing Crisis and Health Risks

Household income plays a key role in determining housing options and opportunities. As household income decreases, challenges such as higher housing costs, overcrowding, and the risk of displacement or homelessness tend to increase. [114]

Research conducted in Oakland shows that as the housing crisis worsens, lower-income residents often have no choice but to remain in the only housing they can afford, which is frequently in disrepair or located in areas with high levels of pollution. In neighborhoods where safe, quality, and affordable housing is scarce, residents face higher rates of lead poisoning and asthma. These communities also experience higher poverty levels, have fewer resources to support overall health, and are exposed to more environmental and housing-related health hazards. [115]

Low-income neighborhoods, areas with older housing, and communities with high renter populations are more likely to experience poorly maintained homes with inadequate ventilation, malfunctioning range hoods, and natural gas appliances, creating an urgent need for electrification. [116]

"Renter-occupied" and "owner-occupied" describe who lives in a home—whether it is rented by tenants or owned by the residents. In East Oakland, 58% of homes are renter-occupied, meaning most residents depend on rental housing. In contrast, Alameda County has a higher rate of owner-occupied homes (54%), which may provide more long-term housing stability and greater opportunities for homeownership (see Figure 4-23).

Because most East Oakland residents rent rather than own, they may be forced to rely on landlords to make home upgrades that could improve air quality or address housing quality concerns. However, research shows that tenants may be reluctant to report problems due to the risk of eviction, rent increases, or other forms of retaliation. [117]

[114] Ibid.
[115] Nguyen, Tram, Matt Beyers, Radhika Agarwal, Miriam Magana Lopez, and Luciana Rocha. “Housing Habitability and Health: Oakland’s Hidden Crisis.” Alameda County Public Health Department and Alameda County Healthy Homes Department, April 2018. https://www.acgov.org/cda/lead/documents/news/health,housinginoakland.pdf.
[116] City of Oakland. “Environmental Justice (EJ) Element,” September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.
[117] Nguyen, Tram, Matt Beyers, Radhika Agarwal, Miriam Magana Lopez, and Luciana Rocha. “Housing Habitability and Health: Oakland’s Hidden Crisis.” Alameda County Public Health Department and Alameda County Healthy Homes Department, April 2018. https://www.acgov.org/cda/lead/documents/news/health,housinginoakland.pdf.

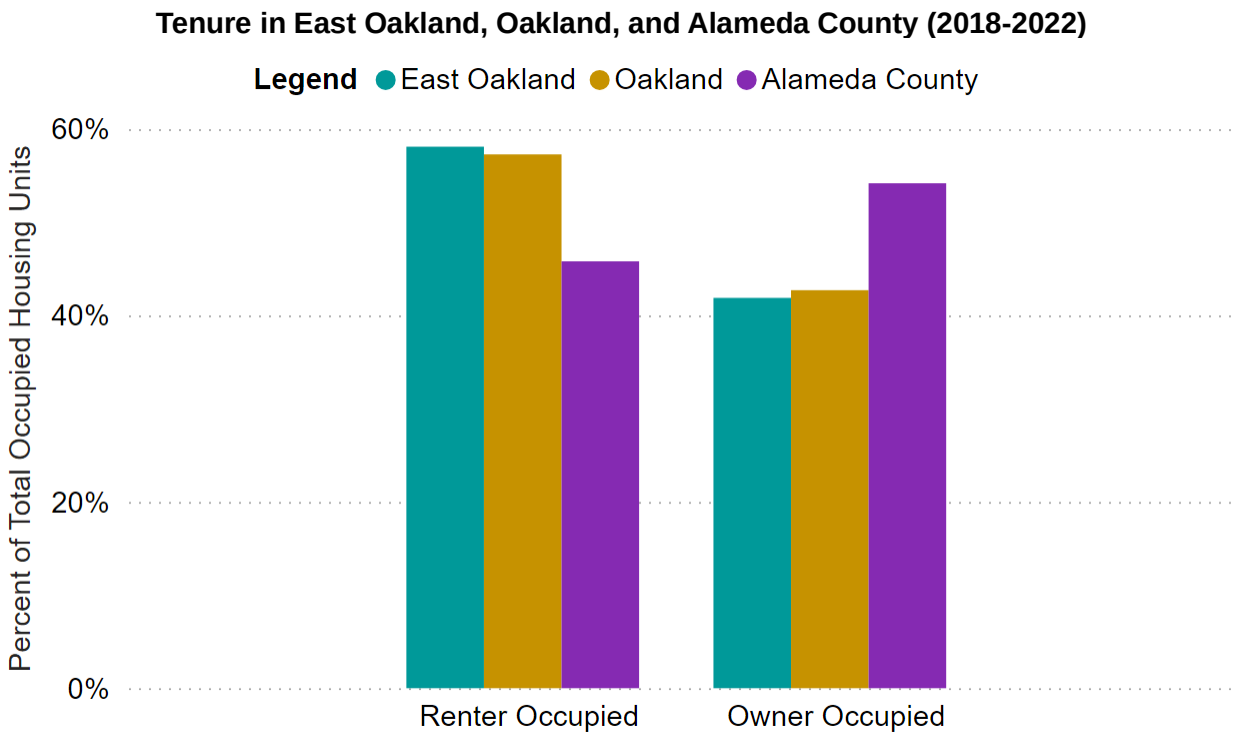

Figure 4-23: This chart shows the percentage of total occupied housing units that are renter-occupied (left) versus owner-occupied (right). Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table B25003 – Tenure. Retrieved from https://data.census.gov.

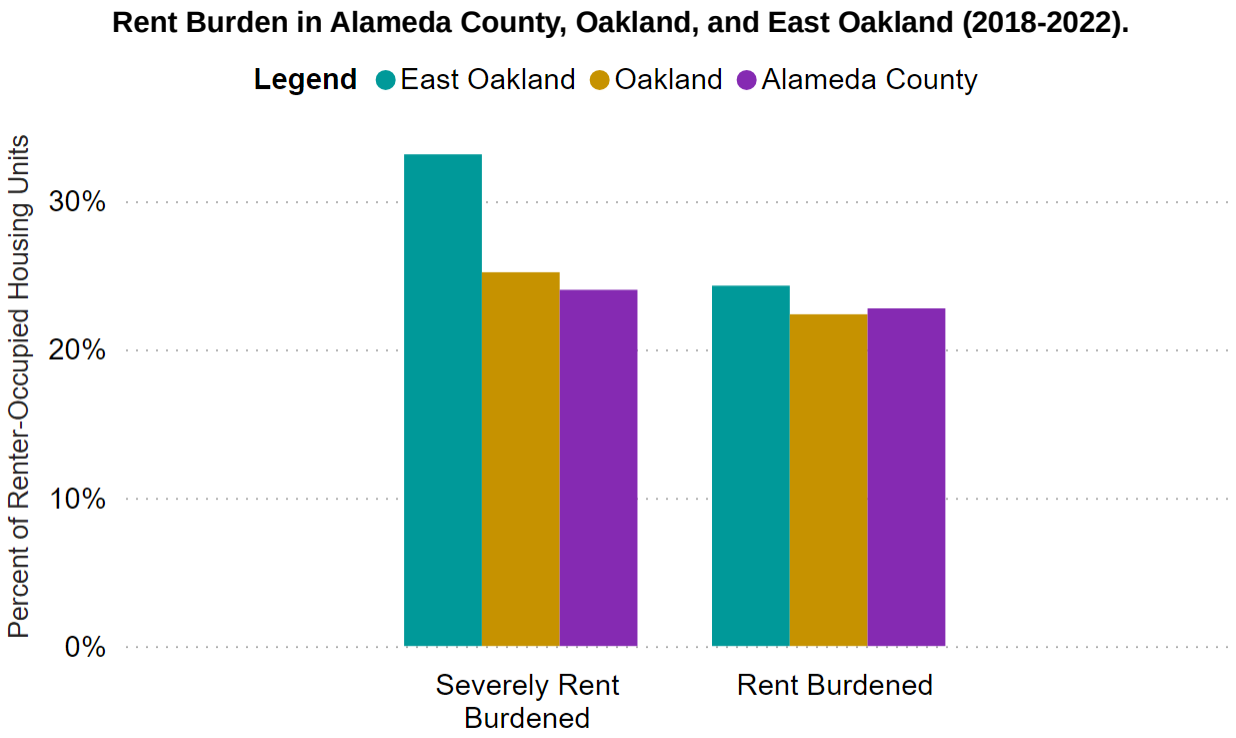

Figure 4-24: This chart shows the percentage of renters who are ‘severely rent burdened’ (left) and ‘rent burdened’ (right). Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table B25070, Gross Rent as a Percentage of Household Income. Retrieved from https://data.census.gov.

Housing affordability is often assessed by the percentage of income spent on rent. Two common categories used are:

- "Rent-burdened": households spending 30% to 50% of their income on rent
- "Severely rent-burdened": households spending more than 50% of their income on rent

Households that spend a large portion of their income on housing, without financial assistance, are considered to be in insecure housing situations. These households are more vulnerable to eviction, displacement, overcrowding, and homelessness. [118]

In East Oakland, the majority of renters (57%) live in unaffordable housing, spending more than 30% of their income on rent. Among them, 33% are severely rent-burdened, meaning they spend more than half of their income on housing, highlighting the significant financial strain faced by many residents in the community (see Figure 4-24).

Wildfires and the Unhoused

Wildfire smoke is becoming a more serious public health issue, especially as climate change causes wildfires to happen more often and with greater intensity. Wildfire smoke can cause a wide range of health problems, from difficulty breathing to heart attacks and strokes. During

[118] City of Oakland. “Environmental Justice (EJ) Element,” September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.

wildfire smoke events, the Air District recommends staying indoors with windows and doors closed, leaving the affected area, or visiting a clean air-cooling center.[119] However, for individuals experiencing homelessness, following these recommendations can be extremely challenging, if not impossible, leaving them at significantly higher risk during these emergencies.

At the time this report was written, specific data for East Oakland was unavailable. However, it is known that approximately 58% of Alameda County's homeless population resides in Oakland. Of Oakland's homeless individuals, 67% are unsheltered, meaning they live in tents, makeshift shelters, vehicles, RVs, or on the streets and sidewalks. Within this unsheltered group, more than half (58%) reside in vehicles or RVs, while 21% live in tents or makeshift shelters. The remaining individuals are either on the streets, sidewalks, or in other locations. Sheltered individuals, on the other hand, are those living in emergency shelters, transitional housing, or "Safe Haven" facilities. There are notable racial disparities in homelessness, with BIPOC, especially African Americans, experiencing homelessness at significantly higher rates than white individuals.[120]

These statistics show the urgent need for solutions to protect this vulnerable group. While the long-term goal is to reduce homelessness, it is important to find ways to keep unhoused communities safe during climate emergencies, especially as climate change causes more frequent wildfires.

[119] Bay Area Air District. "Wildfire Safety." Accessed March 18, 2025. https://www.baaqmd.gov/en/about-air-quality/wildfire-air-quality-response-program/wildfire-safety.
[120] Alameda County Housing and Homelessness Services. "Alameda County Point-In-Time Report," 2024. https://homelessness.acgov.org/data_point_in_time.page?.

Reference List: Map Data Sources

All of the datasets listed below are available for download and fully documented in the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/. To find all datasets utilized in Chapter 4, enter "East Oakland CERP" in the search bar.

Figure 4-1

- Bay Area Air District. "East Oakland CERP Community Boundary."
- California Air Resources Board (CARB). "Alameda County Boundary."

Figure 4-2

- Bay Area Air District. "East Oakland CERP Community Boundary."
- City of Oakland. "City of Oakland Boundary."

Figure 4-3

- Mapping Inequality. "HOLC Redlining Map."

Figure 4-6

- City of Oakland. "Zoning (Effective Dec 17, 2024)."
- Office of Environmental Health Hazard Assessment (OEHHA). "CalEnviroScreen 4.0."

Figure 4-18

- California Department of Education (CDE). "Private Schools."
- California Department of Education (CDE). "Public Schools."
- California Department of Public Health (CDPH). "Licensed and Certified Healthcare Facilities."
- California Department of Social Services (CDSS). "Child Care Centers."
- California Department of Social Services (CDSS). "Residential Care Facilities for the Elderly."
- City of Oakland. "Oakland Public Library Locations."
- City of Oakland. "Parks and Recreation Facilities."
- City of Oakland. "Zoning (Effective Dec 17, 2024)."

Figure 4-19

- City of Oakland. "Zoning (Effective Dec 17, 2024)."

Figure 4-20

- Bay Area Air District. "Permitted Sources."

Figure 4-21

- City of Oakland. "Truck Routes."

Chapter 5: Air Quality Overview

Introduction

To support the development of the Plan, the Air District worked closely with the CSC to develop a common understanding of the community's air quality issues. This effort involved compiling and assessing a wide variety of information to identify factors contributing to air quality conditions in East Oakland. This analysis was informed by the community's lived experience, air quality measurements, emissions inventory data, and air quality modeling results. This chapter begins with an overview of air pollution and health effects, air monitoring data, emissions inventory development, and air quality modeling, and concludes with a section on connecting insights from these technical tools to specific community concerns to help provide a basis for the strategies and actions outlined in Chapter 7. Some of the key findings discussed in this chapter include:

- Air monitoring data from the Air District's *Oakland - East* monitoring site show that while levels of certain air pollutants have been in compliance with federal air quality standards, those levels have not improved over the last ten years.
- Data from Air District monitoring sites and from numerous studies show higher levels of black carbon (BC), ultrafine particles (UFPs), and other pollutants associated with traffic in locations near busy roadways.
- A community-based monitoring study conducted by Communities for a Better Environment (CBE) in 2008 found higher levels of fine particulate matter ($PM_{2.5}$) near industrial areas and corridors with high diesel truck traffic, and that on average, residents in East Oakland were exposed to higher levels of $PM_{2.5}$ compared to residents in Alameda County.
- A 2021 emissions inventory for East Oakland shows that key fine particulate matter ($PM_{2.5}$) sources include residential fuel combustion, road dust, construction activities, and permitted facilities like Davis Street Transfer Station and Miller Milling Company.
- Mobile sources such as cars, trucks, aircraft and construction equipment are significant sources of several key toxic air contaminants (TACs) in East Oakland, including diesel particulate matter (DPM), 1,3-butadiene, benzene, and acrolein.
- Though permitted facilities make a relatively small contribution to the overall toxic air contaminants (TAC) inventory, individual facilities or groups of facilities may still be important emitters, especially if they are located near sensitive populations such as schools or senior centers.
- Oakland San Francisco Bay Airport is a significant air pollution source in East Oakland, accounting for over one-third of local emissions of nitrogen oxides (NO_x). Monitoring studies have shown that elevated levels of ultrafine particles (UFP), fine particulate matter ($PM_{2.5}$), black carbon (BC), and other pollutants occur in and around airports.
- Air monitoring projects planned in East Oakland are expected to provide additional data and information about how air quality can vary from place to place and on air quality impacts from specific sources of concern in the community.

Background and Community Concerns

The Air District recommended East Oakland for the development of a CERP due to the high health burden of residents in East Oakland neighborhoods, who experience disproportionately high exposure to air pollution. Waste facilities, crematories, small-to-medium industrial and manufacturing operations, large warehouse distribution centers, high-volume freeways and roadways (I-880, I-238, I-580, Highway 92), Oakland San Francisco Bay Airport, and freight and passenger rail all contribute to the pollution burden of the area.

Upon the selection of the East Oakland Community Steering Committee (CSC) in 2018, the Air District and the CSC began the process of developing a shared understanding of local air quality issues, which is fundamental to the CERP process. A list of community concerns was developed with CSC input and guided by a variety of public engagement efforts, as described in Chapter 4. Table 5-1 provides a summary of these community concerns, each of which provides an area of focus for the development of CERP strategies and actions. To support strategy development, findings from the air quality assessment are connected to these areas of concern where possible.

Table 5-1: Overview of the community concerns identified by East Oakland residents.

Area of Concern	Description
Commercial & Industrial Sources	Particulate matter (PM) exposure from fugitive dust, material handling, and construction. Facilities of concern include, but are not limited to, Argent Materials, Gallagher and Burk, Miller Milling, and Davis St. Transfer Station. Toxics exposure from facilities producing toxic emissions, including Argent Materials, Evergreen and East Bay crematoriums, Cultured Marble Products, PCC Structurals, and Amazon Services.
Transportation & Mobile Sources	Pollution exposure from mobile sources in the community, including heavy-duty trucks and operations at the Oakland San Francisco Bay Airport.
Built Environment & Land Use	Sensitive receptors in proximity to pollution sources, incompatible zoning, tree canopy coverage, pollution in the home, etc.
Public Health & Wellness	Cumulative health impacts of outdoor air pollution, protecting sensitive populations, and raising awareness about the health impacts of air pollution.
Illegal Dumping	Illegal dumping in vacant lots, the burning of trash and cars, and inequitable access to waste disposal services.

Area of Concern	Description
Cross-cutting Issues	Themes that touch on multiple concerns, such as workforce development and urban greening.

Overview of Air Pollution and Health Effects

This section provides general information on sources of air pollution and related health effects. The air we breathe includes a mix of pollutants emitted from different sources within East Oakland and from sources in nearby communities and regions in addition to pollutants formed through chemical reactions of different pollutants after they are emitted. Meteorological (weather) conditions further determine the transport of pollutants from one area to another and whether pollution will remain concentrated near the ground where people breathe. Sources of air pollution are wide-ranging and include anthropogenic sources (caused by human activity) like commercial and industrial facilities, motor vehicles, trains, ships, airports and airplanes, and residences (e.g., using wood-burning devices), as well as natural sources like wildfires and airborne sea salt. Certain pollution sources or operations produce multiple pollutants at the same time, such as burning fuels or other materials.

This section begins with a discussion of the two main categories of air pollutants: criteria air pollutants (CAPs) and toxic air contaminants (TACs). It then provides more detailed information on particulate matter (PM), including fine particulate matter ($PM_{2.5}$), black carbon (BC), and ultrafine particles (UFPs). Finally, it includes a description of TACs.

Categories of Air Pollutants

There are several categories and subsets of air pollutants. Two main categories of air pollutants are Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs), as summarized in Table 5-2. CAPs are six common air pollutants that harm human health and are pollutants that the U.S. Environmental Protection Agency (U.S. EPA) sets standards for under the Clean Air Act, called the National Ambient Air Quality Standards (NAAQS).[121] California also has established air quality standards (CAAQS) for several air pollutants.[122] TACs are pollutants that are known to or are suspected to cause cancer or other serious health effects.[123] Of these pollutants, particulate matter (PM) and various TACs are of greater concern due to their health impacts and the close proximity of sources of these pollutants to places where people live, work and spend time in East Oakland.

[121] U.S. EPA webpage on Criteria Air Pollutants: https://www.epa.gov/criteria-air-pollutants.
[122] CARB webpage for the California Ambient Air Quality Standards: https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards.
[123] CARB webpage on Toxic Air Contaminants: https://ww2.arb.ca.gov/resources/documents/carb-identified-toxic-air-contaminants.

Table 5-2: Categories and examples of air pollutants.

Pollutant Category	Description	Pollutants in this Category
Criteria Air Pollutants (CAPs)	Six common air pollutants that harm human health and have NAAQS set by the U.S. EPA	• Ozone (O_3) • Particulate matter ($PM_{2.5}$ and PM_{10}) • Carbon monoxide (CO) • Nitrogen dioxide (NO_2) • Sulfur dioxide (SO_2) • Lead (Pb)
Toxic Air Contaminants (TACs)	TACs include over 200 pollutants identified by CARB that are known or suspected to cause cancer or other serious health effects	Examples of TACs: • Benzene, toluene, ethylbenzene, xylene (BTEX), which are volatile organic compounds (VOCs) found in gasoline and released through combustion of fossil fuels • Diesel particulate matter (DPM), resulting from combustion of diesel fuel • Certain metals such as mercury, chromium, and arsenic

Particulate Matter

Particulate Matter (PM) comes in many shapes, sizes, and compositions, as summarized in Table 5-3. PM_{10} refers to inhalable particles with diameters of 10 micrometers or smaller, and $PM_{2.5}$ refers to fine inhalable particles with diameters of 2.5 micrometers or smaller.[124, 125] Fine particles are much smaller than the width of a human hair, as illustrated in Figure 5-1, and can travel deep into the lungs and bloodstream, where they can cause or contribute to short-term health effects like bronchitis and asthma attacks, and long-term effects like heart disease and respiratory conditions like emphysema. Chapter 4 contains more information related to health outcomes in East Oakland. PM is emitted from many sources and can be directly emitted into the air (referred to as primary PM) or can form in the air through complex reactions of other pollutants that are emitted as gases (often referred to as secondary PM). Smaller particles, such as $PM_{2.5}$, are emitted more from combustion sources, including the combustion of fossil fuels for industrial operations; by cars, trucks, and other on-road mobile sources; and off-road mobile sources such as airplanes, trains, and construction equipment. Other combustion sources of $PM_{2.5}$ include residential wood stoves and fireplaces, certain restaurants, and diesel generators. Secondary PM is also primarily composed of particles in the $PM_{2.5}$ size fraction. Non-

[124] CARB webpage on Inhalable Particulate Matter and Health ($PM_{2.5}$ and PM_{10}): California Air Resources Board. https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health.
[125] U.S. EPA webpage on Particulate Matter (PM) Basics: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics.

combustion sources of PM, such as dust from unpaved surfaces, facilities with sand, gravel, and metal operations, tend to emit particles of larger sizes, such as PM_{10}. Brake and tire wear from vehicles, and road dust generally, are also sources of PM. Natural sources of PM include wind-blown dust and sea salt, and biogenic sources (natural sources) that contribute to particle formation.

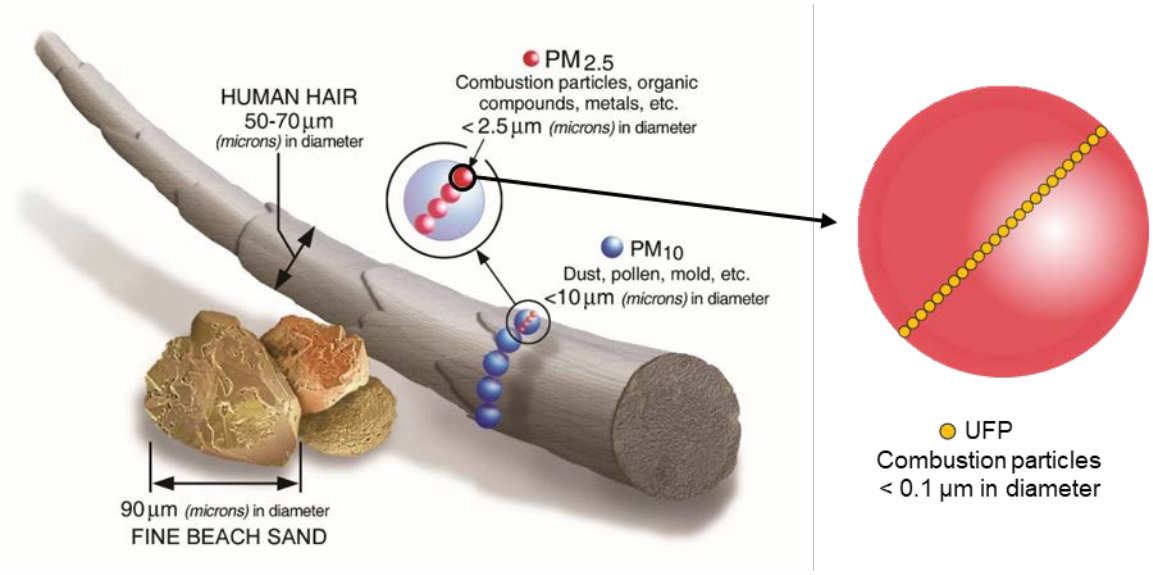

Figure 5-1: Illustration of size comparisons for types of particulate matter. Image reproduced and adapted from U.S. EPA.

Table 5-3: Types of PM and examples of sources and health impacts. Many pollution sources produce multiple types of PM. In addition to PM emitted directly from sources, PM can also form in the atmosphere due to reactions of other pollutants, referred to as secondary PM.

Pollutant	Description / Examples	Example Sources	Notable / Example Health Impacts
Inhalable particulate matter (PM_{10})	Smaller than 10 µm ($1/5^{th}$ the thickness of a human hair).	Dust, including from construction sites, unpaved surfaces, landfills, waste burning, and industrial and commercial sources Brake and tire wear Combustion of fuels (gasoline, oil, diesel) and wood (including wildfires)	Asthma development, asthma attacks, difficulty breathing, bronchitis, heart disease, heart attacks, strokes, neurological (brain) disease, lung cancer, low birth weight, lost days of work and/or school. Increased emergency room visits, medicine usage, hospital admissions, and premature deaths / years of life lost.

Pollutant	Description / Examples	Example Sources	Notable / Example Health Impacts
Fine inhalable particulate matter ($PM_{2.5}$)	Smaller than 2.5 µm (1/20th the thickness of a human hair). Smaller size makes it easier to inhale & be deposited in lungs.	Combustion of fuels (particularly diesel) and wood (including wildfires) Industrial and commercial sources Brake and tire wear $PM_{2.5}$ also forms in the air through complex reactions of other pollutants that are emitted as gases (known as secondary PM)	
Black carbon (BC)	Soot; a component of $PM_{2.5}$; correlated with diesel particulate matter (DPM)	Combustion of fuels (gasoline, oil, diesel) and wood (including wildfires)	
Ultrafine particles (UFPs)	Particles with diameter smaller than 0.1 µm.	Exhaust from gasoline, diesel fuel, etc., being burned in engines (including airplanes) Brake and tire wear, road dust Ultrafine particles also form in the air through complex reactions of other pollutants	

Black carbon (BC), commonly known as soot, is a component of particulate matter (PM). Black carbon is correlated with diesel particulate matter (DPM), which is of particular health concern because of its toxicity. Another category of PM is ultrafine particles (UFPs), which are particles with diameters of less than 0.1 micrometers. UFPs have many sources and are emitted primarily from fuel combustion, including diesel, gasoline, and jet engines. Concentrations of UFPs are highly variable over time and from location to location and are strongly influenced by proximity to sources that emit UFPs directly, secondary formation of UFPs resulting from chemical reactions in the atmosphere, and meteorological conditions. Higher concentrations of UFPs near high traffic roadways and airports have been well documented in several

measurement studies.[126, 127, 128] Because of their very small size, UFPs can travel farther into the body and cause adverse health effects, including respiratory and cardiovascular issues. The health effects of different components and sizes of particulate matter is an active and evolving area of scientific research.[129]

Toxic Air Contaminants

Toxic Air Contaminants (TACs), also referred to as air toxics, are pollutants that are known or suspected to cause cancer and other serious health effects such as neurological, reproductive, developmental, cardiovascular, or respiratory conditions. Chapter 4 contains more information related to health outcomes in East Oakland. There are over 200 substances or groups of substances in the list of TACs as defined by the California Air Resources Board (CARB). Some examples of TACs include diesel particulate matter (DPM); particulate metals such as arsenic, lead, manganese, and chromium; and volatile organic gases such as benzene and formaldehyde. Sources of different TACs vary by specific contaminant, and many TACs are co-emitted (released simultaneously) during combustion or evaporation of fuels. The California Office of Environmental Health Hazard Assessment (OEHHA) has developed Reference Exposure Levels (RELs) for non-cancer health impacts[130] for chronic (annual), 8-hour, and acute (1-hour) exposures for many TACs, which can be compared with measured or modeled TAC data.[131] Pollution levels below the REL are not expected to cause non-cancer health impacts. At higher levels, exposure to TACs can cause acute health effects such as headaches, nausea, respiratory irritation and asthma episodes, and irritation of the eyes, nose, throat, and skin.

[126] South Coast AQMD MATES V Final Report, Appendix VII: Ultrafine Particle Measurements at Fixed Sites: https://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/g-appendix.pdf?sfvrsn=7.
[127] South Coast AQMD Final Report: General Aviation Airport Air Monitoring Study: Follow-up Monitoring Campaign at the Santa Monica Airport: https://www.aqmd.gov/docs/default-source/air-quality/air-quality-monitoring-studies/general-aviation-study/supplemental-monitoring-campaign-at-the-santa-monica-airport.pdf.
[128] G.S.W. Hagler, R.W. Baldauf, E.D. Thoma, T.R. Long, R.F. Snow, J.S. Kinsey, L. Oudejans, B.K. Gullett,Ultrafine particles near a major roadway in Raleigh, North Carolina: Downwind attenuation and correlation with traffic-related pollutants, Atmospheric Environment, Volume 43, Issue 6, 2009, Pages 1229-1234, ISSN 1352-2310, https://doi.org/10.1016/j.atmosenv.2008.11.024.
[129] For more information on the health effects of ultrafine particles (UFP), see: https://www.nature.com/collections/bjjiefcddb; https://link.springer.com/article/10.1007/s00038-019-01202-7 or https://www.liebertpub.com/doi/abs/10.1089/089426802320282310.
[130] Examples of non-cancer chronic health effects include damage to the respiratory, nervous, immune, and reproductive systems and neurological and development disorders.
[131] OEHHA's Summary of Acute, 8-hour and Chronic Reference Exposure Levels (RELs): https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary.

Air Quality Monitoring

This section contains an overview of air monitoring data. It includes a discussion of trends and variability in air monitoring data for different Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs). It also provides comparisons with air quality standards and other health-based thresholds using data collected at Air District air monitoring sites. Furthermore, it offers insights from additional air monitoring projects in East Oakland.

Ambient air quality monitoring provides information on the outdoor air we breathe in our neighborhoods and communities. There are several methods for monitoring ambient air quality, each with different purposes, strengths, and limitations. However, no single monitoring system can inform every aspect of air quality and air monitoring is not feasible in all places at all times and for all pollutants. Air monitoring data reflect the combined impacts of pollution emissions, influences from meteorological conditions, and chemical reactions in the atmosphere.

The Air District operates a multi-pollutant network of long-term regulatory air monitoring sites across the Bay Area.[132] Data provided by the Air District's network can help characterize long-term air quality trends and is used for comparison with health-based standards, in particular, the National Ambient Air Quality Standards (NAAQS) set by the U.S. EPA.[133] This network includes three monitoring sites in Oakland: *Oakland – East*, *Oakland – Laney*, and *Oakland – West*, as shown in Figure 5-2, and Table 5-4 provides additional information about these monitoring sites and the pollutants they monitor for.

[132] The Air District's Ambient Air Monitoring Network webpage: https://www.baaqmd.gov/about-air-quality/air-quality-measurement/ambient-air-monitoring-network.
[133] Description of U.S. EPA's health-based NAAQS: https://www.epa.gov/air-trends/air-quality-design-values.

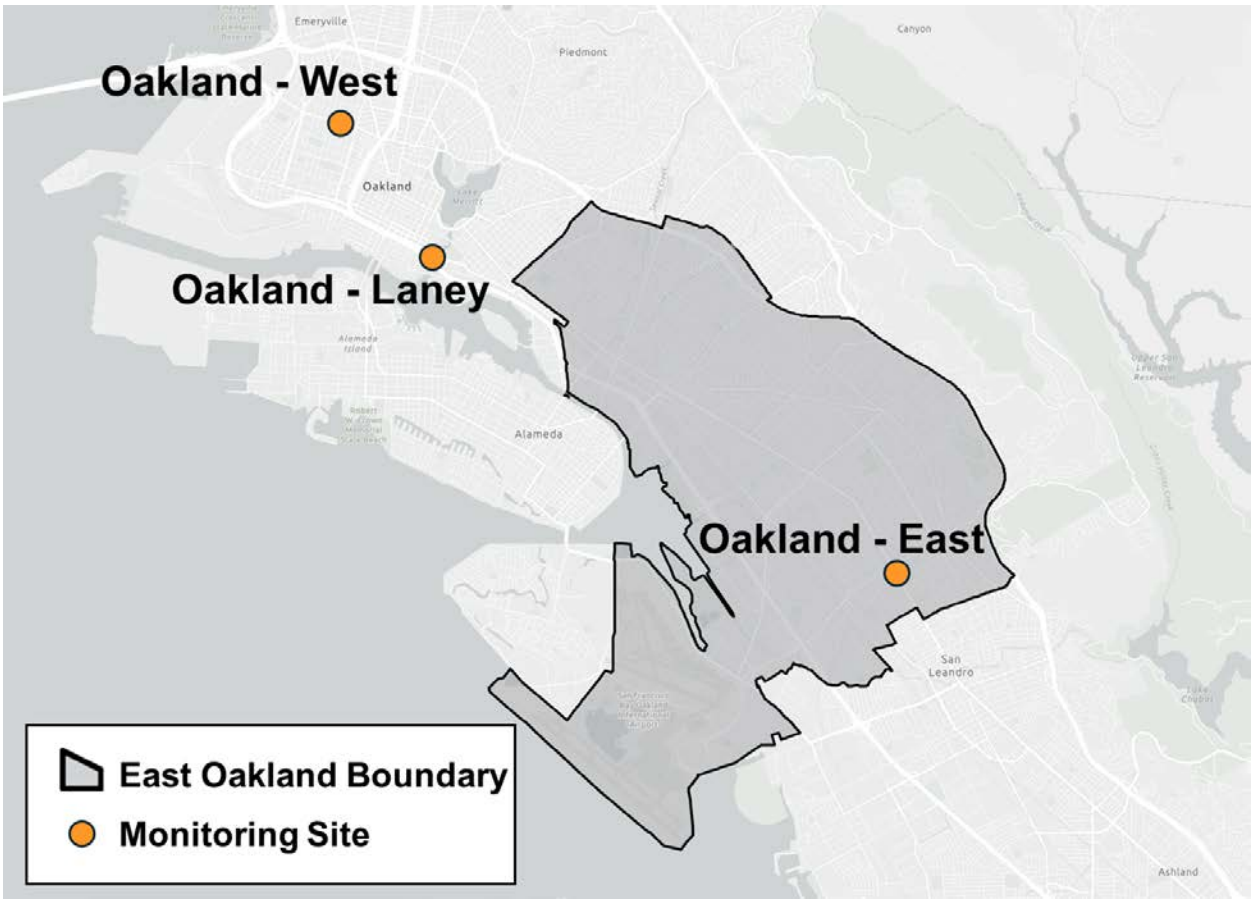

Figure 5-2: Map of air monitoring sites in Oakland.

Table 5-4: Air District monitoring sites in Oakland.

Monitoring Site	Pollutants Monitored	Location Notes
Oakland – East	Fine particulate matter ($PM_{2.5}$), ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), selected volatile organic compounds (VOCs) including some toxic air contaminants (TACs)	*Oakland – East* is located along International Blvd. between 98th St. and 99th St.
Oakland – Laney	$PM_{2.5}$, black carbon, ultrafine particles (UFPs), nitrogen dioxide (NO_2), carbon monoxide (CO), selected VOCs including some TACs	*Oakland – Laney* is a near-road monitoring site, located 20 meters from I-880 and is sited to be representative of pollution exposure in the near-road environment
Oakland – West	$PM_{2.5}$, speciated $PM_{2.5}$, black carbon, ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), selected VOCs including some TACs	*Oakland – West* is located one mile from the Port of Oakland, a major source for diesel particulate matter, and is near several freeways

Trends and Variability in Criteria Air Pollutants (CAPs)

One way to assess air quality in terms of health impacts is to compare measured concentrations of different pollutants to U.S. EPA's health-based (National Ambient Air Quality Standards) NAAQS. This comparison uses a statistic called a design value. For each Criteria Air Pollutant (CAP) measured at each monitoring site, a design value is calculated each year using data collected over the previous three years.[134] Tracking how design values change over time provides information on whether levels of a pollutant are improving, worsening, or holding steady relative to the NAAQS, and helps illustrate how design values vary between locations and for different pollutants.

Design values for annual average and 24-hour fine particulate matter ($PM_{2.5}$), 8-hour ozone (O_3), and 1-hour nitrogen dioxide (NO_2) for the three Oakland-area monitoring sites are shown in Table 5-5. All of the latest design values in Oakland (for the 2021-2023 period) are below their respective NAAQS levels.

[134] EPA Air Quality Design Values website: https://www.epa.gov/air-trends/air-quality-design-values.

Table 5-5: Design values (2021-2023) for $PM_{2.5}$, ozone (O_3), and nitrogen dioxide (NO_2) for Oakland-area air monitoring sites. Units are in micrograms per meter cubed (µg/m3), parts per million (ppm), or parts per billion (ppb), depending on pollutant.

National Ambient Air Quality Standards (NAAQS)	Level of the NAAQS	Oakland – East 2021-2023 Design Value	Oakland – Laney 2021-2023 Design Value	Oakland – West 2021-2023 Design Value
Annual $PM_{2.5}$ (2024 standard)	9.0 µg/m^3	7.6 µg/m^3	8.9 µg/m^3	7.5 µg/m^3
24-hour $PM_{2.5}$ (2006 standard)	35 µg/m^3	19 µg/m^3	23 µg/m^3	21 µg/m^3
8-hour Ozone (O_3) (2015 standard)	0.070 ppm	0.046 ppm	----	0.041 ppm
1-hour Nitrogen Dioxide (NO_2) (2010 standard)	100 ppb	37 ppb	40 ppb	39 ppb

The design value for annual fine particulate matter ($PM_{2.5}$)evaluates long-term, or chronic, exposure to $PM_{2.5}$ over the course of a year, and the design value for 24-hr $PM_{2.5}$ evaluates exposure to shorter-duration $PM_{2.5}$ episodes (e.g., wildfires or when stagnant weather conditions allow pollution levels to build up). In February 2024, U.S. EPA strengthened the National Ambient Air Quality Standards (NAAQS) for annual average $PM_{2.5}$ from 12.0 µg/m^3 to 9.0 µg/m^3.[135] Design values for annual $PM_{2.5}$ at the *Oakland – East* monitoring site were between 7.6 µg/m^3 and 10.0 µg/m^3 over the past ten years, as shown in Figure 5-3. Data from the *Oakland – Laney* monitoring site may better describe exposure experienced by East Oakland residents who are nearest to I-880 since it is generally representative of pollution levels near freeways, and design values for annual $PM_{2.5}$ at *Oakland – Laney* have usually been higher (ranging between 8.4 µg/m^3 and 11.6 µg/m^3). While the design value for annual $PM_{2.5}$ at the *Oakland - East* monitoring site has been below the NAAQS, additional reductions in $PM_{2.5}$ can have health benefits, especially in overburdened communities that can be more vulnerable to air pollution.

The 24-hour fine particulate matter ($PM_{2.5}$) design value, as opposed to the annual $PM_{2.5}$ design value, is much more strongly affected by shorter-term air quality events, such as smoke from wildfires. In recent years, wildfire smoke contributed to numerous occurrences of high 24-hour $PM_{2.5}$ concentrations across the Bay Area, leading to design values above the National Ambient Air Quality Standards (NAAQS) (see Figure 5-4). Outside of recent years with severe wildfire events, the 24-hour $PM_{2.5}$ design values were below the current 24-hr $PM_{2.5}$ NAAQS.

[135] EPA Final Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (PM): https://www.epa.gov/pm-pollution/final-reconsideration-national-ambient-air-quality-standards-particulate-matter-pm.

Design values for 8-hour ozone (O_3) (see Figure 5-5) and 1-hour nitrogen dioxide (NO_2) (see Figure 5-6) have been well below the National Ambient Air Quality Standards (NAAQS) at the *Oakland – East* monitoring site for the last decade. This means that ozone (O_3) and nitrogen dioxide (NO_2) concentrations are in compliance with federal health-based air quality standards. Ozone (O_3) forms in the atmosphere from reactions of other pollutants, especially under sunny, hot weather conditions. In the Bay Area, ozone (O_3) levels are generally higher farther inland from the coast and Bayshore. Nitrogen dioxide (NO_2) and other nitrogen oxides (NO_x) react with other pollutants to form both particulate matter (PM) and ozone (O_3).

As noted previously, in addition to the National Ambient Air Quality Standards (NAAQS) established by U.S. EPA, California established the California Ambient Air Quality Standards (CAAQS) for several pollutants. However, some of the CAAQS, including for fine particulate matter ($PM_{2.5}$), are now less stringent than the NAAQS, and recent monitoring data for different pollutants measured at the *Oakland - East* monitoring site are all below their respective CAAQS. The World Health Organization (WHO) has also developed air quality guidelines for several pollutants.[136] Those guidelines use different methodologies for comparison with air monitoring data and therefore are not directly comparable to the data presented in this section, which were summarized for comparison with the NAAQS.

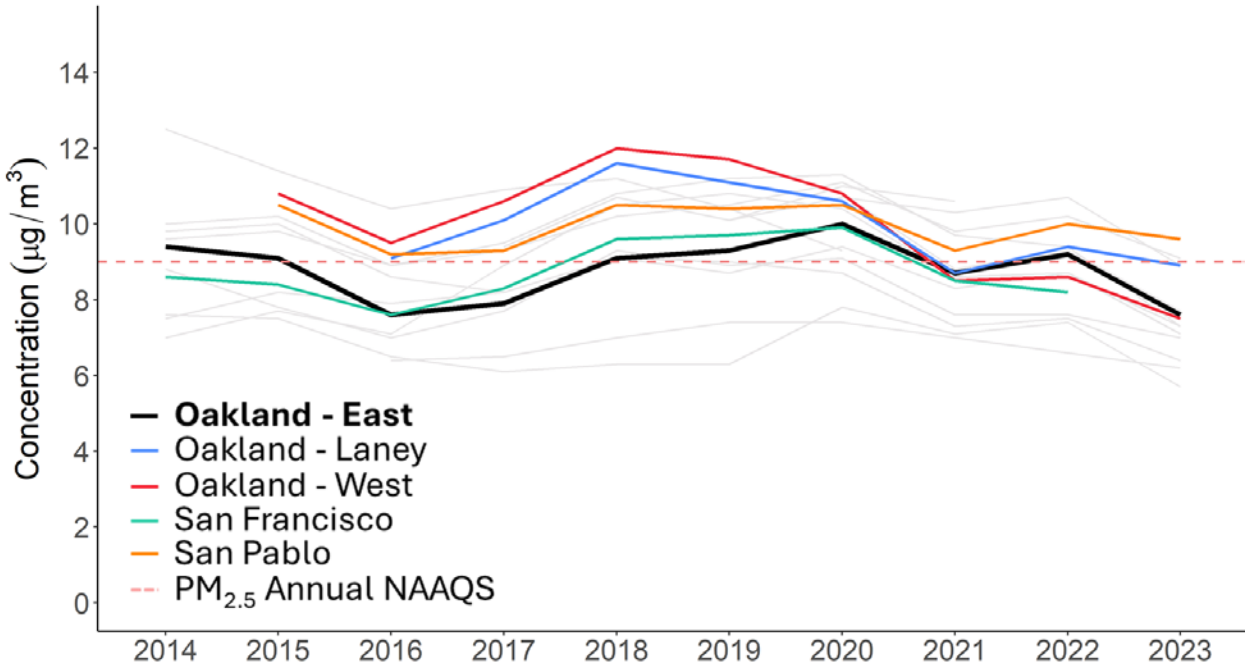

Figure 5-3: Design values for annual $PM_{2.5}$ at Air District monitoring sites. The y-axis shows $PM_{2.5}$ concentrations and the x-axis shows years from 2014 to 2023. Each line on the plot represents design values at a different monitoring site. Grey lines denote design values for other Air District monitoring sites in the Bay Area that are not otherwise labeled. In 2024, the $PM_{2.5}$ annual NAAQS was lowered from 12.0 µg/m^3 to 9.0 µg/m^3 and is shown in the figure for reference.

[136] World Health Organization air quality guidelines: https://www.who.int/news-room/feature-stories/detail/what-are-the-who-air-quality-guidelines.

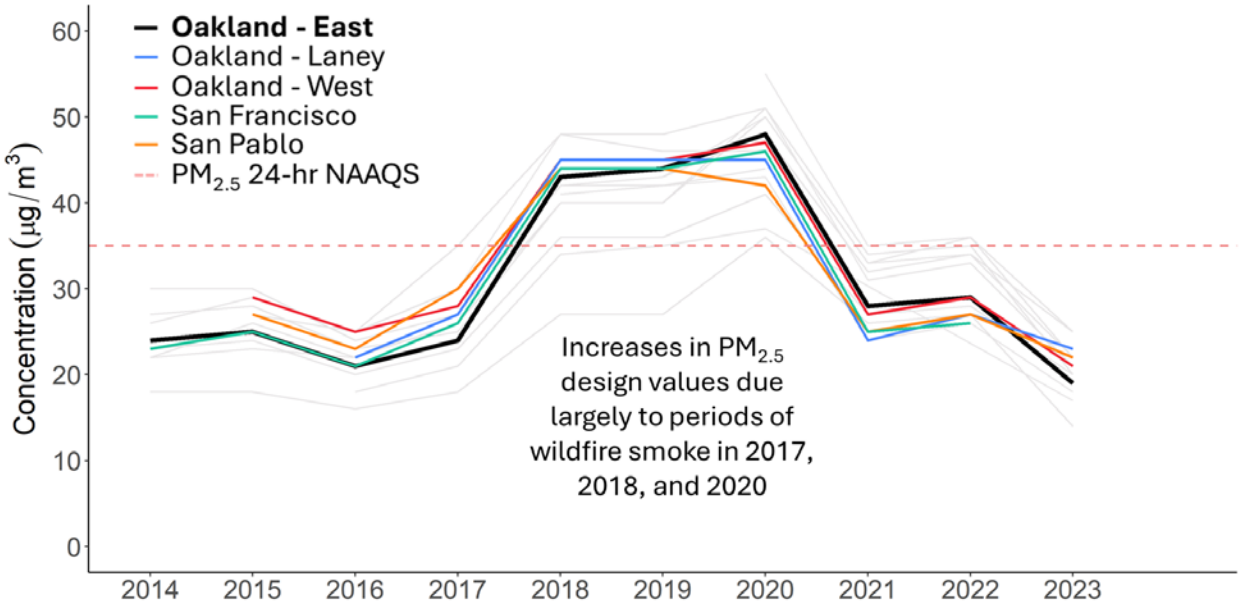

Figure 5-4: Design values for 24-hr $PM_{2.5}$ at Air District monitoring sites. The y-axis shows $PM_{2.5}$ concentrations and the x-axis shows years from 2014 to 2023. Each design value represents three years of data. Grey lines denote design values for other Air District monitoring sites in the Bay Area that are not otherwise labeled. Smoke from wildfires was the main driver for increases in 24-hr $PM_{2.5}$ design values from 2017 to 2020.

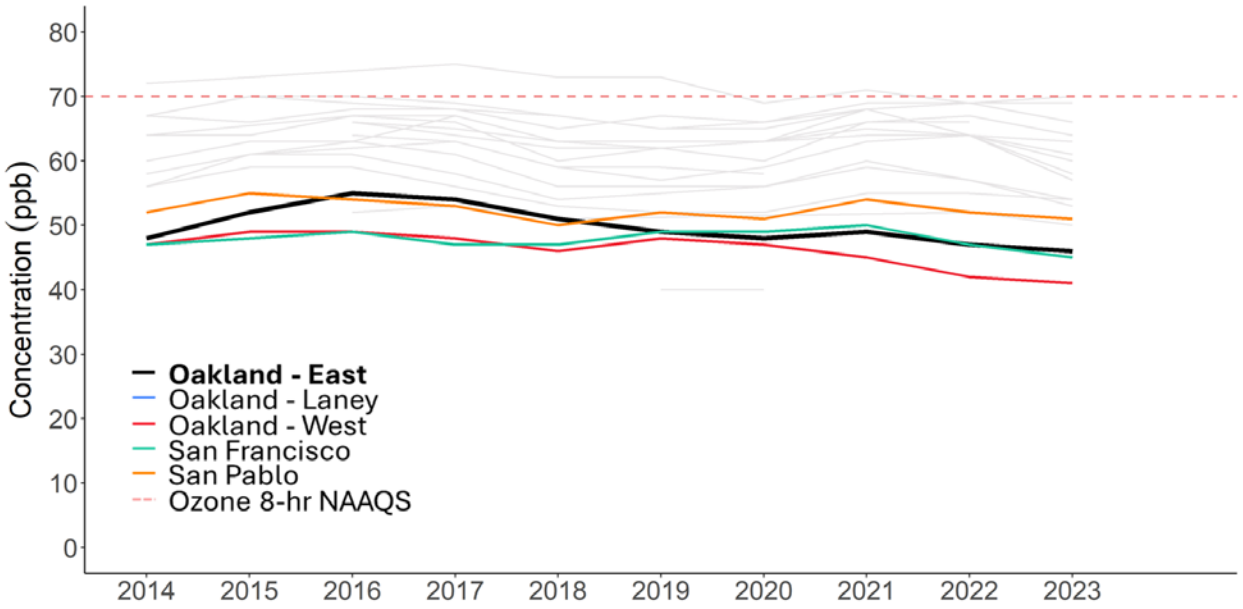

Figure 5-5: Design values for 8-hr ozone (O_3) at Air District monitoring sites. The y-axis shows ozone concentrations and the x-axis shows years from 2014 to 2023. Grey lines denote design values for other Air District monitoring sites in the Bay Area that are not otherwise labeled. Design values for 8-hr ozone (O_3) at the Oakland – East monitoring site have remained well below the NAAQS for the past ten years.

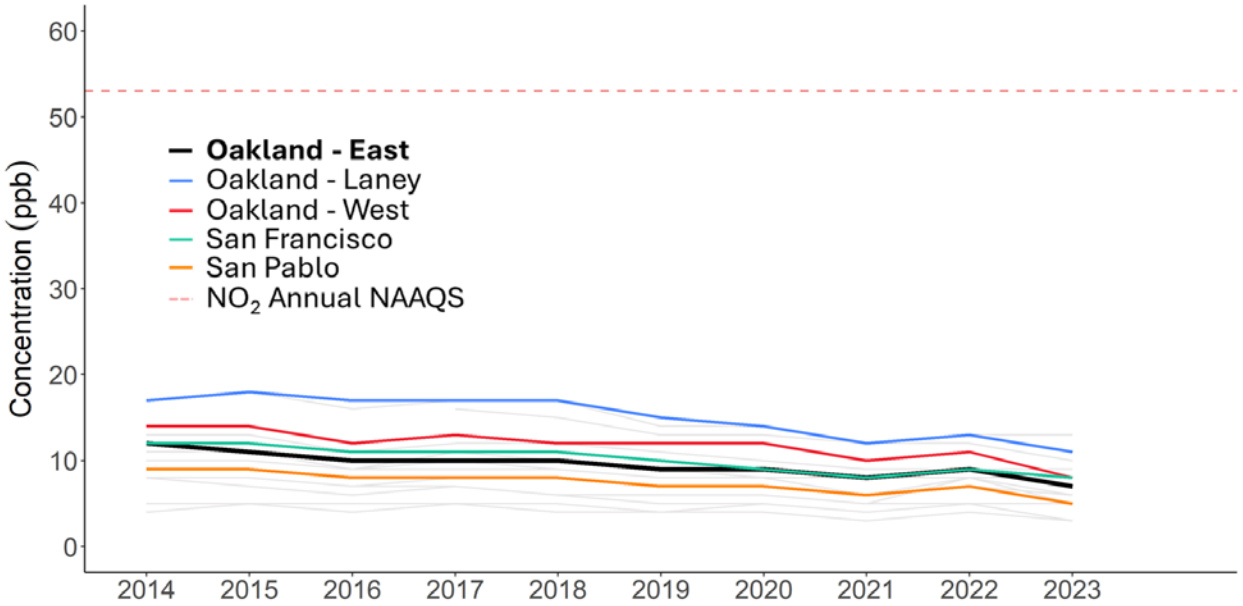

Figure 5-6: Design values for 1-hr nitrogen dioxide (NO_2) at Air District monitoring sites. The y-axis shows NO_2 concentrations and the x-axis shows years from 2014 to 2023. Grey lines denote design values for other Air District monitoring sites in the Bay Area that are not otherwise labeled. Design values for 1-hr NO_2 at the Oakland – East monitoring site have remained well below the NAAQS for the past ten years.

Trends and Variability in Air Toxics Data

Volatile organic compounds (VOCs) are compounds that can easily evaporate into the air and contribute to air pollution. The Air District measures selected VOCs, many of which are Toxic Air Contaminants (TACs), at several air monitoring sites, including *Oakland – East*. These VOCs are measured by collecting air into a canister over 24 hours, and the collected samples are then analyzed at the Air District's laboratory. VOC samples are collected at these monitoring sites every twelfth day. VOCs can come from many kinds of facilities, operations, processes, and consumer products. Some general sources of VOCs in outdoor air are listed below, noting that not all of these types of sources are found in East Oakland:

- Combustion of fuels (like gasoline, diesel, wood, coal, and cooking oils)
- Evaporation (vapors) from certain products, such as gasoline, paints, solvents, and cleaners
- Oil and gas refining, processing, transport, and storage
- Landfills, scrapyards, and water treatment facilities
- Smoke from wildfires, structure fires, and prescribed fires

Table 5-6 lists the maximums, minimums, and averages of the volatile organic compounds (VOC) samples as measured at the *Oakland – East* monitoring site from 2016-2020 in comparison to measurements across all Air District monitoring sites. Concentrations of several measured VOCs were higher at the Oakland – East monitoring site compared to the network average, including benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). The BTEX compounds have many sources in urban environments, including vehicle exhaust and commercial and industrial facilities. The *Oakland – East* monitoring site recorded the highest

individual 24-hour concentration of m/p-xylene (xylenes) across the Air District's network for the 2016-2020 period. In addition, the Oakland – East monitoring site recorded the highest 5-year average concentration and highest individual 24-hour concentration of methyl chloroform compared to any other Air District monitoring site, possibly indicating greater emissions of methyl chloroform in the local area near the *Oakland – East* monitoring site. Methyl chloroform is typically used as a solvent and degreasing agent for industrial purposes and is an ingredient in several common household products.

Table 5-6: Maximum, minimum, and 5-year average VOC concentrations measured at the Oakland - East air monitoring site in comparison to all Air District monitoring sites (Network) from 2016-2020. 5-year averages for a VOC that were higher than the network-wide average are in blue. Maximum individual samples that were the highest across the network in the five years are in red. Underlined concentrations denote values that are below the method detection limit (MDL).

Volatile Organic Compound (VOC)	Oak - East 5-yr avg.	Oak - East Max	Oak - East Min	Network 5-yr avg.	Network Max	Network Min
Acetone	4.09	15.15	0.31	4.96	71.52	0.03
Acetonitrile	0.02	0.36	0.00	0.04	18.86	0.00
Acrylonitrile	0.01	0.01	0.01	0.01	0.32	0.01
1,3-Butadiene	0.01	0.18	0.00	0.01	0.54	0.00
Benzene	0.23	1.54	0.00	0.19	3.12	0.00
Carbon tetrachloride	0.11	0.13	0.10	0.10	0.16	0.07
Chloroform	0.02	0.07	0.00	0.02	0.38	0.00
Dichloromethane	0.09	0.45	0.01	0.09	5.75	0.01
Ethyl alcohol	4.04	20.08	0.79	4.09	119.64	0.02
Ethylbenzene	0.14	1.04	0.00	0.09	1.20	0.00
Ethylene dibromide	0.00	0.00	0.00	0.00	0.00	0.00
Ethylene dichloride	0.00	0.00	0.00	0.00	0.02	0.00
Freon-113	0.07	0.22	0.05	0.07	0.24	0.04
Methyl chloroform	0.13	1.27	0.00	0.01	1.27	0.00
Methyl ethyl ketone	0.21	0.66	0.01	0.25	5.74	0.01
Tetrachloroethylene	0.00	0.03	0.00	0.00	0.34	0.00

Volatile Organic Compound (VOC)	Oak - East 5-yr avg.	Oak - East Max	Oak - East Min	Network 5-yr avg.	Network Max	Network Min
Toluene	0.63	3.52	0.12	0.42	3.93	0.01
Trichloroethylene	0.01	0.35	0.00	0.01	0.38	0.00
Trichlorofluoromethane	0.25	0.59	0.17	0.24	0.67	0.16
Vinyl chloride	0.01	0.01	0.00	0.01	0.04	0.00
m/p-Xylene	0.34	3.15	0.04	0.21	3.15	0.01
o-Xylene	0.14	1.37	0.01	0.08	1.45	0.00

Benzene is a TAC of particular concern as it is a carcinogen with known health impacts even at relatively low concentrations. Most of the measured benzene concentrations have been below 0.5 ppb across the Air District's monitoring network, which is below the Office of Environmental Health Hazard Assessment (OEHHA)'s chronic reference exposure level for benzene of 1 ppb (see Figure 5-7). Many of the measurements above 1 ppb occurred during periods of wildfire smoke. Some monitoring sites, including *Oakland – East*, have recorded instances of relatively higher benzene concentrations (over 0.5 ppb) outside of periods of wildfire smoke.

Several monitoring sites, including *Oakland – East*, recorded more occurrences of relatively higher concentrations of toluene and xylenes compared to other sites in the network (see Figure 5-8 and Figure 5-9). As noted previously, the highest 24-hour concentration of m/p-xylene (xylenes) measured throughout the network from 2016-2020 was at the *Oakland – East* monitoring site, and that measurement was not during a wildfire smoke period. This may indicate greater emissions of m/p-xylene and other benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds from local sources near the *Oakland – East* monitoring site. While some of toluene and xylene concentrations measured at the *Oakland – East* monitoring site were somewhat higher than in other typical urban areas, they were well below the Office of Environmental Health Hazard Assessment (OEHHA) chronic and acute reference exposure levels (RELs) for toluene of 110 ppb and 1300 ppb, respectively, and for xylene of 200 ppb and 5000 ppb, respectively, and the measured levels do not indicate a risk for acute health effects.

The *Oakland – East* monitoring site also recorded the highest 5-year average concentration and highest individual 24-hour concentration of methyl chloroform compared to any other monitoring site in the network (see Figure 5-10), indicating possible local sources of this compound near the monitoring site. Methyl chloroform concentrations were generally higher from 2011 to 2020 and have decreased since 2020 to levels similar to those observed at other Air District monitoring sites. The measured concentrations, while higher than compared to other locations, have been well below the Office of Environmental Health Hazard Assessment (OEHHA) chronic and acute reference exposure levels (RELs) for methyl chloroform of 200 ppb and 12500 ppb, respectively. Methyl chloroform was commonly used as a solvent and degreasing agent and as an ingredient in certain consumer products.

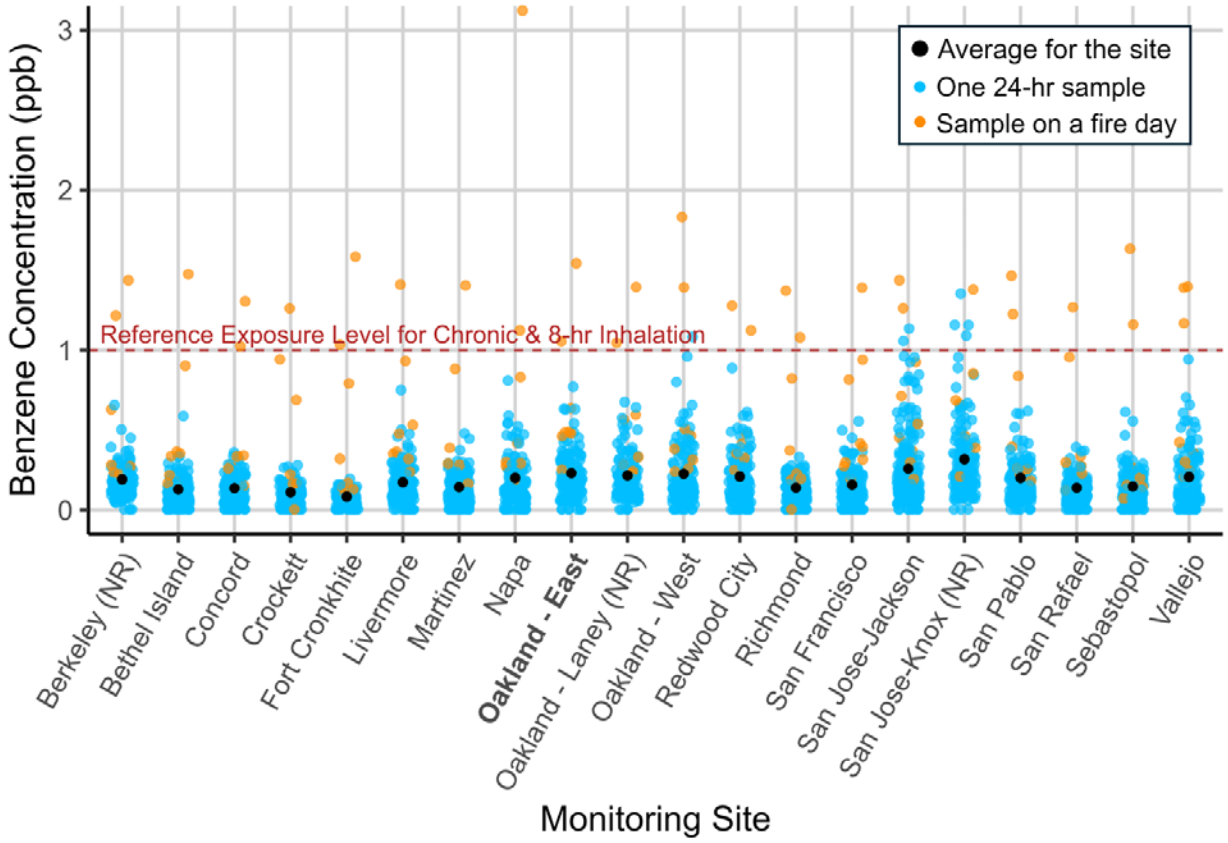

Figure 5-7: 24-hour benzene concentrations at Air District monitoring sites, 2016-2020. The y-axis shows benzene concentrations from roughly 0 to 3 parts per billion and the x-axis shows different Air District monitoring sites. Each blue or orange dot represents an individual 24-hour measurement, where orange dots indicate measurements during wildfire smoke periods. The larger black dots indicate the 5-year average concentration at each monitoring site. Most benzene concentrations were below 1 ppb, which is the Reference Exposure Level for chronic and 8-hr inhalation. Many of the relatively higher benzene concentrations occurred during periods of wildfire smoke.

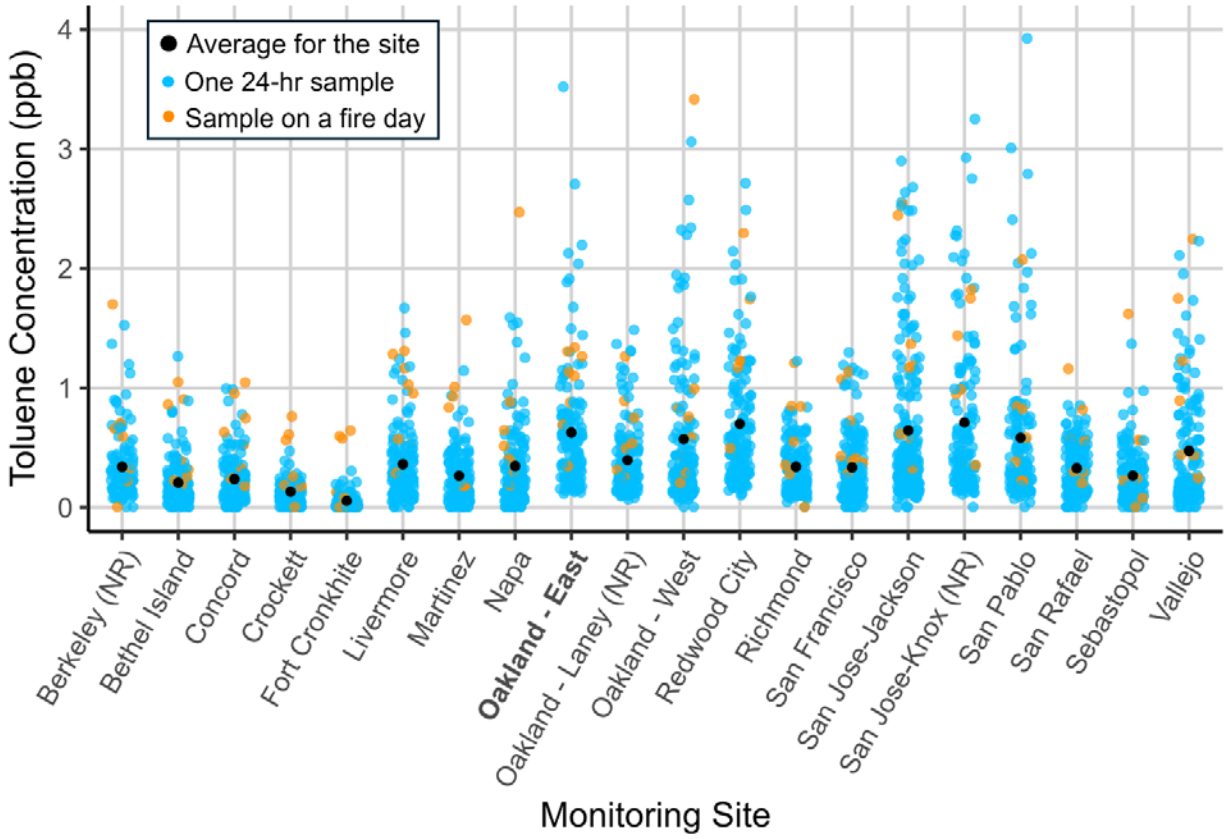

Figure 5-8: 24-hour toluene concentrations at Air District monitoring sites, 2016-2020. The y-axis shows toluene concentrations from roughly 0 to 4 parts per billion and the x-axis shows different Air District monitoring sites. Each blue or orange dot represents an individual 24-hour measurement, where orange dots indicate measurements during wildfire smoke periods. The larger black dots indicate the 5-year average concentration at each monitoring site. Measured toluene concentrations have been well below chronic and acute Reference Exposure Levels (RELs) for toluene of 110 ppb and 1300 ppb, respectively.

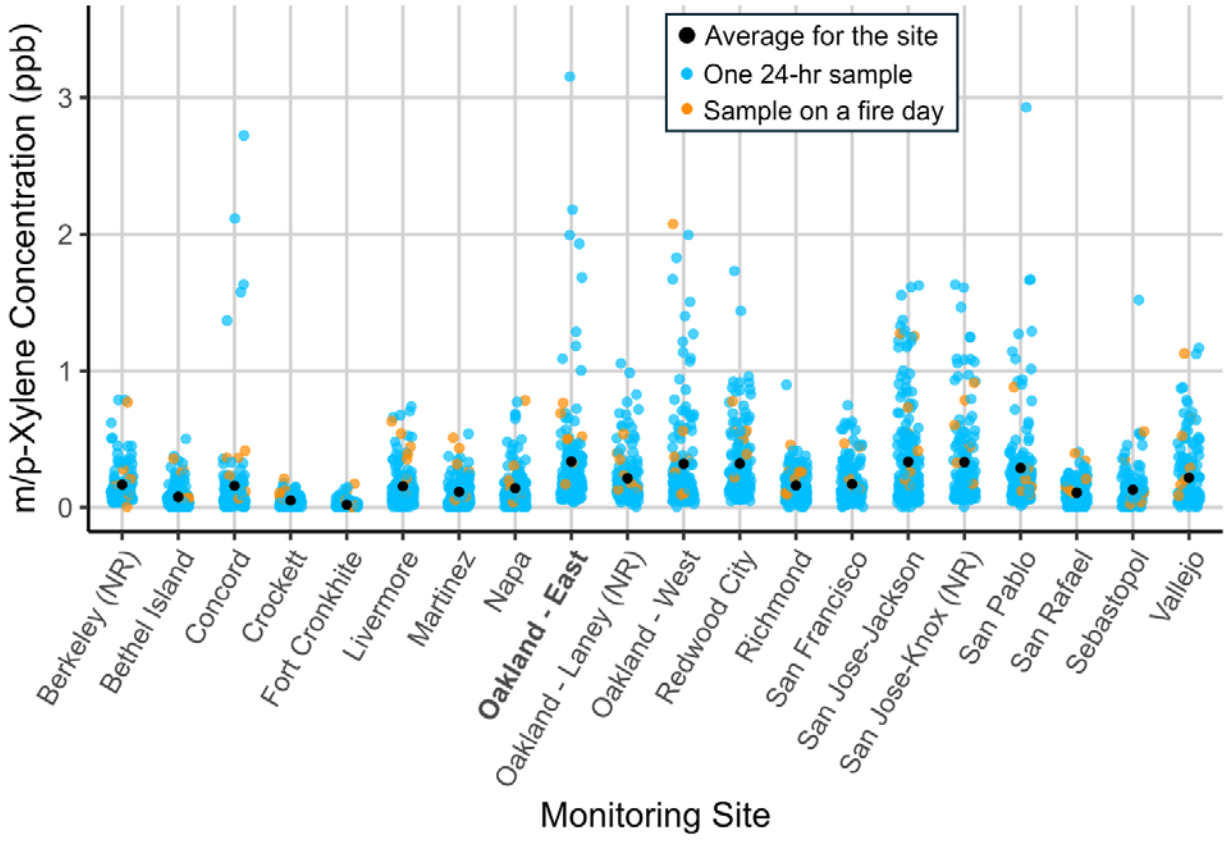

Figure 5-9: 24-hour m/p-xylene (xylenes) concentrations at Air District monitoring sites, 2016-2020. The y-axis shows m/p-xylene concentrations from roughly 0 to 4 parts per billion and the x-axis shows different Air District monitoring sites. Each blue or orange dot represents an individual 24-hour measurement, where orange dots indicate measurements during wildfire smoke periods. The larger black dots indicate the 5-year average concentration at each monitoring site. Measured m/p-xylene concentrations have been well below chronic and acute Reference Exposure Levels (RELs) for m/p-xylene of 200 ppb and 5000 ppb, respectively.

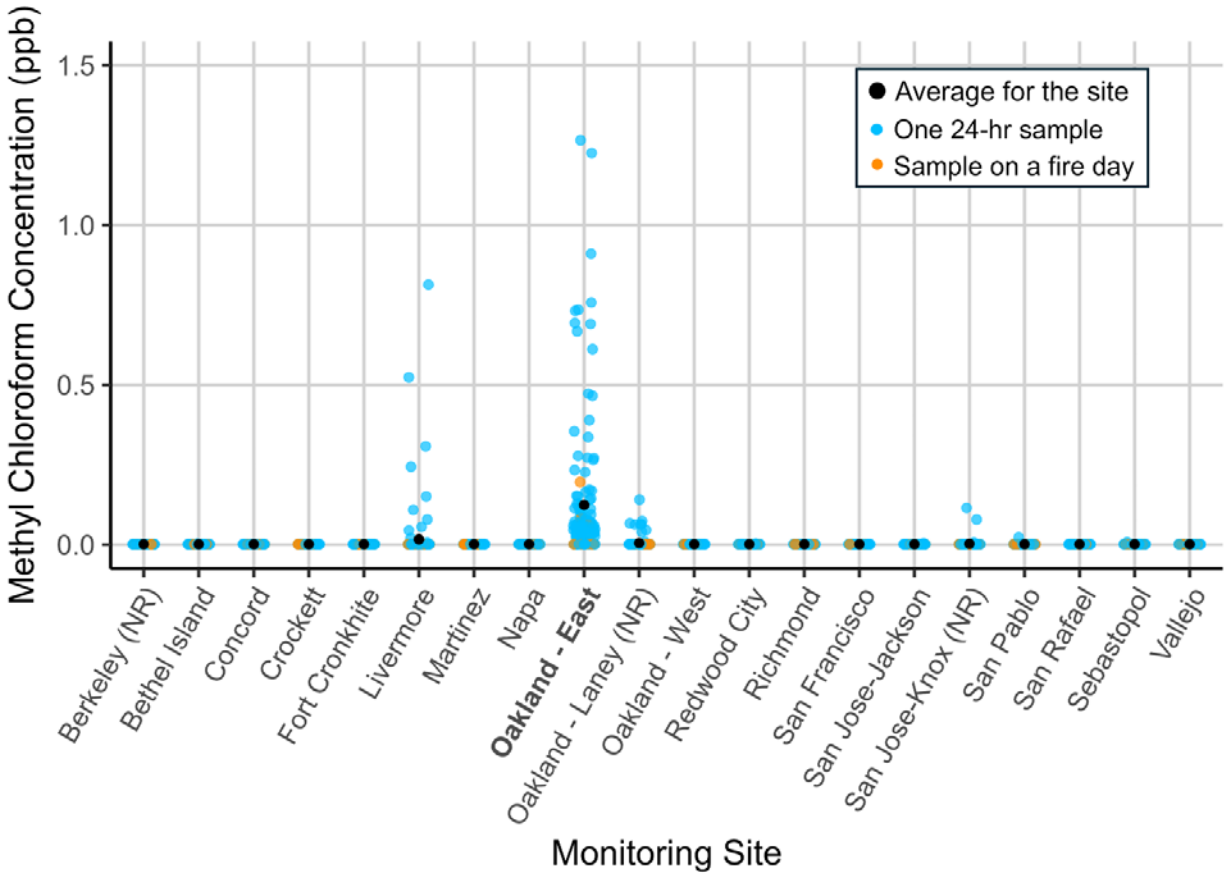

Figure 5-10: 24-hour methyl chloroform concentrations at Air District monitoring sites, 2016-2020. The y-axis shows methyl chloroform concentrations from roughly 0 to 1.5 parts per billion and the x-axis shows different Air District monitoring sites. Each blue or orange dot represents an individual 24-hour measurement, where orange dots indicate measurements during wildfire smoke periods. The larger black dot indicates the 5-year average concentration. The measurements of methyl chloroform at the Oakland - East monitoring site, while higher than compared to other locations, have been well below the chronic and acute Reference Exposure Levels (RELs) for methyl chloroform of 200 ppb and 12,500 ppb, respectively.

Annual average concentrations of several monitored volatile organic compounds (VOCs) have decreased (improved) since routine monitoring began at Air District long-term air monitoring sites, but those decreases in concentrations have leveled off in recent years. Figure 5-11, Figure 5-12, Figure 5-13, and Figure 5-14 show annual average concentrations of benzene, toluene, m/p-xylene, and methyl chloroform, respectively, at the *Oakland – East*, *Oakland – Laney*, *Oakland – West*, *San Francisco*, and *San Jose – Jackson* monitoring sites. *San Francisco* and *San Jose - Jackson* are shown for reference since those monitoring sites have longer data records. Prior to the mid-1990s, annual average benzene concentrations were above 1.0 ppb, which is the reference exposure level (REL) for chronic and 8-hour inhalation of benzene. Annual average concentrations of benzene and toluene have decreased (improved) considerably since the early 1990s, though those improvements have leveled off in more recent years. An overall decline in annual average concentrations of m/p-xylene (xylenes) is also evident, noting that a shorter period of record is available for m/p-xylene since samples were not analyzed for that compound prior to 2003. For methyl chloroform, annual average

concentrations decreased sharply in the 1990s. Methyl chloroform is an ozone depleting substance that was phased out per the 1992 Copenhagen Amendment to the Montreal Protocol.[137] A period of relatively higher levels of methyl chloroform was measured at the *Oakland – East* monitoring site from roughly 2011 to 2020, indicating possible local sources of this compound near the monitoring site as noted previously. It is unclear what the specific source of methyl chloroform was in this instance, and concentrations since 2020 have decreased to levels similar to those measured at other monitoring sites and are now generally below detection limits.

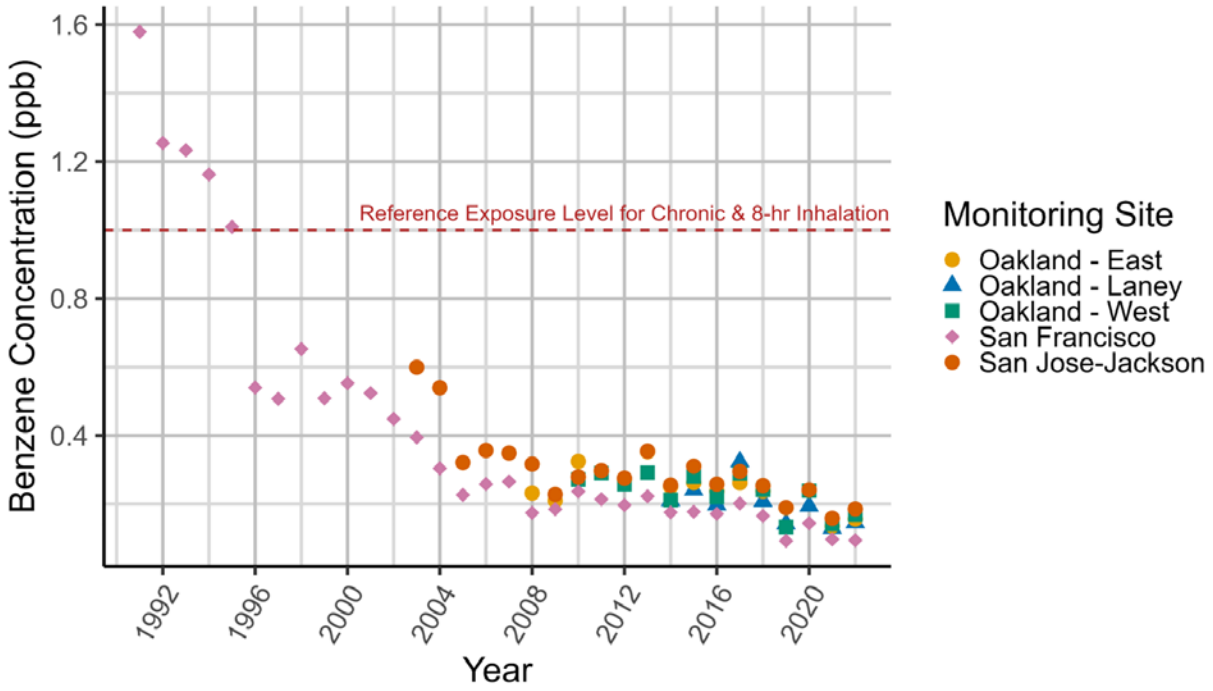

Figure 5-11: Annual average benzene concentrations at selected Air District monitoring sites. Note that the monitoring sites have different periods of record; the first year with complete data for the Oakland – East monitoring site was 2008. The y-axis shows annual average benzene concentrations and the x-axis shows years. Annual average benzene concentrations have decreased (improved) considerably since the early 1990s, though those decreases have leveled off in more recent years. Annual average benzene concentrations are now typically below 0.25 ppb, which is below the Reference Exposure Level (REL) for chronic exposure to benzene of 1 ppb.

[137] United Nations webpage on the Copenhagen Amendment to the Montreal Protocol: https://ozone.unep.org/treaties/montreal-protocol/amendments/copenhagen-amendment-1992-amendment-montreal-protocol-agreed.

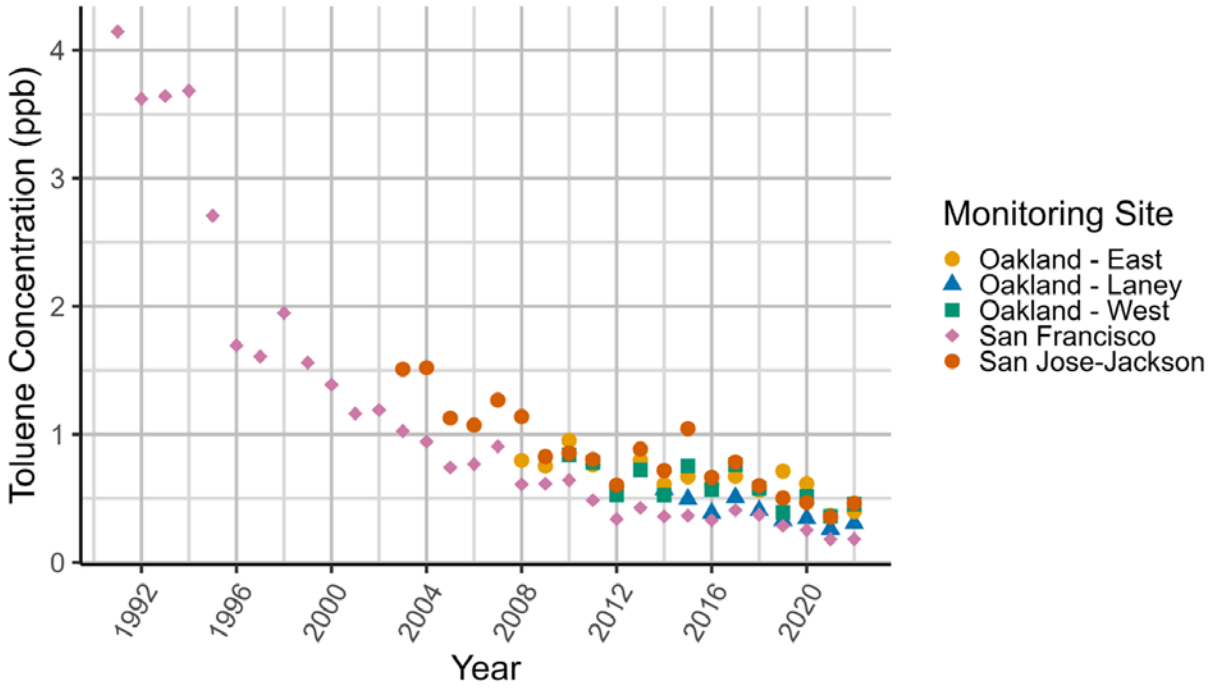

Figure 5-12: Annual average toluene concentrations at selected Air District monitoring sites. Note that the monitoring sites have different periods of record; the first year with complete data for the Oakland – East monitoring site was 2008. The y-axis shows annual average toluene concentrations and the x-axis shows years. Annual average toluene concentrations have decreased (improved) considerably since the early 1990s. Annual average toluene concentrations are now typically below 0.5 ppb, which is well below the Reference Exposure Level (REL) for chronic exposure to toluene of 110 ppb.

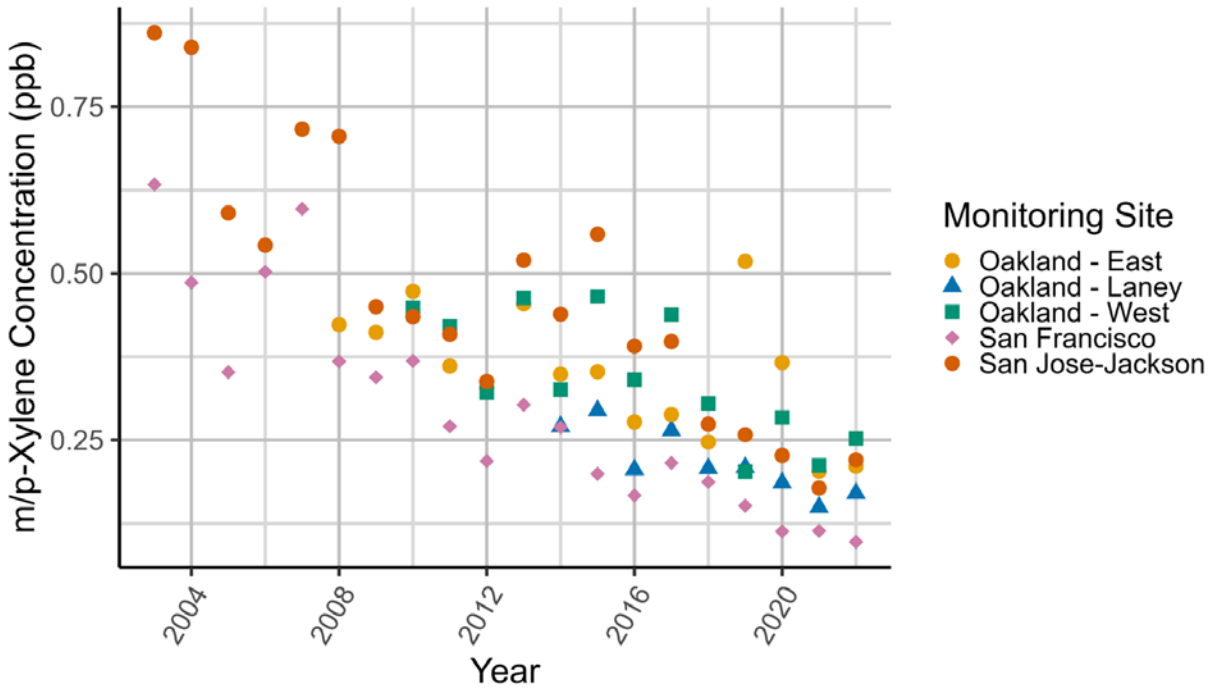

Figure 5-13: Annual average m/p-xylene concentrations at selected Air District monitoring sites. Note that the monitoring sites have different periods of record; the first year with complete data for the Oakland – East monitoring site was 2008. Samples were not analyzed for m/p-xylene prior to 2003. The y-axis shows annual average m/p-xylene concentrations and the x-axis shows years. Annual average m/p-xylene concentrations have generally decreased since the mid-2000s. Annual average m/p-xylene concentrations are now typically below 0.5 ppb, which is well below the Reference Exposure Level (REL) for chronic exposure to m/p-xylene of 200 ppb.

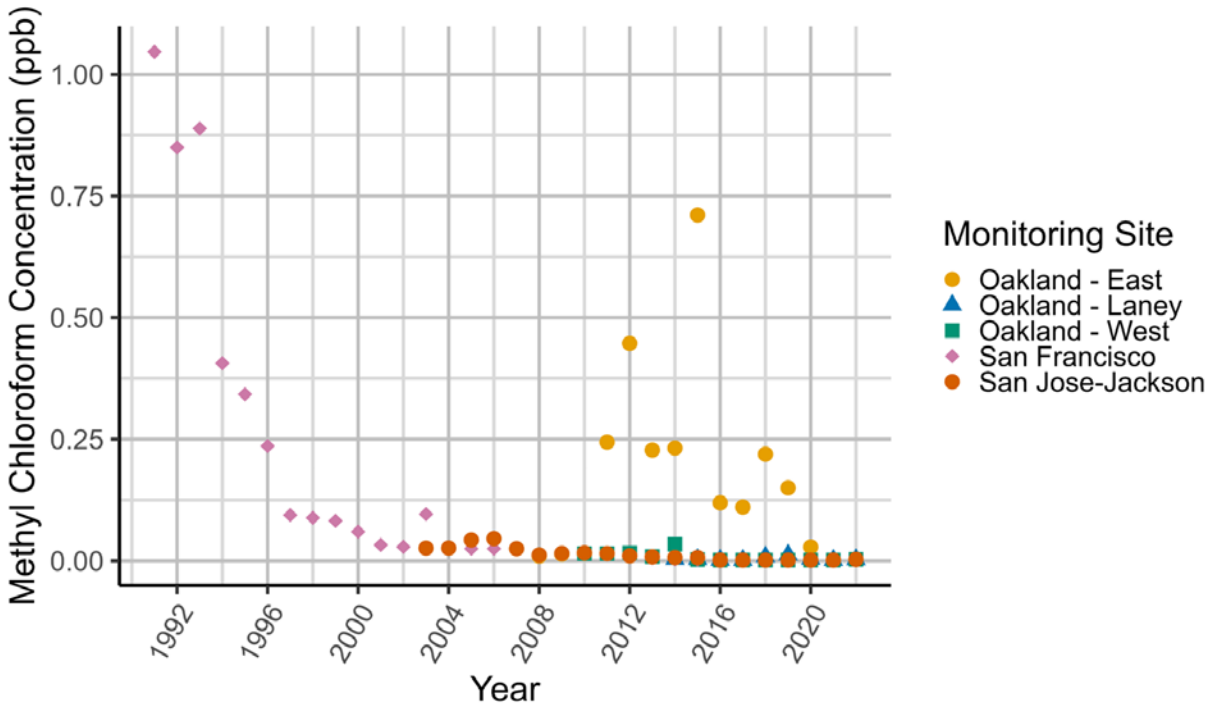

Figure 5-14: Annual average methyl chloroform concentrations at selected Air District monitoring sites. Note that the monitoring sites have different periods of record; the first year with complete data for the Oakland – East monitoring site was 2008. The y-axis shows annual average methyl chloroform concentrations and the x-axis shows years. A period of relatively higher levels of methyl chloroform was measured at the Oakland – East monitoring site from roughly 2011 to 2020, indicating possible local sources of methyl chloroform near the monitoring site. Concentrations since 2020 have decreased to levels similar to those measured at other monitoring sites and are now generally below detection limits and well below the Reference Exposure Level (REL) for chronic exposure to methyl chloroform of 200 ppb.

In addition, the Air District is currently partnering with Communities for a Better Environment (CBE) and the University of California, Berkeley to implement a multi-year community air monitoring project in East Oakland. [138] This study will use the Air District's air monitoring van to perform exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM) around sources or receptors of interest to the community, including follow up studies. This project is currently in progress, and data collected from this effort will be made available and used to support implementation of Plan strategies.

Insights From Other Projects

East Oakland Particulate Matter 2.5 Community-Based Air Monitoring Research Project

In 2008, Communities for a Better Environment (CBE) conducted a community-based air monitoring project in East Oakland to better understand the air quality impacts of diesel truck

[138] Bay Area Air Quality Management District: Community Air Monitoring in East Oakland. https://www.baaqmd.gov/en/about-air-quality/air-quality-measurement/special-air-monitoring-projects/east-oakland-community-monitoring-project.

emissions and industrial activities in the community.[139] The purpose of the study was to measure fine particulate matter ($PM_{2.5}$) to better understand the impacts of diesel truck emissions and industrial activities in the community. Handheld air monitors (TSI DustTrak 8520 Aerosol Particulate Monitors) were used to measure concentrations of $PM_{2.5}$. Local air monitoring showed that there were high levels of $PM_{2.5}$ near industrial areas and corridors with high diesel truck traffic. The study also suggested that on average residents in East Oakland were exposed to higher levels of $PM_{2.5}$ compared to residents in Alameda County.

East Oakland Air Monitoring Project

As mentioned above, the Air District is currently partnering with Communities for a Better Environment (CBE) and the University of California, Berkeley to implement a multi-year community air monitoring project in East Oakland. This study will use the Air District's air monitoring van to perform exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM) around sources or receptors of interest to the community, including several commercial and industrial facilities and the Oakland San Francisco Bay Airport. Measurements from the air monitoring van will initially provide snapshots in time of pollutant concentrations and may indicate what sources are contributing to elevated pollutant concentrations. It is anticipated that these exploratory measurements will also raise new questions that will inform the follow up studies that will involve the deployment of portable monitors to provide temporal information at locations identified through the initial measurements.

In addition, the project will also involve the deployment of a network of outdoor and indoor commercial particulate matter (PM) sensors and air filtration units to community members and schools. A PurpleAir sensor will be placed outdoors at each of the 35 monitoring sites. Five of these monitoring locations will be at Oakland Unified School District (OUSD) schools and 30 locations will be at residential homes. For the residential hosts, community members will be able to opt in to receive a second PurpleAir sensor that will be placed indoors and an indoor air filtration device. Training will also be provided to community members to build ownership in monitoring and responding to severe air quality events. While this project is currently in progress, it is expected that any data collected will be made available and used to support Plan implementation.

Emissions Inventory Development

For the East Oakland community, a baseline emissions inventory was developed for the year 2021 that included the two main categories of air pollutants – Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs) – as well as toxicity-weighted emissions (TWE) information. As discussed in the section below on TACs, toxicity weighting provides a useful means of accounting for the relative toxicity of the different TACs in an inventory, which is important because individual TACs have different toxicity levels and health effects. By converting mass-based emissions into toxicity-weighted emissions (TWE), it is easier to determine which TACs and sources may be of most concern.[140] The inventory covers stationary sources and mobile sources operating in and around the East Oakland community boundary[141] (see Figure 5-15).

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[139] East Oakland Particulate Matter 2.5 Community-based Air Monitoring Research Report. September 2010. https://www.cbecal.org/wp-content/uploads/2013/01/East-Oakland-PM-Monitoring-Report-FINAL-2010.pdf.

[140] Note that TWE do not quantify health risks, which requires additional information on pollutant concentrations and human exposures.

[141] The emissions inventory includes sources within the community boundary and a buffer zone around the community that captures nearby sources that may impact air quality for community residents. A map showing the

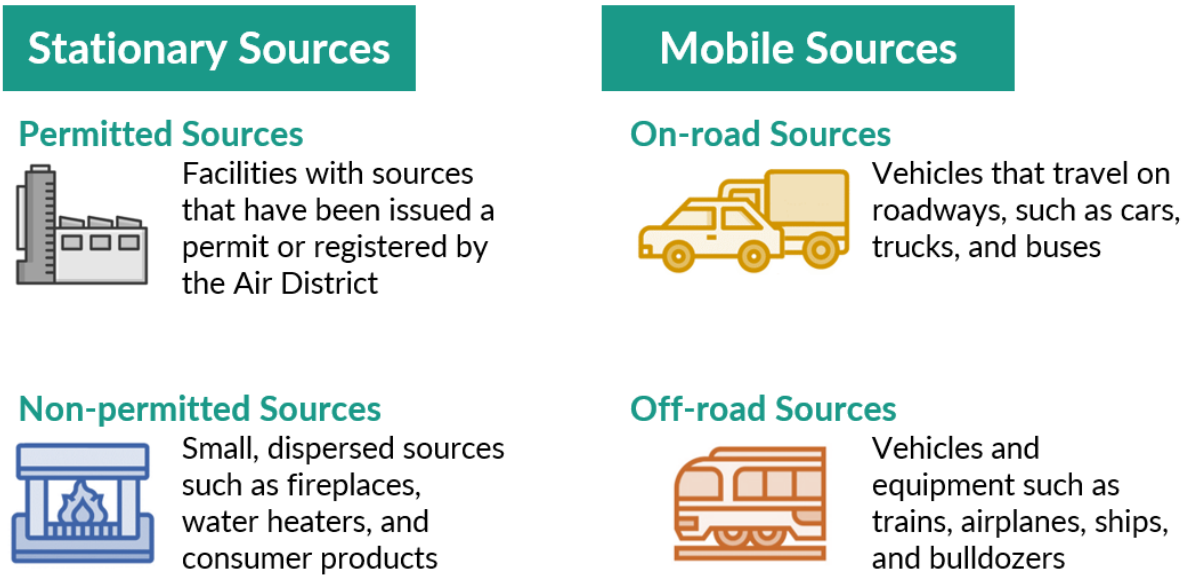

Figure 5-15: Source sectors included in the East Oakland emissions inventory.

Note that for permitted stationary sources, the East Oakland inventory includes detailed information for individual processes or devices that operate under the facility permit and emit air pollutants.[142] Non-permitted stationary sources, on the other hand, are treated as a group in the inventory and are not associated with a particular facility or location. Examples include fugitive dust sources and residential sources like fireplaces and consumer products.

Appendix D: Supplemental Technical Information provides additional details on the methods and data sources used to compile the emissions inventory for local sources in and around East Oakland. Appendix D also includes emissions forecasts for the years 2031 and 2036, which represent 5- and 10-year milestones from 2026, the year of Plan adoption. These forecasted emissions reflect the impact of anticipated growth and existing control programs and will be used for tracking purposes as the Plan is implemented. The sections that follow summarize the 2021 baseline inventory for criteria air pollutants (CAPs) and toxic air contaminants (TACs).

Criteria Air Pollutants (CAPs)

The East Oakland inventory includes emissions estimates for particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), nitrogen oxides (NO_x), sulfur oxides (SO_x), carbon monoxide (CO), total organic gases (TOG), and reactive organic gases (ROG). Note that some of these pollutant designations refer to classes of compounds. For example, ROG consists of organic compounds assumed to be reactive at urban scales, including toxic species such as benzene. These pollutants are either criteria air pollutants (CAPs) or species that serve as precursors to the formation of CAPs in the atmosphere.

Table 5-7 summarizes criteria air pollutants (CAP) emissions by source sector, and these data

community and emissions inventory boundaries is provided in Chapter 4.

[142] Note that "permitted stationary sources" also includes emissions from permit-exempt facilities for which the Air District has facility-level emissions data.

shows that source contributions vary by pollutant. For example, stationary sources account for the majority of particulate matter (PM_{10} and $PM_{2.5}$) and organic gas (TOG and ROG) emissions, while mobile sources dominate the inventory for nitrogen oxides (NO_X), sulfur oxides (SO_X), and carbon monoxide (CO). For nitrogen oxides (NO_x) and sulfur oxides (SO_x), aircraft operating at Oakland San Francisco Bay Airport are the largest source of emissions in East Oakland, as further discussed in a sub-section on the airport that follows.

Table 5-7: East Oakland 2021 CAP emissions by source sector in tons per year (tpy).

Source Type	Source Sector	$PM_{2.5}$	PM_{10}	NO_x	SO_x	CO	TOG	ROG
Stationary	Permitted	76.3	114.2	60.8	0.7	53.1	783.0	196.4
	Non-permitted	122.7	310.2	227.2	4.6	461.0	2,335.0	1,650.8
Mobile	On-Road	54.1	269.5	794.5	9.4	4,167.2	594.5	517.6
	Off-road	28.3	29.5	1,147.6	67.6	6,527.3	636.9	591.6
TOTAL		281.5	723.4	2,230.2	82.3	11,208.6	4,349.4	2,956.4

Among the criteria air pollutants (CAPs), fine particulate matter ($PM_{2.5}$) is of special concern from a human health perspective. As noted earlier in this chapter, fine particles can travel deep into the lungs and bloodstream, where they can cause or contribute to premature deaths, long-term effects like heart disease and respiratory conditions like emphysema, and short-term effects like bronchitis and asthma attacks. Figure 5-16 provides a more detailed breakdown of $PM_{2.5}$ emissions in East Oakland for each of the four source sectors listed in Table 5-7. This figure shows that non-permitted stationary sources account for 44% of local $PM_{2.5}$ emissions in East Oakland. Key sources in this sector include residential fuel combustion, [143] construction dust, and commercial cooking. Permitted stationary sources account for 27% of local $PM_{2.5}$ emissions, with key facilities including the Davis Street Transfer Station, Miller Milling Company and Peet's Coffee and Tea.

On-road mobile sources account for 19% of local fine particulate matter ($PM_{2.5}$) emissions, with paved road dust being the largest contributor. This finding reflects recent trends showing that sharp reductions in tailpipe emissions have increased the relative importance of non-exhaust processes like road dust with respect to on-road $PM_{2.5}$ inventories. Lastly, off-road mobile sources account for 10% of local $PM_{2.5}$ emissions, with airport-related sources being the largest contributors.

[143] About 70% of $PM_{2.5}$ emissions from residential fuel combustion are associated with wood burning for space heating. This category also includes combustion of natural gas for space heating, water heating and cooking.

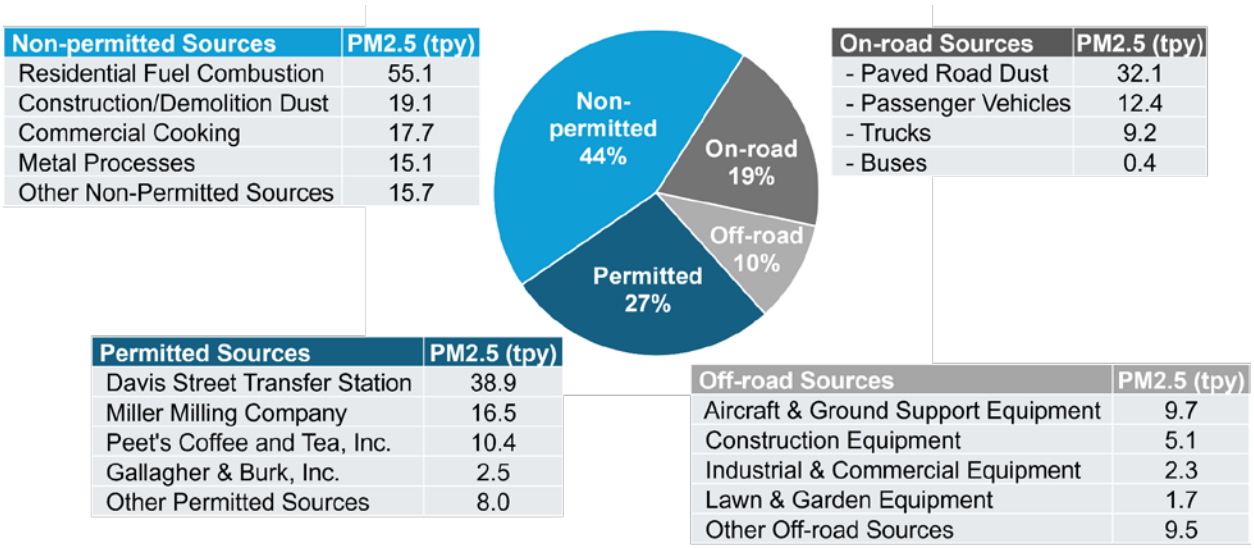

Figure 5-16: East Oakland PM2.5 emissions with source sector breakdowns.

Toxic Air Contaminants (TACs)

The 2021 inventory for East Oakland includes emissions estimates for 143 Toxic Air Contaminants (TACs). Because these compounds have different toxicity levels and health effects, Toxicity-Weighted Emissions (TWEs) were also calculated in two ways. For TACs listed as carcinogens, the mass emissions for each TAC emitted by a given source were multiplied by cancer potency factors from the Office of Environmental Health Hazard Assessment (OEHHA) and then summed. For TACs listed as causing other kinds of chronic health impacts (e.g., asthma, hypertension), emissions from a given source were divided by chronic reference exposure levels (RELs), and then summed.[144] The resulting TWE provide a useful means of comparing the relative toxicity of TACs in the inventory; however, TWE do not quantify health risks, which also require the consideration of how many people are exposed, for how long, and at what levels (concentrations).

Table 5-8 provides a broad summary of toxic air contaminants (TAC) and toxicity-weighted emissions (TWE) for local sources in East Oakland. The importance of toxicity weighting can be seen in the contributions of the various source sectors to total TAC emissions (unweighted) and cancer and chronic TWE. Mobile sources account for less than half of total TAC emissions by mass but account for 88% of cancer TWE and 74% of chronic TWE. This finding can be explained by the fact that mobile sources emit many of the compounds with high relative toxicities. For example, Figure 5-17 shows the contributions of individual TACs to cancer and chronic TWE in East Oakland. Mobile sources account for over 80% of emissions for several of these key TACs, including diesel particulate matter (DPM) (97%), 1,3-butadiene (85%), benzene (91%), and acrolein (98%).

[144] Note that one or more of the OEHHA health values were available for 81 of the 143 TACs in the East Oakland inventory. Emissions for the remaining compounds could not be included in the TWE calculations.

Table 5-8: East Oakland 2021 TAC emissions by source sector.

Source Type	Source Sector	Total TAC mass (lbs)	Cancer TWE	Chronic TWE
Stationary	Permitted	38,107	1,569	28
	Non-permitted	1,216,726	11,543	374
Mobile	On-Road	458,238	70,971	738
	Off-road	568,864	26,872	420
TOTAL		2,281,935	110,955	1,560

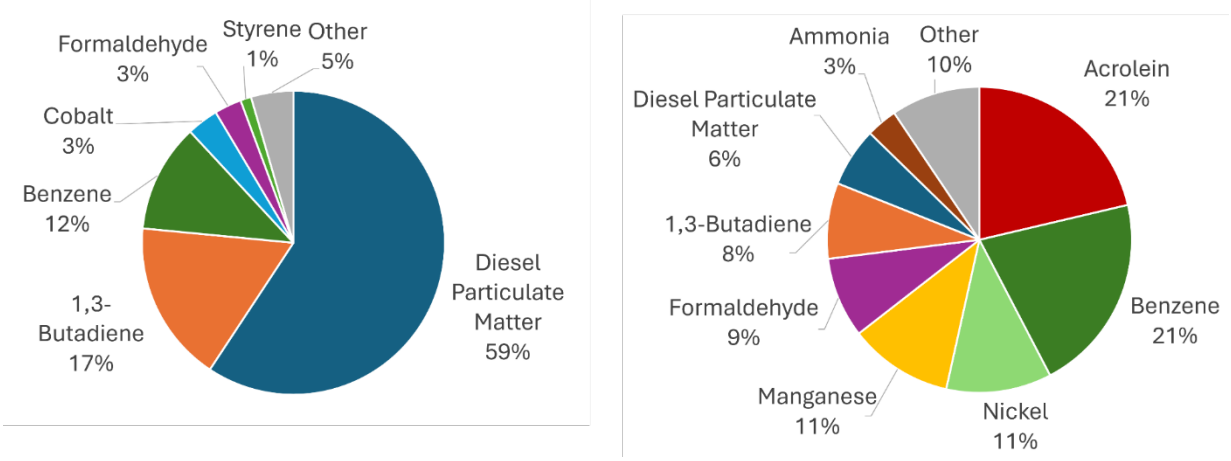

Figure 5-17: Contributions of individual toxic air contaminants (TACs) to total cancer (left) and chronic (right) toxicity-weighted emissions (TWE) in East Oakland.

It should be noted that, while permitted sources play a small role in the overall toxic air contaminants (TAC) inventory, individual facilities or groups of facilities may still be important emitters, especially if they are located near sensitive populations such as schools or senior centers. Importantly, some toxic compounds, such as mercury, dioxins and furans, and hydrogen sulfide, are primarily or entirely emitted by permitted sources. In addition, emissions from permitted facilities are generally released from a concentrated set of stacks or release points, while emissions from other sectors may be distributed widely (e.g., over a vast road network). These considerations are further explored in the material on community concerns that follows.

Dispersion Modeling Overview

Though the emissions inventory provides useful information on total annual emissions from a given source, other factors influence the impact of those emissions on pollutant concentrations and human exposures. For example, a source's proximity to residences and its emissions release characteristics (e.g., an elevated stack vs. a low-level release) influences the source's

contributions to exposures. Therefore, once the emissions inventory was completed, the Air District performed dispersion modeling for key local sources to provide a more complete picture of the impacts of those sources in East Oakland. Sources addressed in the community-scale modeling include permitted facilities, on-road mobile sources, aircraft and ground support equipment at Oakland San Francisco Bay Airport, rail activity, ferries, and commercial cooking. Modeling was conducted with the American Meteorological Society (AMS) and U.S. EPA Regulatory Model (AERMOD) , which combines emissions inputs, meteorological data, and other information to produce fine-grained pollutant concentration estimates near emissions sources.

For East Oakland, AERMOD was used to estimate fine particulate matter ($PM_{2.5}$) concentrations, diesel particulate matter (DPM) concentrations, cancer risk, [145] and chronic hazard index (HI) [146] at receptors spaced 50 meters apart, providing hyper-local, source-specific information. It should be noted that the modeling analyses focused on long-term average exposures and did not assess exposure to shorter variations in pollutant concentrations, which are better characterized by monitoring and other modeling approaches.

It should be noted that dispersion modeling of local sources does not provide an assessment of total exposure to air pollution, as it does not account for the impact of pollutant transport from outside East Oakland or the secondary formation of pollution in the atmosphere. Rather, the local source modeling gives information on the increment above “urban background” that is generated by sources within the community. Regional modeling conducted to support the West Oakland Community Action Plan (WOCAP) indicated that the local increment accounted for about 20% of total fine particulate matter ($PM_{2.5}$) exposure and about 40% of total cancer risk due to air pollution. [147] Preliminary results from more recent regional modeling show similar results for East Oakland, where the average residential cancer risk value of 300 per million is 36% higher than the Bay Area average of 220 per million.

An example of dispersion modeling results is provided in Figure 5-18, which shows a map of total cancer risk resulting from all modeled sources in East Oakland. These values represent cancer incidences per million people that would be expected to result from modeled carcinogen emissions. In Figure 5-18, the highest risk values can be seen along the I-880 freeway and the I-238 freeway that connects the I-880 and I-580. Unlike the I-580, these freeways are open to heavy-duty truck traffic. [148]

[145] Modeled cancer risk values represent an estimate of the chance that a person might develop cancer as a result of exposure to emitted carcinogens at a given residential location, assuming 30 years of exposure and accounting for increased susceptibility to carcinogens during infancy and childhood. Cancer risk values are expressed as the number of people who may develop cancer over their lifetime per million people exposed to modeled exposure levels.
[146] In contrast to cancer risk, the chronic hazard index (HI) does not represent a probability. It is a score created by comparing modeled levels of multiple toxic air contaminants to officially established reference levels (RELs), above which there is reason to expect harmful effects.
[147] Owning Our Air: The West Oakland Community Action Plan. Available at: https://www.baaqmd.gov/community-health/community-health-protection-program/west-oakland-community-action-plan.
[148] Historically, heavy-duty trucks have been banned from an 8.7 mile segment of I-580 running from Grand Avenue in Oakland to Foothill Boulevard in San Leandro. With nearly all heavy truck traffic using the I-880 corridor, concerns have been raised that the I-580 Truck Ban contributes to disproportionate air pollution exposure in already overburdened communities.

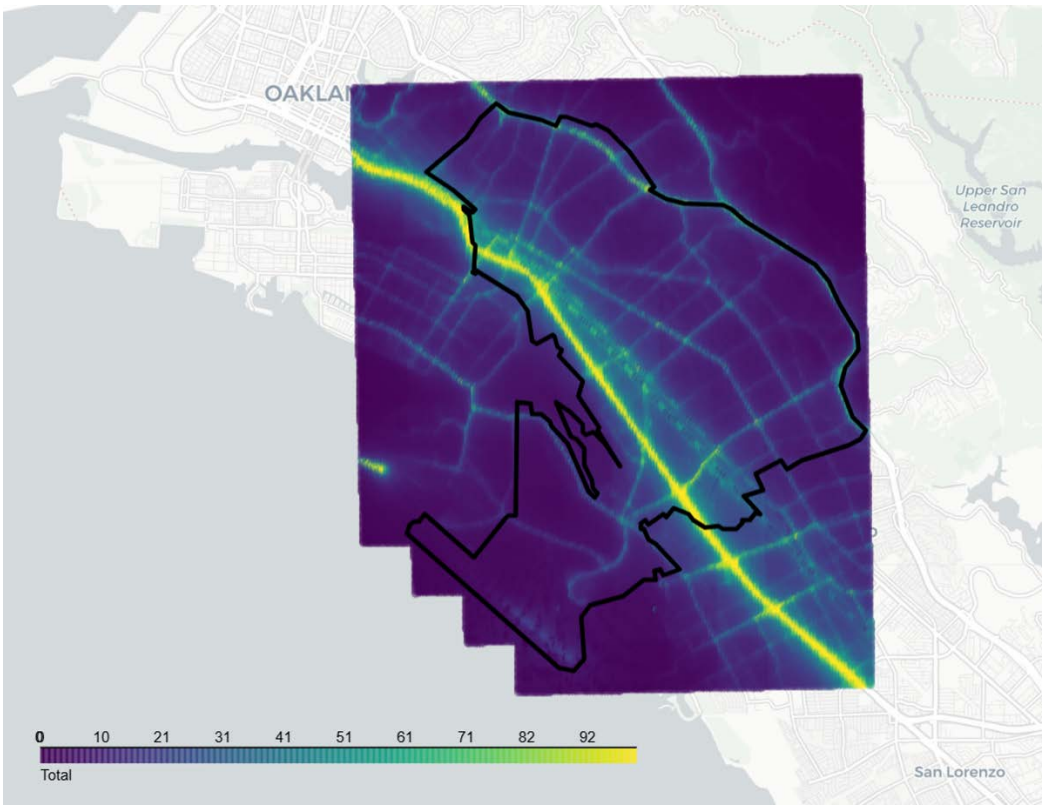

Figure 5-18: Map of total cancer risk (per million) from all modeled sources in East Oakland (permitted facilities, commercial cooking, on-road mobile sources, rail activity, ferries, and airport-related sources).

Modeling results are discussed further in the sub-sections that follow, which connect technical findings from the monitoring, emissions inventory, and modeling analyses to specific concerns identified by the CSC. In addition, Appendix D: Supplemental Technical Information provides further details on the methods and data sources used to conduct the dispersion modeling for key local sources in and around East Oakland.

Connecting to Community Concerns

As described above, the CSC collected community input through a variety of public engagement efforts and used that information to develop a list of six community concerns. The sections that follow provide information from the emissions inventory and modeling analyses on impacts of sources associated with each of these areas of concern.

Commercial & Industrial Sources

This area of concern relates to: (1) particulate matter (PM) exposure from fugitive dust sources, material handling operations, and construction; and (2) industrial and manufacturing facilities that emit air toxics and handle hazardous materials. Plan strategies are aimed at reducing these impacts and holding polluting industries and businesses accountable.

Particulate Matter (PM) Exposure from Fugitive Dust Sources

As shown in Table 5-7 above, stationary (permitted + non-permitted) sources emit 199 tons of fine particulate matter ($PM_{2.5}$) per year in East Oakland, which accounts for 71% of local $PM_{2.5}$ emissions in the community (see Figure 5-16). Among permitted sources, the 11 facilities shown in Figure 5-19 account for 98% of local $PM_{2.5}$ emissions from the permitted source sector. Many of these facilities house material handling operations that produce fugitive dust emissions. In fact, at seven of these facilities, processes that produce fugitive dust account for most or all of the $PM_{2.5}$ emissions. Table 5-9 provides additional details on fugitive dust emissions from these facilities and from non-permitted stationary sources. Table 5-9 also shows that, in total, fugitive dust sources in East Oakland emit 82 tons of $PM_{2.5}$ per year, or about 40% of all $PM_{2.5}$ emissions from local stationary sources. These findings highlight the importance of controlling fugitive dust emissions in the community as a way of reducing total $PM_{2.5}$ emissions.

It should also be noted that emissions estimates for fugitive dust sources are highly uncertain, in part due to the variable nature of those emissions. Factors like wind speed, soil moisture, and land disturbance play a large role, and fugitive dust sources may also be transitory in location (e.g., short-term construction projects or temporarily vacant lots). Identifying and tracking fugitive dust sources is difficult and may lead to underestimations in emissions from these sources.

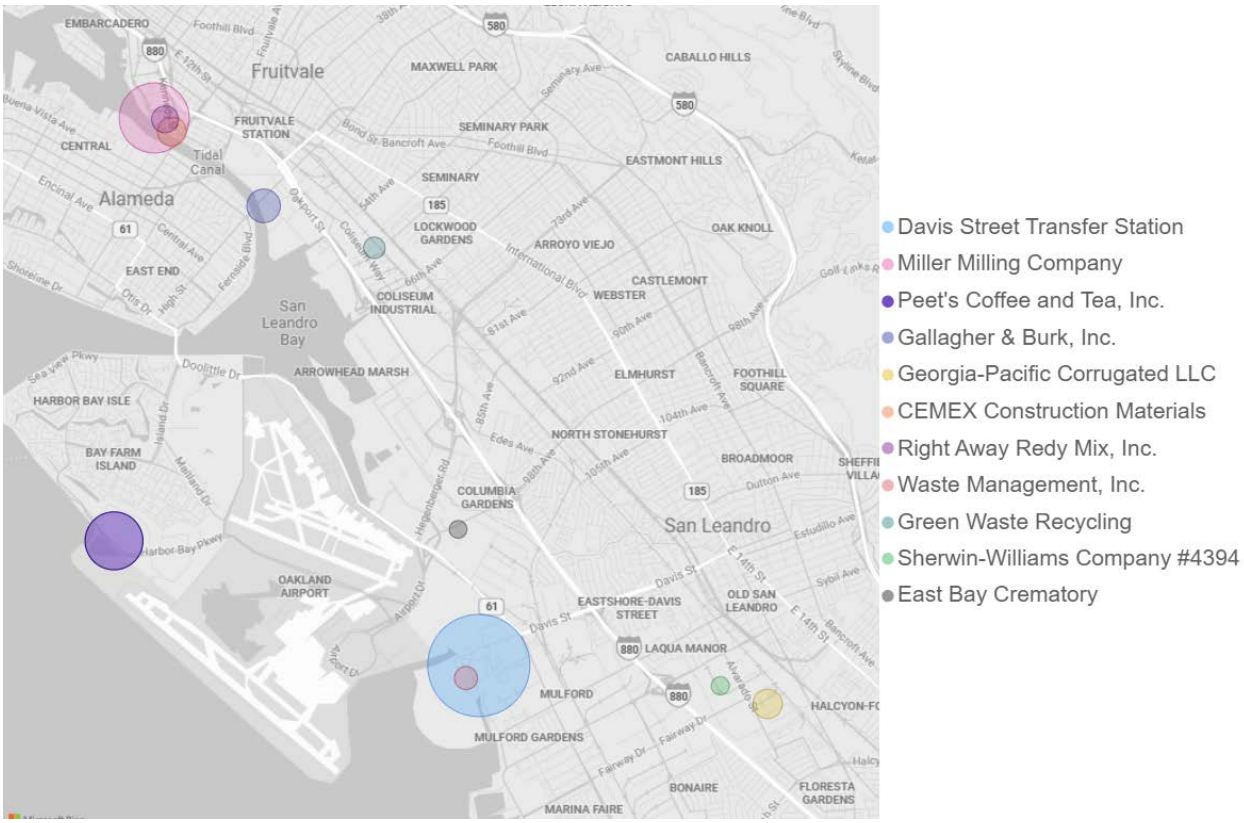

Figure 5-19: Top permitted sources of $PM_{2.5}$ emissions in East Oakland. Bubble sizes are proportional to annual $PM_{2.5}$ emissions in tons.

Table 5-9: Summary of 2021 PM2.5 emissions (tons) from stationary sources of fugitive dust in East Oakland.

Source Type	Source Name	Device or Process	$PM_{2.5}$
Permitted	Davis Street Transfer Station	Stockpiling	16.57
		Green Waste Transfer Building	9.49
		Main Indoor Waste Sorting and Transfer Station	9.25
		Material Processing: Screening Operations	1.40
		Other Fugitive Dust	2.16
		Sub-total	38.87
	Miller Milling Company	Grain Elevator	4.24
		Wheat Cleaning Houses	3.75
		Flour Flood Loadout Systems	5.83
		Flour Storage & Blend Plant	1.11
		Other Fugitive Dust	1.57
		Sub-total	16.50
	Gallagher & Burk, Inc.	Drum Mixer	1.84
		Aggregate Storage Bins	0.20
		Screen Deck 6 X 16 Virgin Aggregate	0.19
		Other Fugitive Dust	0.29
		Sub-total	2.52
	Georgia-Pacific	Hogger/Shredder	1.55
		Other Fugitive Dust	0.01
		Sub-total	1.57
	CEMEX Construction Materials	Mixer Truck Loading	1.47
		Other Fugitive Dust	0.12
		Sub-total	1.59
	Right Away Redy Mix Inc.	Aggregate Conveyor	0.71

Source Type	Source Name	Device or Process	$PM_{2.5}$
		Ground Storage for Aggregate	0.55
		Other Fugitive Dust	0.00
		Sub-total	1.26
	Green Waste Recycling	Green Waste Stockpiles	0.53
		Green Waste Chip and Grind	0.05
		Sub-total	0.58
Non-permitted	Construction/Demolition Dust	--	19.08
	Fugitive Windblown Dust	--	0.05
Total – All Fugitive Dust Sources			82.02

Air Toxics and Hazardous Materials

As previously noted, though permitted sources play a small role in the overall Toxic Air Contaminant (TAC) inventory, individual facilities or groups of facilities may still be important emitters due to the specific compounds they emit and/or their proximity to sensitive populations. To identify permitted sources that likely have the greatest impact on human health in East Oakland, facility-level emissions were ranked for cancer and chronic Toxicity-Weighted Emissions (TWE). This analysis led to the identification of a “Top 10” list based on facility-level contributions to total emissions from all permitted sources. Figure 20 shows emissions contributions for these 10 facilities, which account for 70% of permitted source cancer TWE and 85% of permitted source chronic TWE in East Oakland.

Focusing on toxic air contaminants (TACs) leading to chronic health effects, Figure 5-20 shows that cremation services at Evergreen Cemetery and SE Combined Services of California (East Bay Crematory) account for almost half (49%) of chronic toxicity-weighted emissions (TWE) emitted by permitted sources in East Oakland. Cremation activities at these facilities emit toxics such as mercury, arsenic, and hydrochloric acid.

For carcinogens, Cultured Marble Products, Amazon Services, and Waste Management are leading sources, combining to account for just over half of cancer toxicity-weighted emissions (TWE) from permitted sources in East Oakland. At Cultured Marble Products, styrene emissions from curing ovens and a gelcoat spray booth are the key drivers of cancer TWE; however, it should be noted that this facility is located about one mile south of the East Oakland community boundary. Diesel particulate matter (DPM) emissions from backup generators are responsible for cancer TWE at Amazon Services, while vinyl chloride and hydrogen sulfide emissions from the landfill gas collection system and flare are of concern at Waste Management.

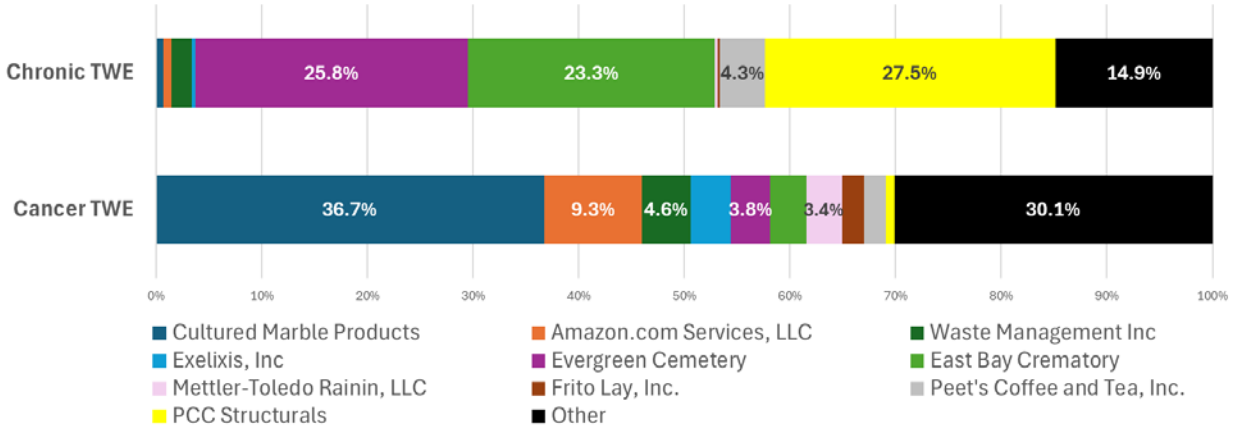

Figure 5-20: Top permitted sources of cancer and chronic TWE in East Oakland.

Dispersion modeling of cancer risk from permitted sources helps to define the potential spatial impact of these sources. Figure 5-21 shows a contour map with cancer risk values that represent cancer incidences per million people that would be expected to result from total permitted source carcinogen emissions.[149] The outer (purple) contour shows areas with a modeled cancer risk value of at least 1 in a million, and while impacts of this magnitude generally occur within a 1 km radius around individual facilities, large areas with cancer risk of at least 1 in a million are seen in locations where multiple toxic air contaminant (TAC) sources are clustered together. For example, a red oval is drawn around an area spanning more than 5 km (north-south) that has modeled cancer risk values at that level. This area is impacted by emissions from East Bay Crematory, PCC Structurals, and Waste Management, three of the Top 10 TAC sources identified in Figure 5-20.

[149] Note that Figure 5-21 shows the same type of information as Figure 5-18 (modeled cancer risk) but includes only impacts from permitted facilities. Figure 5-18 shows combined impacts from all modeled source, but while permitted sources were included in that figure, their impacts are not evident due to the scale of that map.

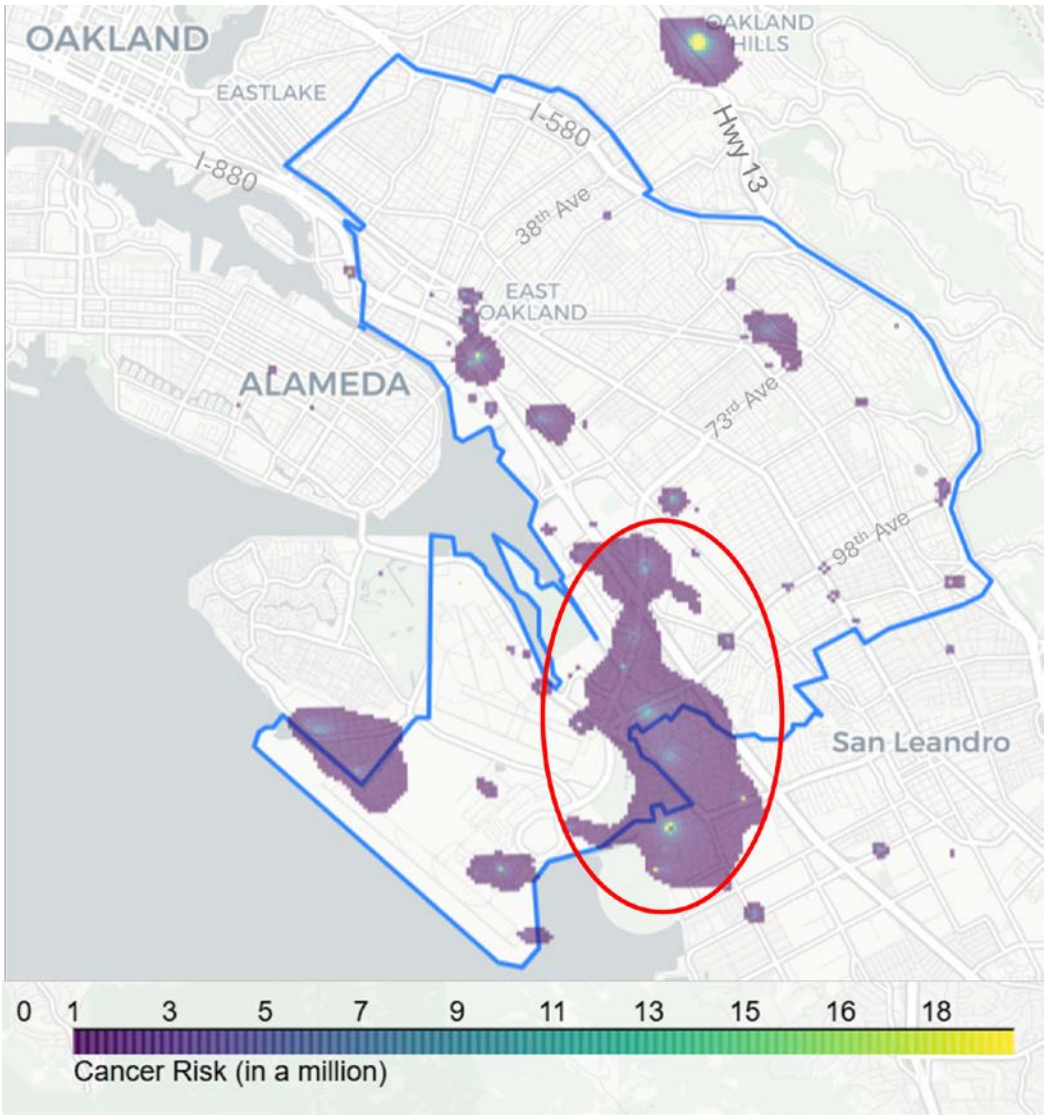

Figure 5-21: Modeled cancer risk (showing areas with risk greater than or equal to 1 in a million) from permitted facilities in and around East Oakland.

Transportation & Mobile Sources

Mobile sources operating in and around East Oakland are a significant source of fine particulate matter ($PM_{2.5}$) and nitrogen oxides (NO_x) emissions, as well as air toxics such as diesel particulate matter (DPM) and benzene. Specific transportation-related concerns in the community include roadways with high traffic volumes, truck traffic in the community, and emissions sources at Oakland San Francisco Bay Airport.

Freeway and High-Volume Roadway Traffic

Measurement data from Air District air monitoring sites and numerous studies of air monitoring data show that levels of several traffic-related air pollutants, such as nitrogen oxides (NO_x), carbon monoxide (CO), black carbon, ultrafine particles (UFPs), fine particulate matter ($PM_{2.5}$),

and volatile organic compounds (VOCs), are often higher near busy roadways. Pollutant levels along roadways are typically higher when traffic is worse, such as during daily commute periods.

The Air District operates four near-road air monitoring sites in the Bay Area as part of a national network of near-road monitors required by U.S. EPA.[150] These sites are located alongside freeways with high traffic counts where maximum impacts from on-road pollution sources are expected and monitor for pollutants that are commonly associated with traffic, such as nitrogen dioxide (NO_2), carbon monoxide (CO), and fine particulate matter ($PM_{2.5}$). Figure 5-22 shows the locations of the Air District's near-road air monitoring sites and a photo of the siting of the *Oakland - Laney* near-road monitoring site, which is located 20 meters downwind of I-880 along a segment of roadway that typically has among the highest Fleet Equivalent Annual Average Daily Traffic (FE-AADT) in the Bay Area. The *Oakland – Laney* site is located northwest of East Oakland as shown in Figure 5-22 and is representative of the impacts near freeways in East Oakland.

[150] U.S. EPA Near Road Monitoring website: https://www.epa.gov/amtic/near-road-monitoring.

Figure 5-22: Locations of the Air District's near-road air monitoring sites (top) and photo of the probe at the Oakland – Laney near-road air monitoring site near I-880 (bottom). [151]

[151] Photo of the *Oakland – Laney* air monitoring site is from the California Air Resources Board. Air Monitoring Sites – Interactive Map (2019). https://ww2.arb.ca.gov/applications/air-monitoring-sites-interactive-map.

Figure 5-23 shows average concentrations of several pollutants by time of day over the period 2016-2020 at Air District monitoring sites, categorized by general siting location (near-road, urban/suburban, and rural). Concentrations of nitrogen dioxide (NO_2), carbon monoxide (CO), black carbon, and ultrafine particles (UFPs) were generally higher at the near-road monitoring sites (red lines) compared to other monitoring sites (blue and green lines). For fine particulate matter ($PM_{2.5}$), average concentrations at the near-road monitoring sites (red lines) were higher than many of the other sites, though concentrations at some of the non-near road urban/suburban sites (blue lines) were very similar to concentrations at near-road sites. Average peak hour concentrations of black carbon and UFP at the near-road monitoring sites were about twice as high as compared to most other monitoring sites and were highest at the *Oakland - Laney* monitoring site. The higher black carbon concentrations observed at the near-road monitoring sites may indicate a greater contribution from diesel truck exhaust.

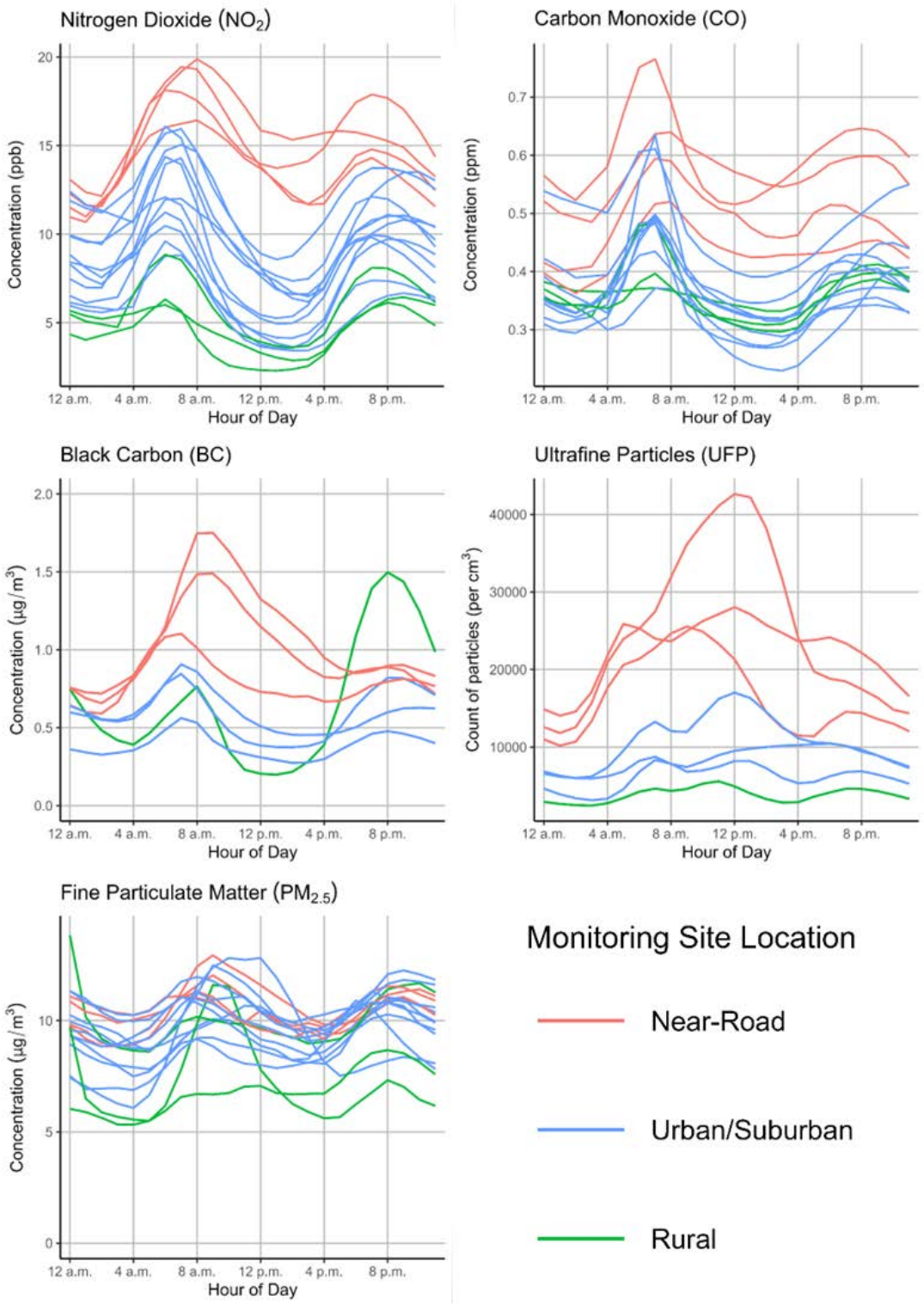

Figure 5-23: Average concentrations of nitrogen dioxide (NO_2), carbon monoxide (CO), black carbon (BC), ultrafine particles (UFP), and fine particulate matter ($PM_{2.5}$) by hour of day at Air District monitoring sites, 2016-2020. Each line represents data from one monitoring site.

Concentrations of these pollutants fluctuate throughout the day due to changes in emissions, meteorology, and chemical reactions in the atmosphere. Pollutant concentrations generally increase during the morning commute period, due in part to increased emissions from traffic at that time. The rural monitoring site that shows higher concentrations of black carbon in the evening hours is in a valley where residential wood burning is a dominant source of air pollution. On any given day, the fluctuations and patterns in pollutant concentrations may be substantially different than the average concentrations shown in Figure 5-23.

The impacts shown by Air District near road air monitoring are consistent with numerous other studies that also found higher measured concentrations of traffic-related air pollutants near roadways.[152, 153, 154] While these specific studies took place outside East Oakland, their findings can be applicable to near-road environments more broadly. Within the Bay Area, a mobile monitoring project conducted by Aclima found higher levels of traffic-related pollutants along several freeway corridors, including I-880 in East Oakland.[155] In addition, there are racial disparities in exposure to traffic-related air pollution, with communities of color often facing higher levels of harmful pollutants due to their proximity to busy roadways.[156]

Findings from the emissions inventory and modeling analyses also illustrate the impact of motor vehicle traffic on local air quality. For example, the inventory shows that diesel trucks account for about 20% of local emissions of diesel particulate matter (DPM), an important carcinogen in East Oakland. Moreover, these trucks operate on roadways that pass through or near residential areas and sensitive receptors such as schools and senior centers. As previously noted, Figure 5-18 shows that the highest risk values can be seen along the I-880 freeway and the I-238 freeway that connects the I-880 and I-580. It should also be noted that the freeways and major arterials in this map are sharply delineated, indicating that risk values decrease rapidly with distance from the roadways. This finding is supported by long-standing research into near-road air pollution[157] and highlights the importance of mitigating the impact of vehicle emissions for those living within a few hundred meters (~1,000 ft) of a major roadway such as I-880.

In addition to diesel particulate matter (DPM) impacts from heavy-duty trucks, passenger cars and other vehicles on high-volume roadways contribute to emissions of pollutants such as nitrogen oxides (NO_x) and fine particulate matter ($PM_{2.5}$), the latter from tailpipe exhaust, brake wear, tire wear, and road dust. As previously noted, road dust emissions are a significant contributor to $PM_{2.5}$ emissions in East Oakland, accounting for 59% of $PM_{2.5}$ emissions from on-road mobile sources and 11% of local $PM_{2.5}$ emissions from all sources (see Figure 5-24). And because road dust emissions are a function of roadway silt loadings, emissions from this source are of special concern in areas where dirt is tracked out onto road surfaces from industrial areas or construction sites.

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[152] Baldauf, R., Thoma, E., Hays, M. et al., *Traffic and Meteorological Impacts on Near-Road Air Quality: Summary of Methods and Trends from the Raleigh Near-Road Study*, Journal of the Air & Waste Management Association, 58:7, 865-878 (2008). https://doi.org/10.3155/1047-3289.58.7.865.

[153] Baldauf, R., Watkins, N., Heist, D. et al. *Near-road air quality monitoring: Factors affecting network design and interpretation of data.* Air Qual Atmos Health 2, 1–9 (2009). https://doi.org/10.1007/s11869-009-0028-0.

[154] Polidori A., Fine P. M. *Ambient Concentrations of Criteria and Air Toxic Pollutants in Close Proximity to a Freeway with Heavy-Duty Diesel Traffic*. Final report prepared by the South Coast Air Quality Management District (2012). http://www.aqmd.gov/docs/default-source/air-quality/air-quality-monitoring-studies/near-roadway-study.pdf.

[155] Aclima's Air.Health website: https://air.health/.

[156] Union of Concerned Scientists. Inequitable Exposure to Air Pollution from Vehicles in California. https://www.ucsusa.org/sites/default/files/attach/2019/02/cv-air-pollution-CA-web.pdf.

[157] Karner, A., Eisinger, D., and Niemeier, D. *Near-roadway air quality: synthesizing the findings from real-world data,* Environmental Science & Technology, 15:44(14):5334-44 (2010).

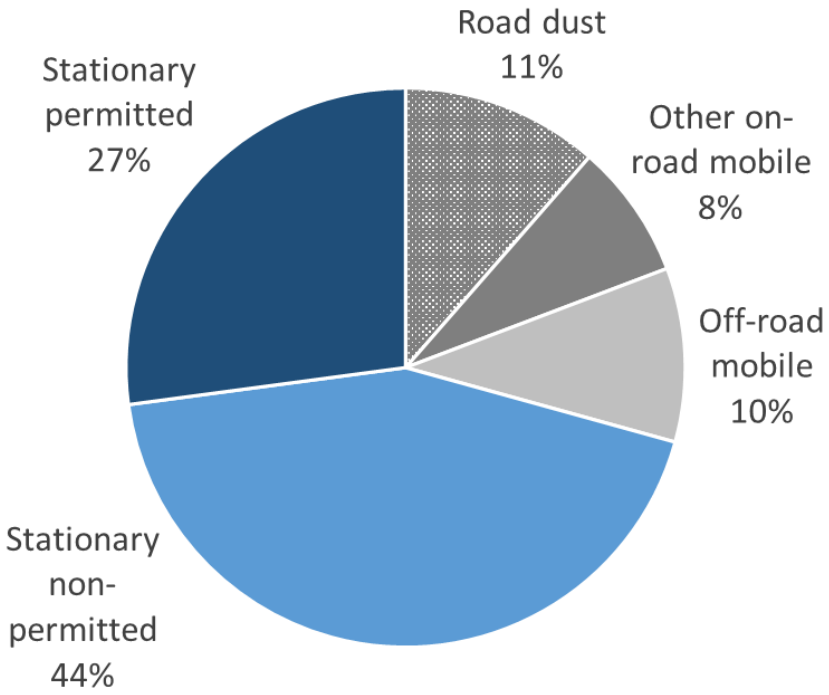

Figure 5-24: Breakdown of local $PM_{2.5}$ emissions in East Oakland for 2021 (total emissions = 282 tons).

A map of modeled fine particulate matter ($PM_{2.5}$) concentrations resulting from local on-road mobile sources is shown in Figure 5-25. Modeled concentrations exceeding 1 µg/m^3 can be seen along freeways like I-880, with $PM_{2.5}$ levels dropping sharply with distance from the freeway. Though the overall roadway pattern is similar to the map of cancer risk previously shown in Figure 5-18, note that the contrast between the I-580 and I-880 freeways is not as pronounced for $PM_{2.5}$ as it was for cancer risk. This finding is due to the fact that cancer risk is largely attributable to DPM emissions from truck traffic, while all vehicles contribute to $PM_{2.5}$ impacts, especially through the suspension of road dust.

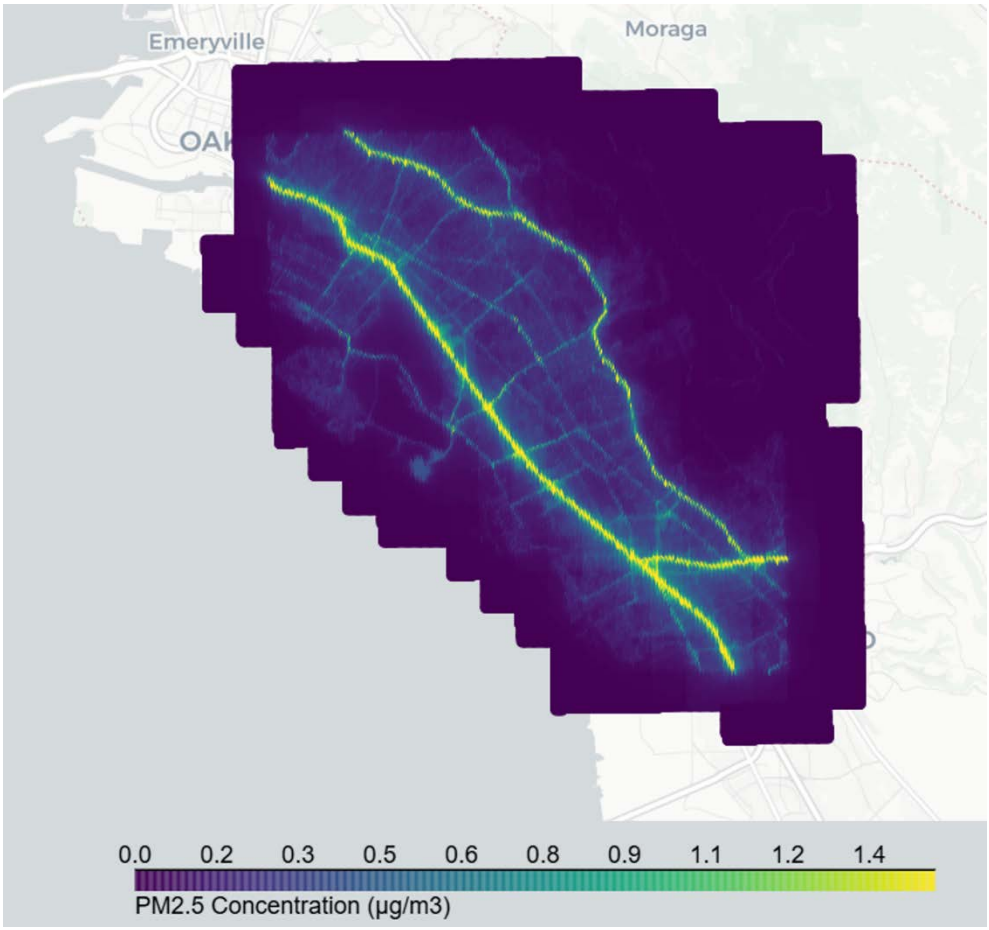

Figure 5-25: Map of $PM_{2.5}$ concentrations resulting from on-road mobile source emissions in East Oakland.

Oakland San Francisco Bay Airport

Oakland San Francisco Bay Airport is located in East Oakland and contributes to air pollution in the community. Emissions sources at the airport include aircraft, ground support equipment, and vehicular traffic to and from the facility. In addition to mobile sources, numerous stationary permitted sources operate at the airport, including backup diesel engines, fuel storage tanks, and gasoline pumps. The U.S. EPA has the primary authority to regulate emissions from aircraft engines in coordination with the International Civil Aviation Organization (ICAO). Since 2010, the Federal Aviation Administration (FAA) has been leading the Continuous Lower Energy, Emissions (CLEE), and Noise (CLEEN) Program with U.S. EPA and engine manufacturers to develop aircraft engines that are quieter, more fuel efficient and lower emitting. [158] In addition, the California Air Resources Board (CARB) regulates emissions from equipment used to maintain, fuel, move and restock planes, and handle passenger luggage as part of its Off-Road Regulation. [159] CARB is also exploring a new regulation that will require airport equipment to be

[158] Federal Aviation Administration. Continuous Lower Energy, Emissions, and Noise (CLEEN) Program. https://www.faa.gov/newsroom/faa-awards-100m-develop-next-generation-sustainable-aircraft-technology; https://www.transportation.gov/advancing-next-generation-aviation-technologies.
[159] California Air Resources Board. In-Use Off-Road Disel-Fueled Fleets Regulation. https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation.

zero emissions and developing a suite of regulations to require zero emissions from these vehicles.[160, 161]

The Air District regulates stationary permitted sources at the airport. In addition, the Air District also provides funding to purchase zero emission ground support tugs, baggage loaders, fueling trucks, low and zero emission buses, and to install electric vehicle (EV) chargers in the parking lots. The Air District also supports the efforts to expand the use of sustainable aviation fuel, or renewable fuel, as a substitute for petroleum-based jet fuel. A recent study commissioned by the Air District concluded that sustainable jet fuel has the potential to significantly reduce both greenhouse gas and particulate matter emissions.[162]

Short-term monitoring studies have found increases in ultrafine particles (UFPs) above typical urban levels in areas downwind of airport runways associated with takeoff and landing activity.[163, 164] In addition to UFPs, these studies have shown that elevated levels of fine particulate matter ($PM_{2.5}$), black carbon, criteria air pollutants (CAPs), and polycyclic aromatic hydrocarbons also occur in and around airports.[165] Other pollutants of concern include lead from piston-engine aircraft and nitrogen oxides (NO_x), which participates in the atmospheric formation of ozone (O_3) and secondary particulate matter. Figure 5-26 shows that airport-related sources are the largest contributor to NO_x emissions in East Oakland, accounting for 36% of the 2,230 tons emitted in 2021. Aircraft and ground support equipment emitted 796 tons of NO_x, which is comparable to total NO_x emissions from on-road mobile sources in East Oakland (795 tons).[166] Aircraft operating at the airport are also the largest source of SO_x and lead in the community, accounting for over 80% of sulfur oxides (SO_x) emissions and over 70% of lead emissions in the East Oakland inventory. It should be noted that aircraft emissions are estimated from the runway surface to a height of 3,000 feet,[167] so a significant portion of those emissions occur well above ground level. For example, about 40% of aircraft NOx emissions at the airport are released more than 1,000 feet above the ground.

[160] California Air Resources Board. Zero-Emission Airport Ground Support Equipment. https://ww2.arb.ca.gov/our-work/programs/zero-emission-airport-ground-support-equipment.
[161] California Air Resources Board. Zero-emission Vehicle Fleet. https://ww2.arb.ca.gov/our-work/programs/zero-emission-vehicle-fleet.
[162] Sustainable Aviation Fuel: Greenhouse Gas Reductions from Bay Area Commercial Aircraft. October 2020. https://www.baaqmd.gov/~/media/files/planning-and-research/research-and-modeling/saf-report-final-for-distribution-to-baaqmd-pdf.pdf?rev=4f138a556aa743b8b6c508e5e780392a.
[163] South Coast Air Quality Management District. Multiple Air Toxics Exposure Study (MATES) V in the South Coast AQMD, Final Report August 2021. https://www.aqmd.gov/docs/default-source/planning/mates-v/mates-v-final-report-9-24-21.pdf?sfvrsn=6.
[164] K. Riley, R. Cook, E. Carr, and B. Manning. A systematic review of the impact of commercial aircraft activity on air quality near airports. City and Environment Interactions, Volume 11, August 2021, 100066. https://doi.org/10.1016/j.cacint.2021.100066.
[165] While measurements from these studies were not made in East Oakland, it is expected that similar sources exist and that the findings would be representative for airport-adjacent communities, including East Oakland.
[166] Note that NO_x from motor vehicles traveling to and from the airport were not split out from the total on-road inventory, making the contribution of airport-related sources even larger.
[167] This altitude of 3,000 feet represents an estimate of the atmospheric mixing height, or the distance from the ground up to where the mixing of turbulent air effectively disperses pollutants.

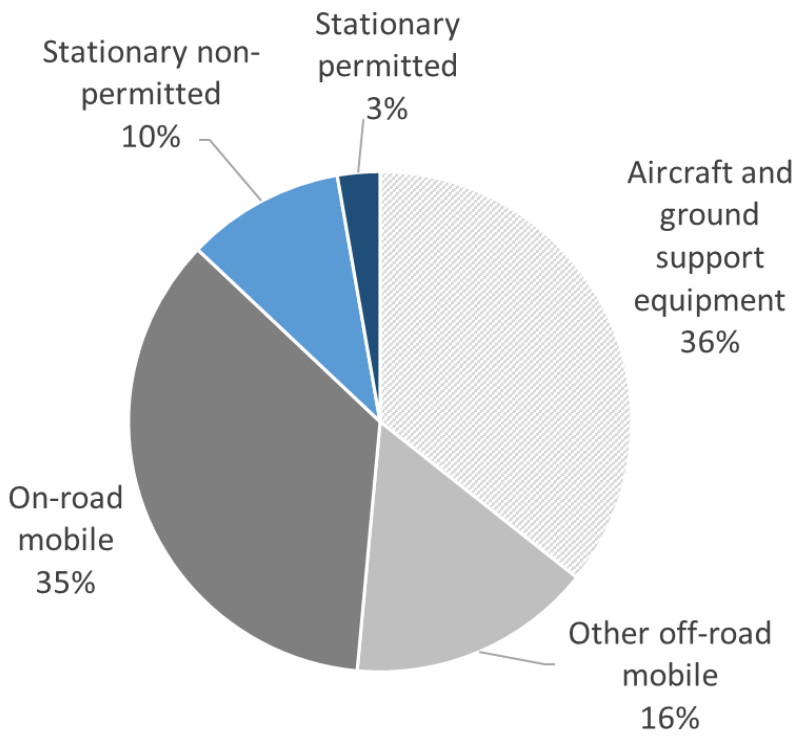

Figure 5-26: Breakdown of local NO_x emissions in East Oakland for 2021 (total = 2,230 tons).

Built Environment & Land Use

Though the Plan is mainly focused on improving ambient (outdoor) air quality, air pollution inside the home is also of concern because it significantly impacts the respiratory health of East Oaklanders, particularly for sensitive groups like children and the elderly. Many homes in the area are older and prone to mold and lead exposure, and indoor allergens and irritants can be significant triggers for asthma attacks. Additionally, residential fuel combustion is a significant source of nitrogen oxides (NO_x) and fine particulate matter ($PM_{2.5}$) emissions. As shown in Figure 5-16 above, residential fuel combustion emits 55.1 tons of $PM_{2.5}$ annually, or about 20% of total $PM_{2.5}$ emissions from local sources in and around East Oakland. Table 5-10 shows that natural gas combustion for water and space heating is the primary source of NO_x emissions from this source category, while wood combustion in woodstoves and fireplaces is the dominant source of $PM_{2.5}$ emissions.

Table 5-10: Summary of 2021 emissions from residential fuel combustion in East Oakland.

Source Description	Fuel	Emissions (tons/year)	
		NO_x	$PM_{2.5}$
Woodstoves	Wood	2.5	13.2
Fireplaces	Wood	3.1	26.2
Other Space Heating	Natural Gas	96.7	7.8
	Distillate Oil	0.4	0.0
Water Heating	Natural Gas	44.9	6.4
Cooking	Natural Gas	8.6	0.7
Other	Various	11.0	0.7
TOTAL		**167.2**	**55.1**

This area of concern also includes sensitive receptors that are near pollution sources, an important land use issue. As noted in Chapter 4, numerous daycare centers, hospitals, clinics, libraries, nursing homes, assisted living facilities, schools and parks in East Oakland are located near industrially zoned land.

Public Health & Wellness

Public health concerns include smoke from wildfires, which has caused periods of unhealthy air quality in East Oakland and throughout the Bay Area in recent years. Figure 5-27 shows 24-hour average (midnight to midnight) fine particulate matter ($PM_{2.5}$) concentrations at the Air District's *Oakland – East* monitoring site from 2018 to 2023. The bold blue line indicates data from 2023 to highlight the variability in $PM_{2.5}$ concentrations over a year, and the gray shaded area represents the range of daily $PM_{2.5}$ concentrations that were measured during the 2018-2023 period. The fluctuations in $PM_{2.5}$ concentrations from day to day are driven largely by changes in meteorology (wind patterns, mixing and ventilation) and in emissions. The highest $PM_{2.5}$ concentrations occurred during wildfire periods, during which the National Ambient Air Quality Standards (NAAQS) for daily average $PM_{2.5}$ of 35 µg/m^3 was exceeded on numerous occasions. Wildfire smoke also contains numerous other pollutants, including carbon monoxide (CO), nitrogen oxides (NO_x), and various toxic air contaminants (TACs) (see Figure 5-7). The U.S. EPA's AirNow program [168], California Air Resources Board (CARB) [169], and the Air District [170] have websites with information and resources on wildfire smoke and steps to take to reduce exposure to wildfire smoke. The AirNow Fire and Smoke Map website displays real-time $PM_{2.5}$ data from air quality agencies (such as the Air District) as well as data from PurpleAir lower-cost sensors (whose data are adjusted by a U.S. EPA-developed algorithm that

[168] U.S. EPA AirNow Wildfire website: https://www.airnow.gov/wildfires/.
[169] CARB's Protecting Yourself from Wildfire Smoke website: https://ww2.arb.ca.gov/protecting-yourself-wildfire-smoke.
[170] The Air District's Wildfire Safety website: https://www.baaqmd.gov/about-air-quality/wildfire-air-quality-response-program/wildfire-safety.

compensates for some of the inaccuracies of the sensors). [171]

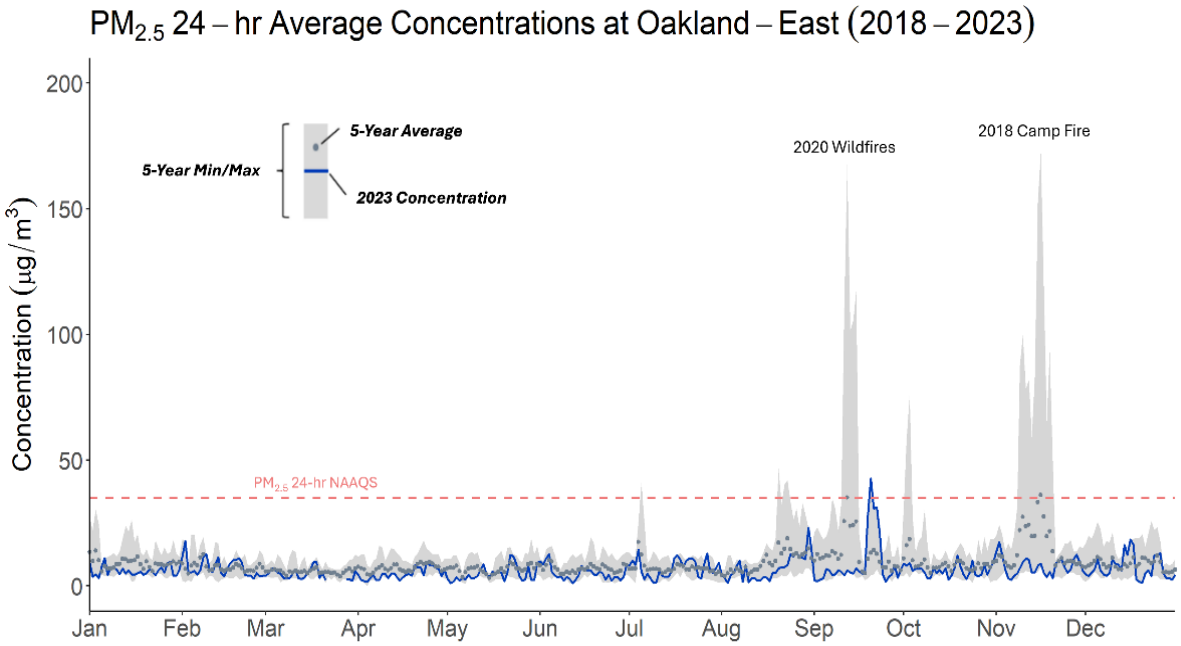

Figure 5-27: 24-hour average $PM_{2.5}$ concentrations at the Oakland – East monitoring site, 2018-2023. $PM_{2.5}$ concentrations typically vary considerably over a year. Some of the highest concentrations occurred during periods of wildfire smoke.

Real-time air quality data can help inform the public in making decisions about reducing exposure to unhealthy air quality, such as choosing to reschedule outdoor activities like exercise when air quality is or is expected to be unhealthy. The Air District's website provides real-time air quality monitoring data from Air District air monitoring sites on its website. Air quality meteorologists at the Air District also issue daily air quality forecasts for the Bay Area, as well as Spare the Air Alerts when air quality levels are expected to be unhealthy compared to the National Ambient Air Quality Standards (NAAQS). The public can view the daily air quality forecast and subscribe to receive forecasts and alerts by text and e-mail, and can download the Spare the Air mobile app, on the Spare the Air program website. [172] The Air District also issues Air Quality Advisories when air quality is expected to be poor in some areas for a short amount of time but not to the extent a health-based standard (based on a 24-hour average for $PM_{2.5}$) is exceeded. These Advisories are listed on a banner at the top of the Air District website and are posted on Air District social media pages. Bay Area residents can also opt in to receive Air Quality Incident Notifications via email and text message. [173]

[171] U.S. EPA AirNow Fire and Smoke Map for real-time $PM_{2.5}$ data: https://fire.airnow.gov/.
[172] Website for the Air District's Spare the Air program: https://www.sparetheair.org/.
[173] Website for the Air District's Air Quality Incident Notification Sign-Up: https://www.baaqmd.gov/en/contact-us/sign-up-for-information/air-quality-incident-notifications

Illegal Dumping

Illegal dumping is a major concern for the East Oakland community. In addition to being a quality-of-life issue, there can be air quality impacts related to illegal dumping, such as:

- Smoke (when illegally dumped materials are burned)
- Odors
- Airborne dust, fibers, and other materials (such as from construction sites)

Air quality impacts due to illegal dumping, such as smoke from burning materials and odors, are often intermittent and relatively localized. Technical tools that the Air District uses to characterize air quality issues, such as emissions inventories and air quality monitoring and modeling, are not especially well suited to inform the topic of illegal dumping and air quality. For example, impacts from burning illegally dumped materials would likely only be meaningfully represented in air monitoring if a monitor was located near the location at the time the materials were burning. In addition, depending on the pollutants being monitored, it may be difficult to differentiate smoke due to illegal dumping from smoke from other combustion sources. This is why community input on air quality concerns, such as via the Social Pinpoint map, is such an important dataset itself, since that information highlights air quality issues that are not well characterized by other air quality tools and datasets.

Illegal dumping can include a wide range of materials, including various metals, plastics, fuels, foams, fabrics, and other refuse. When burned, these materials release harmful pollutants into the air. Given the materials that are likely burning, and what we know from studies and observations of similar types of fires, the smoke can be expected to contain fine particulate matter ($PM_{2.5}$) and a host of toxic air contaminants (TACs), including particulate metals, volatile organic compounds (VOCs) such as benzene, polycyclic aromatic hydrocarbons (PAHs), and dioxins, among other pollutants.

Short-term exposure to high levels of fine particulate matter ($PM_{2.5}$) and toxic air contaminants (TACs) contained in smoke can be harmful, and residents should protect their health and avoid smoke exposure. To reduce exposure, residents are encouraged to stay inside with windows and doors closed until smoke levels subside, if temperatures allow. It is also recommended that those impacted by smoke set air conditioning units and car vent systems to re-circulate to prevent outside air from moving inside.

Smoke can irritate the eyes and airways, causing coughing, a scratchy throat and sinus irritation. Elevated particulate matter in the air can trigger wheezing in those who suffer from asthma, emphysema or Chronic Obstructive Pulmonary Disease (COPD). Elderly people, children and individuals with respiratory illnesses are particularly susceptible and should take extra precautions to avoid exposure.

Odors can also affect health and well-being, even if an odor is not associated with high levels of a particular pollutant. Different people have different sensitivities to odors, can detect odors at different thresholds, and have different responses to odors. Odors can also negatively affect mental health and lead to increased stress and stress-related health impacts, including increased susceptibility to additional stressors. Odors may indicate the presence of one or more pollutants. Odors can also indicate the presence of pollutants that don’t have odors but are being emitted at the same time.

Chapter 6: Enforcement Overview & Findings

The Air District and the California Air Resources Board (CARB) share enforcement responsibilities for air quality regulations in the East Oakland area, with the Air District primarily responsible for regulating stationary sources and CARB primarily responsible for regulating mobile sources. It is the goal of both agencies to implement robust enforcement programs in East Oakland through its inspections to document violations and continue to implement new strategies to ensure regulated facilities and sites operate in compliance with applicable air quality rules and requirements.

This chapter highlights the enforcement activities in East Oakland from 2021 to 2024, specifically in the zip codes of 94601, 94602, 94603, 94605, 94606, 94613, 94619, and 94621. The information presented in this chapter summarizes the most recent four years of enforcement data. The data review and analyses from this chapter will be used to formulate additional enforcement strategies identified in Chapter 7, which aim to be responsive to community concerns and improve enforcement outcomes in East Oakland.

Enforcement Authority

The enforcement programs of the Air District and CARB strive to ensure compliance and minimize local and regional impacts from air pollution. This section summarizes the enforcement authority for stationary and mobile sources.

Stationary Sources

The California Health and Safety Code (HSC) grants Air Districts authority to adopt and enforce air pollution regulations to achieve state and federal air quality standards. The Air District enforces federal, state, and Air District regulations for a variety of stationary sources in the East Oakland area. The following are a few examples of stationary sources in East Oakland and corresponding Air District regulations for those types of operations:

- Autobody shops (Rule 8-45)
- Asbestos renovation and demolition projects (Rule 11-2 and Rule 11-14)
- Boilers (Rule 9-7)
- Solvent and coating operations (Rule 8-4, Rule 8-16, Rule 8-19, Rule 8-31, and Rule 8-32)
- Gasoline dispensing facilities (Rule 8-7)
- Generators/Stationary engines (Rule 9-8)
- Aggregate, concrete & asphalt operations (Regulation 6, Rule 6-1, Rule 6-6)
- Waste & recycling operations (Rule 8-34)

There are currently no permitted facilities in East Oakland subject to Air District Rule 2-6, Major Facility Review Program (Title V). AB&I Foundry was the only Title V facility in the area and the facility closed in June 2022. The thresholds that trigger Title V Program permitting include facilities with potential to emit 100 tons per year of a criteria pollutant,10 tons per year of a single Hazardous Air Pollutant (HAP); or 25 tons per year of any combination of HAPs.

Mobile Sources

The California Air Resources Board (CARB) is the primary authority for developing and enforcing regulations to control emissions from portable and mobile sources and consumer products in California, except in cases where federal law preempts CARB's authority. The Air District may refer to, or partner with, CARB to investigate air quality concerns relating to the mobile sources listed below:

- Portable equipment
- Heavy-duty truck idling
- Cargo handling equipment (CHE)
- Off-road construction equipment
- Commercial harbor craft (CHC)
- Ocean-going vessels (OGV)
- At-Berth (Shore Power)
- Drayage trucks
- Transport refrigeration units
- On-board incineration on cruise ships
- Fuel sulfur and operational requirements within 24 nautical miles for ocean-going vessels

While CARB has authority to regulate emissions from these sources, authority to regulate parking and truck routes lies with the City of Oakland's Police Department and Department of Transportation (OakDOT).

Enforcement of Stationary Sources

Air District Enforcement Program

The Compliance & Enforcement Division has primary responsibility for administering the enforcement program of the agency. Inspectors are assigned geographical regions, and their roles include, but are not limited to, the following enforcement activities:

- Unannounced compliance verification inspections of permitted facilities,
- Investigations at sites/facilities that may not have an Air District permit,
- Air quality complaint investigations and area patrols,
- Responding to and investigating major incidents such as fires associated with manufacturing or industrial processes, or other major air emission releases,
- Coordinating across divisions on permitting and emissions testing, and with regulatory partners on enforcement concerns.

As of December 2024, 45 field staff are assigned to enforce and verify compliance with Air District, state, and federal rules and regulations across the nine Bay Area counties. Two inspectors are assigned to East Oakland to conduct compliance inspections and respond to air pollution problems and compliance issues. Additional staffing resources are available to provide support and assistance in the East Oakland area when needed.

Stationary Sources in the East Oakland Area

This stationary source sub-chapter encompasses sites/facilities within the Plan community boundary area and sites/facilities within the East Oakland zip codes (94601, 94602, 94603, 94605, 94606, 94613, 94619, and 94621). This broader approach ensures the enforcement data for stationary sources is more inclusive and captures nearby air pollution sources that have the potential for affecting air quality in East Oakland. As of May 13, 2025, there are 285 facilities within the East Oakland zip codes that are permitted by the Air District (see Figure 6-1 for counts by facility type), as listed in Appendix E-3, List of Permitted Facilities in East Oakland. The facilities outside the Plan community boundary but within the listed zip codes are denoted by an asterisk in the appendices.

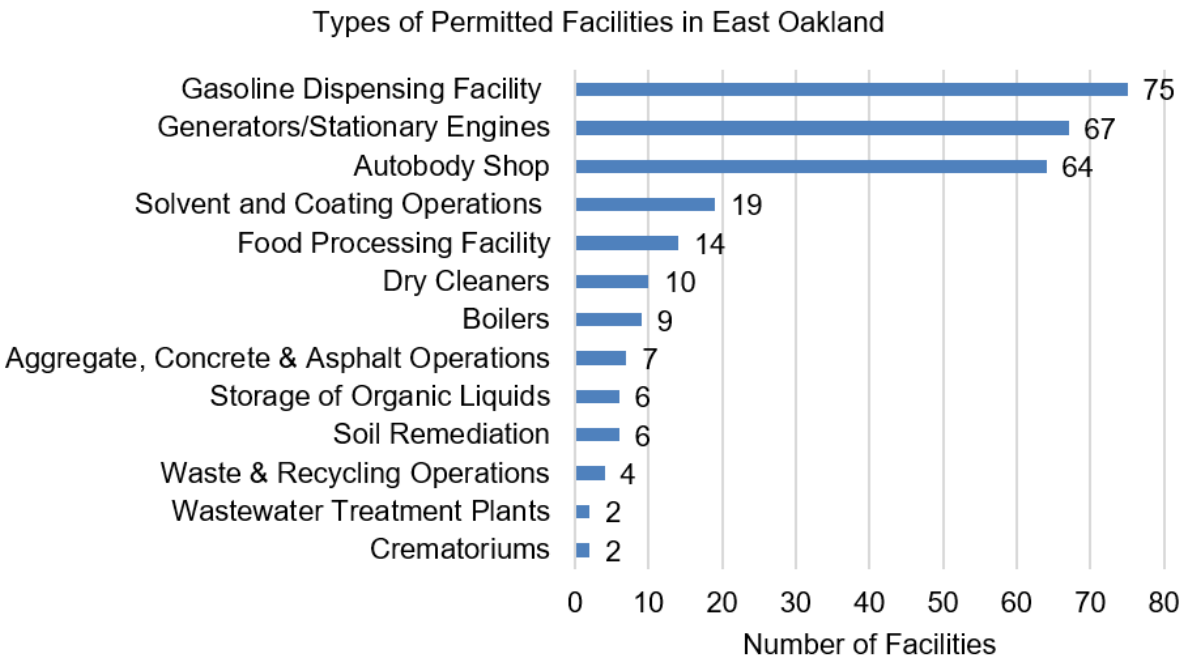

Figure 6-1: Types and number of permitted facilities in East Oakland as of May 13, 2025

4-Year Enforcement History of Stationary Sources

This section provides a closer look at the 4-year compliance and enforcement history in East Oakland. This data includes a summary of compliance inspections, air quality complaint investigations, and violations from January 2021 through December 2024.

Compliance Inspections

Inspectors conduct routine, unannounced inspections of permitted, stationary sources to ensure they are operating in compliance with air quality regulations. Inspections typically include the following:

- Review of permit requirements and conditions,
- Air District, state and federal rules that may apply,
- Operating parameters, monitoring and recordkeeping requirements,
- Process upsets and equipment malfunctions,

- Major incidents, such as fires or other air emission releases, and
- An assessment of any activities or operations without an Air District permit that may be an air quality concern.

In the 4-year period through 2024, staff completed 592 site/facility inspections at Air District permitted facilities in East Oakland. Of these inspections, 108 were asbestos demolition and renovation site inspections subject to the Air District's Asbestos Demolition and Renovation Program.

Air Quality Complaint Investigations

The Air District responds to and investigates all air pollution complaints. Resolving air quality complaints is one of the Air District's highest priorities. The Air District's goal is to respond to air quality complaints within 30 minutes during regular business hours and investigate community concerns expeditiously. While inspectors are not first responders, complaint response and investigations are prioritized to achieve early intervention and resolutions to air quality concerns. Community members are encouraged to report an air quality complaint to the Air District as they are often the first to become aware of and are impacted by odors, visible emissions or other air pollution concerns. Inspectors meet with complainants to gather information and conduct investigations, onsite inspections at the alleged site/facility, and area patrols to pinpoint the site/facility of concern.

Air quality complaint investigations make up a large portion of the inspection activities in East Oakland. From 2021-2024, a total of 763 air quality complaints were reported and investigated by the Air District. The full list of complaints is provided in Appendix E-1, Air Quality Complaints in East Oakland (2021-2024). Table 6-1 is a summary of air quality complaints by calendar year. The middle column lists complaints attributed to AB&I Foundry. AB&I Foundry was a large metal facility that operated under a Title V major facility permit in East Oakland until its closure in June 2022. The last column shows all the other complaints in the area when AB&I Foundry complaints are excluded.

Table 6-1: Summary of Air Quality Complaints by Calendar Year

Calendar Year	Complaints Alleging AB&I Foundry Reported to Air District	Complaints Reported to Air District (excludes AB&I Foundry complaints)
2021	249	134
2022	122	99
2023	1	73
2024	0	85
Total	**372 (49% of total complaints)**	**391 (51% of total complaints)**

Table 6-1 shows that AB&I Foundry was the most significant source of complaints in East Oakland. From 2021-2024, odor complaints alleging AB&I Foundry accounted for 372 of the 763 complaints, while only operating in 2021 and the first half of 2022. During the same 4-year period, 391 air quality complaints were received alleging other sites/facilities in East Oakland. While AB&I Foundry is now permanently closed, it is important to recognize the magnitude of impact it had on air quality complaint numbers in the East Oakland community. From 2021-2022, there was an average of 302 complaints a year. The average number of complaints dropped to 80 a year from 2023-2024, following closure of the AB&I Foundry.

Figure 6-2 shows the number of East Oakland air quality complaints by type that were reported to the Air District from 2021 to 2024. Odors were the greatest source of community complaints, with AB&I Foundry accounting for 60% of the total number of odor complaints in East Oakland. The next most common complaint types were complaints of dust, followed by complaints of illegal fires. For complaints listed, “Other”, the complainant did not specify a complaint type.

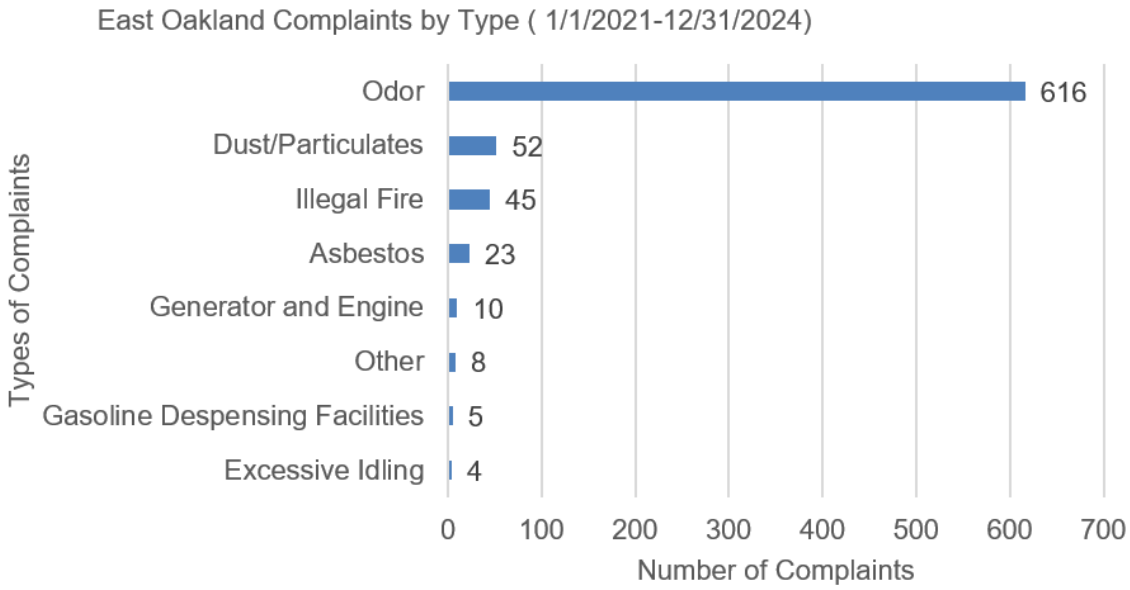

Figure 6-2: Types of Air Quality Complaints in East Oakland (including AB&I)

All air quality complaints are investigated regardless of whether an individual reports a complaint anonymously or provides their name and personal contact information. All personal information provided by complainants are treated as confidential information. The Air District respects the concerns of those complainants that choose to retain anonymity.

Figure 6-3 shows that 19% of complaints were filed anonymously. A benefit of the Air District taking anonymous complaints is that individuals who have privacy concerns are still empowered to raise air quality complaints. While anonymous complaints do not allow inspectors to obtain additional information during their investigation from the complainant, the Air District provides helpful tips and guidance on the Air District website on how to be more descriptive when reporting a complaint which helps the Air District pinpoint potential compliance concerns more quickly.

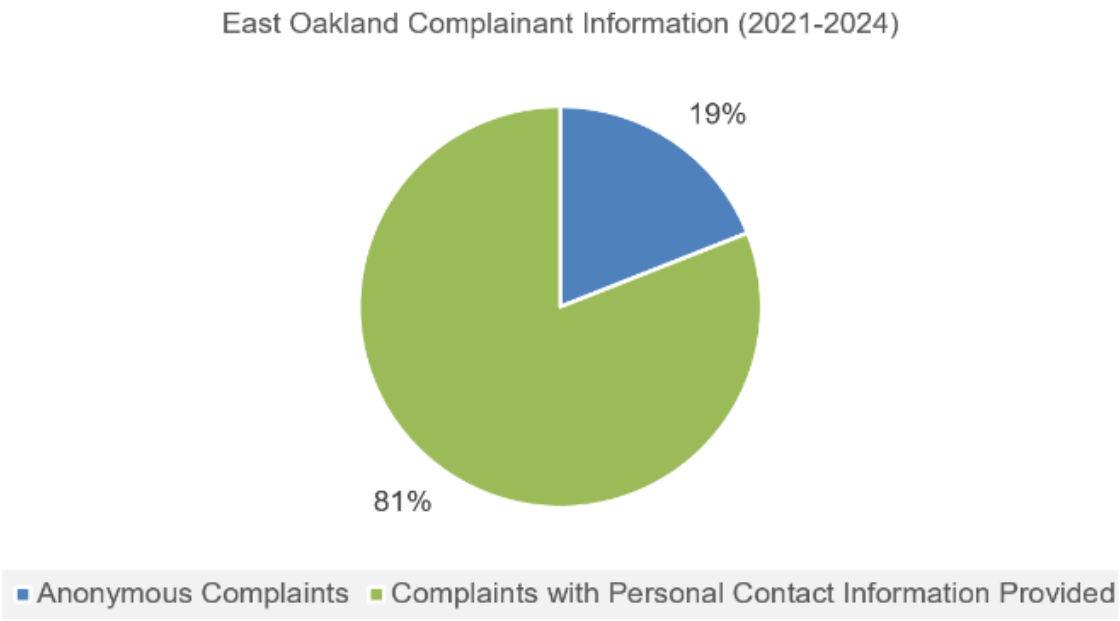

Figure 6-3: East Oakland Complaints - Anonymous vs Contact Information Provided

Following the air quality complaint investigation process, the inspector documents the findings in a report. The inspector makes the determination of whether the “emission was observed and could be traced to the source (site/facility identified),” or that the “emission was not observed and/or could not be traced to the source (site/facility not identified).”

If a violation is discovered, enforcement actions may include issuing a Notice to Comply (NTC) or Notice of Violation (NOV) for violation of Air District rules or regulations, permit requirement, or a documented public nuisance. In addition to documenting violations, inspectors may also provide compliance assistance and collaborate with regulatory partners on compliance concerns. While inspectors respond to and investigate all air quality complaints, not all complaints reported to the Air District result in the issuance of a violation to the alleged site or facility. A violation of a specific rule or regulation must be documented by the inspector for a violation to be issued.

Figure 6-4 shows that of the complaints received in East Oakland between 2021 and 2024, 12% of emissions were verified and traced to a site/facility. The chart also shows that 88% of complaint investigations resulted in the inspector not being able to observe the alleged emission and/or were not able to identify the source of the emission at the time of investigation. A complaint that is not verified or observed by the inspector at the time of an investigation can indicate that there may be other factors that influenced the presence of emissions such as changes in meteorological condition or operations at the facility at the time of the inspector’s investigation. Inspectors are trained to identify potential sources of emissions through reviewing monitoring records, operator logs, and utilize different enforcement tools to determine if a violation occurred. All complaints, whether or not the presence of emissions was verified by the inspector, are tracked and help provide data points to inspectors to identify potential compliance problems and violations.

Figure 6-4: East Oakland Complaints - Emission Traced to Source vs Emission Not Traced to Source

Notice of Violation (NOV) and Notice to Comply (NTC)

When a site/facility is discovered to be in violation of Air District, state, or federal air quality regulations, inspectors may take enforcement action by issuing a Notice of Violation (NOV), or a Notice to Comply (NTC). Multiple violations may be cited on one NOV or NTC. A full list of Violations and NTCs can be found in Appendix E-2: Violations and Notices to Comply in East Oakland 2021-2024.

A Notice of Violation (NOV) is issued when a site/facility is operating in violation of an air quality regulation. NOVs serve to hold polluters accountable, discourage future non-compliance, and promote timely corrective actions. Following the issuing of a NOV, the inspector prepares a comprehensive report detailing the regulation(s) violated, the type of source(s) involved, the number of violations, supporting evidence, any information regarding the cause of non-compliance, the extent of associated harm, and how the violation was corrected. The inspector provides the owner/operator with assistance to help them understand how to achieve compliance and documents measures taken to prevent the violation from recurring. The inspector tracks facility progress with the corrective actions.

For minor violations, a Notice to Comply (NTC) may be issued to place the site/facility on notice that there is a compliance concern. A NTC may only be issued to address violations that are administrative or where emissions are negligible, or de minimus. Administrative violations are typically related to recordkeeping or late reporting. Sites/facilities must also demonstrate that a minor violation is promptly addressed, and corrective actions are taken. Inspectors track the compliance status of NTCs and if the violation is not resolved, the inspector may issue a Notice of Violation (NOV). From 2021 to 2024, 25 NTCs were issued in East Oakland. Out of the 25, a total of 23, or 92%, of those NTCs were issued to gasoline dispensing facilities with 87% of those being administrative violations.

From 2021 to 2024, NOVs were issued to both permitted and unpermitted sites/facilities in East Oakland citing 60 violations. Figure 6-5 groups the violations into three categories: Operational, Permit-related, and Administrative for calendar years 2021 to 2024, as discussed below:

- A total of 33, making up for 55%, were Operational violations. Operational violations include exceedances of emission limits, permitted usage limits, operating parameters, monitoring, maintenance, housekeeping, and abatement and control requirements. These operational requirements are specified in air quality rules and regulations, and the site/facility's permit conditions. A site/facility returns to compliance once they address operational issues to comply with applicable requirements. Examples of operational violations range from exceeding material usage limits, to exceeding maximum engine operating hours, operating below temperature requirements, not replacing air filters or closing solvent containers as maintenance or housekeeping requirements, or causing a public nuisance.
- A total of 15, making up for 25%, were Permit-related violations. These relate to installing or operating equipment without an Authority to Construct (A/C) or Permit to Operate (PTO). A site/facility comes into compliance by either ceasing operation or obtaining an AC/PTO through the District's permitting process. This approval involves application submittal, a processing fee, and detailed evaluation by the Air District's Engineering Division.
- A total of 12, making up for 20%, were Administrative violations. These types of violations include inadequate recordkeeping or late reporting. Administrative requirements are specified in air quality rules and regulations and the facility's permit conditions. A return to compliance can be demonstrated by the site/facility taking measures to keep required records and meet timelines.

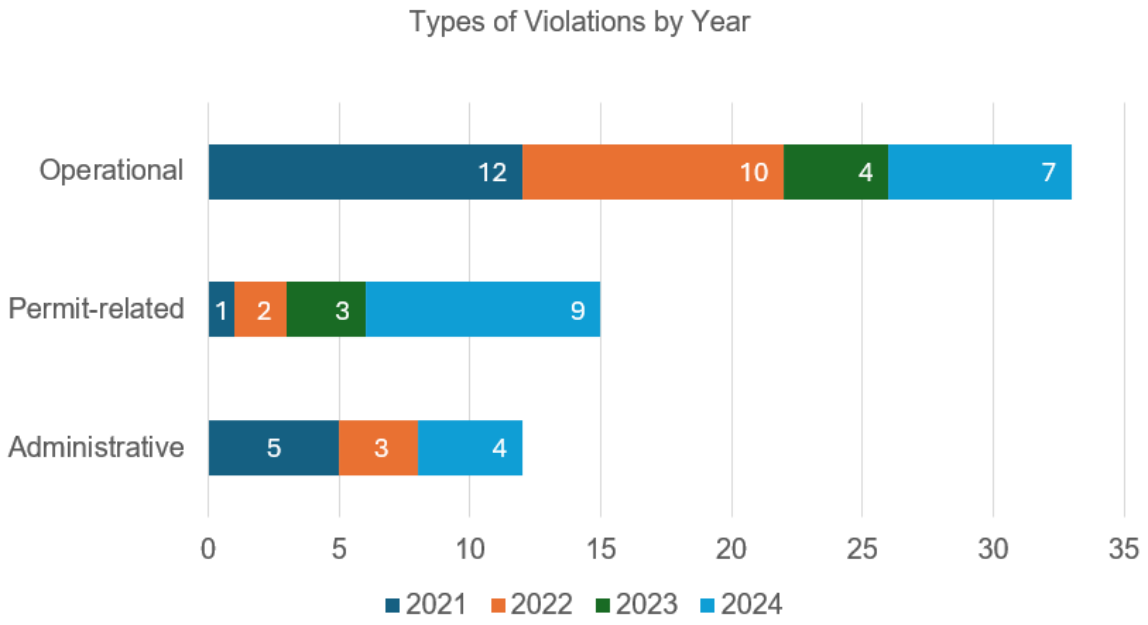

Figure 6-5: 2021-2024 East Oakland Violation Summary by Year

Figure 6-6 shows sites/facilities in East Oakland with two or more violations between 2021 and 2024. Of the 60 violations issued in East Oakland, 36, or 60%, were issued to sites/facilities with multiple instances of non-compliance. The remaining 24, or 40%, of violations were issued to sites/facilities with one-time violations in the four-year timeframe. AB&I Foundry is not reflected in this chart because only one violation was issued in 2021 for causing a public nuisance.

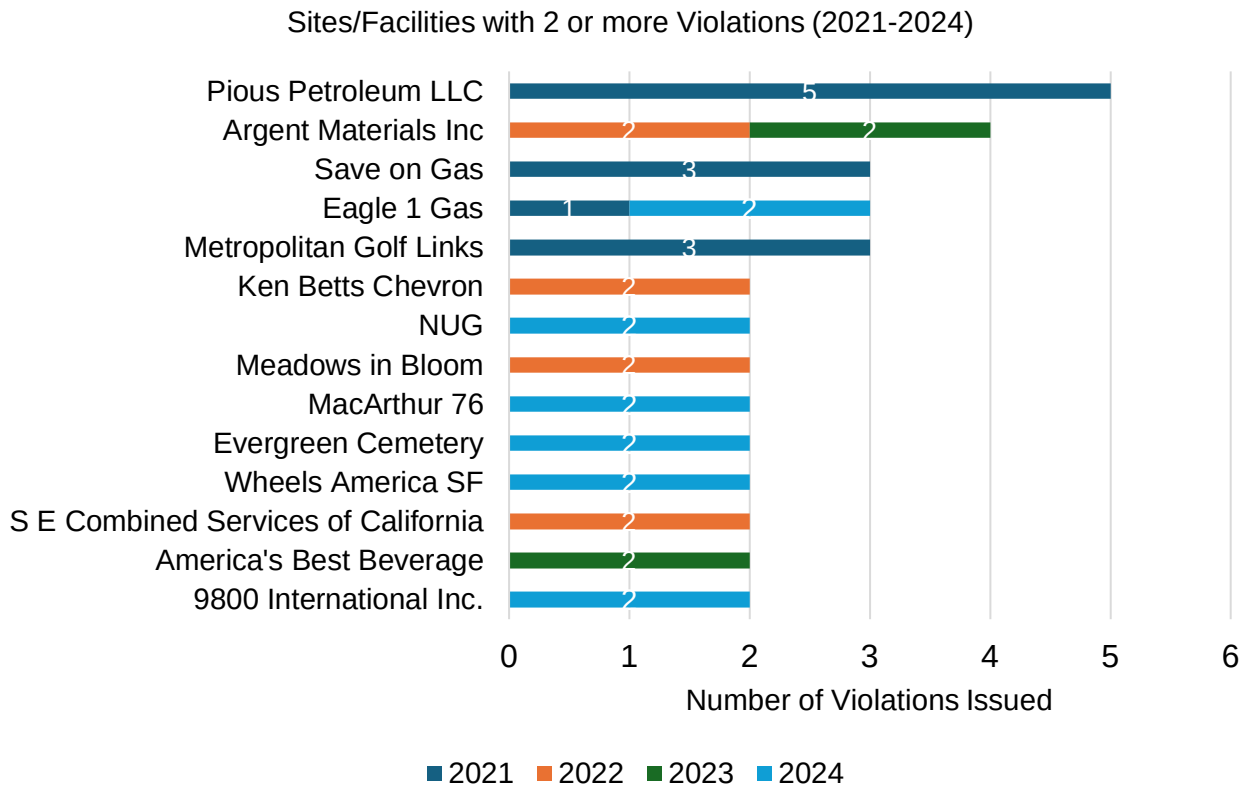

Figure 6-6: Summary of East Oakland Sites/Facilities with 2 or more Violations between 2021-2024

Enforcement of Mobile Sources

CARB Enforcement Programs

The California Air Resources Board's (CARB) Enforcement Division aims to develop partnerships with East Oakland community organizations to co-lead the development of community-focused action plans that reduce disproportionate exposures within the Plan area. CARB is charged with enforcing its regulations applicable to mobile sources, consumer products and other area-wide categories, such as fuels, and climate programs, while the Air District is primarily responsible for enforcement relating to stationary sources (e.g., boilers, refineries).

CARB enforcement programs cover the vehicles driven, the diesel engines that power the economy, consumer products that are purchase, and greenhouse gas (GHG) emissions from industries and activities. The goal of CARB enforcement programs is to achieve comprehensive compliance in every regulation the CARB adopts. Through enforcement, CARB works to bring responsible parties into compliance and in doing so achieve a level playing field across industry

so that no company can benefit from non-compliance at the expense of another; and to deter industry from future violations.

CARB applies enforcement programs in accordance with their enforcement policy, [174] which was updated in 2017. CARB uses data and inspections to identify potential non-compliance, and then investigate each case. Once a violation is identified, CARB notifies the potential violator and evaluates what happened. CARB works with the responsible party to achieve compliance and measure the relevant facts and circumstances of each case, relative to eight factors set in law and described in the enforcement policy, to determine an appropriate penalty. The case is settled when the responsible party has achieved compliance and paid an appropriate penalty. If the case cannot be settled, CARB works with legal staff to refer the case to California's Attorney General for litigation.

Field inspectors are a critical component of the diesel enforcement program. The inspectors work across the state to inspect trucks and other equipment for compliance with CARB's diesel regulations, such as Clean Truck Check, Solid Waste Collection Vehicle, Statewide Truck and Bus, Tractor-Trailer Greenhouse Gas, Off-Road Diesel Equipment, Commercial Vehicle Idling, and Transport Refrigeration Unit. Field inspectors also conduct inspections for compliance with Public Agencies and Utilities, Cargo Handling Equipment, Commercial Harbor Craft, Ocean Going Vessel, and Shore Power regulations. CARB inspectors examine heavy-duty vehicles and equipment at numerous locations throughout California, such as along roadsides, at California Highway Patrol scale facilities, warehouses, fleet yards, construction sites, truck stops, rest areas, ports, and rail yards.

CARB's enforcement activities can be found in CARB's Enforcement Data Visualization System (EDVS), located here: Enforcement Data Visualization System – California Air Resources Board. [175] A guide to how to use EDVS is here: Enforcement Data Visualization System (ca.gov). [176] Additional information on CARB Enforcement Activity can be found in our Annual Reports: https://ww2.arb.ca.gov/resources/documents/enforcement-reports [177]

Heavy-Duty Diesel Vehicle Enforcement

The California Air Resources Board (CARB) regulations establish stringent emission requirements that new diesel vehicles must meet. These requirements require engine manufacturers to meet lower Particulate Matter (PM) and Nitrous Oxides (NOx) emission standards. Many manufacturers employ the installation of diesel particulate filters to meet the PM standard, as well as exhaust after treatment to meet the NOx emission standard. These devices remove more than 95% of toxic diesel emissions from Heavy-Duty Diesel Trucks (HDDTs) when properly functioning. In addition, because diesel engines and equipment are designed to last decades, CARB's diesel fleet regulations require operators to replace older, higher polluting vehicles and equipment with cleaner vehicles, equipment, and technologies to provide emission reductions as quickly as possible. These regulations apply to operators of on-road diesel vehicles such as trucks, and off-road diesel vehicles and equipment including construction and cargo handling equipment, transport refrigeration units, commercial harbor

[174] California Air Resources Board. "Enforcement Policy." April 2020. https://ww2.arb.ca.gov/resources/documents/enforcement-policy.
[175] California Air Resources Board. "Enforcement Data Visualization System." 2024. https://webmaps.arb.ca.gov/edvs/.
[176] California Air Resources Board. "Enforcement Data Visualization System". May 2021. https://ww2.arb.ca.gov/sites/default/files/2021-05/EDVS_052521_0.pdf.
[177] California Air Resources Board. "Enforcement Reports". 2021. https://ww2.arb.ca.gov/resources/documents/enforcement-reports.

craft, and other sources. As a result of these programs, according to the Enforcement Data Visualization System (EDVS), [178] CARB has greatly reduced diesel PM and NOx emissions and the statewide compliance rate was over 90% for diesel programs in 2024.

CARB has also developed a comprehensive heavy-duty vehicle inspection and maintenance regulation to ensure that vehicles' emissions control systems are properly functioning when traveling on California's roadways. The Board approved the regulation in December 2021, with implementation to be phased in starting January 2023. Dubbed the Clean Truck Check, the program combines periodic vehicle testing requirements with other emissions monitoring techniques and expanded enforcement strategies to identify vehicles in need of emissions related repairs and ensure any needed repairs are performed. The Clean Truck Check subjects nearly all non-gasoline vehicles with a gross vehicle weight rating over 14,000 pounds that operate in California to periodic emissions testing. Analogous to California's Smog Check program for light-duty vehicles, these testing requirements help ensure that heavy-duty vehicles operating in California remain equipped with properly functioning emissions controls, and when malfunctioning, that these systems get repaired in a timely manner. When fully implemented, the program will provide significant reductions in smog-forming and carcinogenic toxic air pollution necessary to achieve federal air quality mandates and healthy air in California's communities.

As reported in the Enforcement Data Visualization System (EDVS), CARB did not do any heavy-duty diesel inspections for years 2021 through 2024 within the Plan area, including all heavy-duty vehicle inspection programs, idling, transport refrigeration units and off-road. Although CARB did complete several inspections just outside the community boundary, ensuring that inspections were done for Heavy-Duty Diesel Trucks (HDDTs) entering and leaving the Plan area during that same time period. CARB will work with the Community Steering Committee (CSC) to prioritize inspection locations to ensure that sufficient enforcement is taking place in the community. In July of 2022, the CARB reached a settlement of an investigation with Nova Truck Repair (Nova), with its principal location in East Oakland, in the amount of $27,000. Nova failed to meet the in-use compliance requirements in several ways: By installing Verified Diesel Emission Control Systems (VDECS) without being an authorized installer; by installing VDECS without meeting the terms and conditions of the strategy; by installing VDECS on the incorrect engine; and by selling and installing VDECS which did not meet all the conditions of the respective Executive Order.

Truck and Bus Rule

Nearly all trucks and buses in California were required to have a certified 2010 or newer model year engine by January 2023, to comply with the California Air Resources Board (CARB)'s Truck and Bus rule to legally operate in California. In fact, California is entering its sixth year where the California Department of Motor Vehicles (DMV) is holding registration for some trucks and buses that are not in compliance with CARB's Truck and Bus rule as a requirement of Senate Bill 1 (Beall, Chapter 5, Statutes of 2017). Due to CARB regulation implementation and enforcement, the compliance rate statewide for heavy-duty and light-duty trucks was 98% in 2023. Trucks and buses that cannot demonstrate compliance with the statewide truck and bus rule will have registration holds placed on them with DMV and will be prevented from being driven legally in California.

[178] California Air Resources Board. "Enforcement Data Visualization System." https://webmaps.arb.ca.gov/edvs/.

According to the California Department of Motor Vehicles (DMV) data, in January 2024, vehicles registered in the East Oakland community zip codes had a 98.2% compliance rate for heavy-duty diesel vehicles and 98.4% for light-duty diesel vehicles. In 2023, the DMV placed 22 registration holds on Plan area heavy-duty diesel vehicles ranging from model year 1992 to 2010. Also in 2023, the DMV placed 24 registration holds on Plan area light-duty diesel vehicles ranging from model year 1997 to 2010.

Fuels

The California Air Resources Board (CARB) is authorized to adopt standards, rules, and regulations to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources to accomplish the attainment of the state ambient air quality standards at the earliest practicable date. CARB's fuels effort is made up of several components which broadly fall into two categories: (1) adopting and enforcing fuel specifications, and (2) controlling emissions from marketing and distributing fuels in California.

From 2021 through 2024, CARB conducted zero fuel inspections for diesel and biodiesel. CARB will enhance inspections for fuel violations to ensure compliance.

Other Areas of Mobile Enforcement

The California Air Resources Board (CARB) enforces many areas related to mobile vehicles including engines, fuel containers, refrigerants, and the windshield washer fluids. All these programs contribute to CARB’s overall efforts to tackle emissions of all types from all sources. From 2021 to 2024, CARB conducted six Vehicle and Engine inspections within the Plan area, as shown in Table 6-2.

Table 6-2: CARB Vehicle and Engine Inspections in the Plan Area

Program	Inspections	Violations
Portable Fuel Containers	3	0
Automotive Windshield Washer Fluid	3	0

Consumer Goods

Consumer product inspections are an important regulatory tool to improve public health in the community. Consumer products, such as hairsprays, deodorants, and flooring, are widely used but can be sources of Toxic Air Contaminants (TACs) and volatile organic compounds (VOCs) that community members bring into their homes. As reported in EDVS, CARB did not do any Consumer Goods inspections for years 2020 through 2023 within the Plan area. Enforcement is planning focused outreach and inspections in the Plan area to ensure chemically formulated products sold into this community are compliant.

Stationary Sources

California state law gives local air districts the primary authority to regulate stationary sources for criteria pollutants. The California Air Resources Board (CARB) has an important role in providing support to districts with training and enforcement. Stationary source-focused programs in CARB’s Enforcement Division are implemented consistently with legal authority through

training and support, conducting analyses of air district rules, regulations, variances, and policies as required by state law including direct enforcement.

CARB worked with the Office of the California Attorney General on a $2.5 million settlement with AB&I Foundry (AB&I), which manufactured cast-iron and metal pipe fittings in East Oakland. The settlement resolved two consolidated Proposition 65 lawsuits filed against AB&I, by the environmental justice organization Communities for a Better Environment (CBE) and the California Department of Justice's Bureau of Environmental Justice. Both lawsuits alleged that AB&I unlawfully emitted hexavalent chromium — an extremely potent carcinogen — into the air without providing clear and reasonable warnings to residents, in violation of Proposition 65. As part of the settlement, CARB and the Air District, also separately resolved nuisance odor allegations brought against AB&I for a long history of odor complaints in the community. CARB and the Air District began investigating odors emanating from the AB&I facility after receiving complaints from community members living in the vicinity of the operation. CARB issued a Notice of Violation (NOV) to AB&I in 2020 to remedy the nuisance odors. AB&I chose to cease all operations of its East Oakland foundry in 2022 and sold the property, thus resolving the nuisance odors. The settlement agreement resulted in two Supplemental Environmental Projects (SEPs), Breathe Oakland (SEP24-016) and East Oakland Air Quality Fund (SEP24-017), which are mentioned below.

Summary of Complaints Received

Reporting potential violations of air quality requirements can provide important information for Enforcement. Staff investigates tips about non-compliance and takes all complaints very seriously. Often details can't be discussed during the inspection process but every attempt to resolve the complaint will be made. The California Air Resources Board (CARB) takes enforcement action based on the investigation of the complaint which may lead to a notice of violation. Sometimes the CARB investigations can remain pending for extended periods, while other times the complaints are not actionable because CARB did not receive enough information to initiate an investigation. Based on the nature of the complaint, CARB may refer the complaint to another agency that has the appropriate jurisdiction. Table 6-3 contains the complaints received at CARB for the 2021 to 2024 period.

Table 6-3: Complaints Received at CARB 2021-2024

Complaint/Program Type	Number	Action Taken
Vehicles and Engines	2	Referred to another agency
Odor	3	Referred to another agency
Auto, Body and Upholstery Shop Emissions	4	Referred to another agency
Illegal Outside/Backyard Burning	9	Referred to another agency (8), Insufficient Information (1)
Fugitive Dust	1	Referred to another agency
Indoor Air Quality	1	Outside of Agency's Jurisdiction/Authority
Cannabis	1	Referred to another agency
Gas Station	2	Referred to another agency
Leaf Blowers	1	Outside of Agency's Jurisdiction/Authority
Portable Generator Emissions	3	Referred to another agency
Schnitzer Steel – Smoke	1	Investigated by California Environmental Protection Agency (CalEPA) External Agency Partner
AB&I Foundry - Odor*	76	Settlement Agreement - Penalty Paid

*AB&I Foundry had approximately 128 complaints from 2019-2022.

CARB received 76 complaints regarding a strong metallic/chemical odor coming from the AB&I Foundry from 2021-2022. This, and other complaints, resulted in a Notice of Violation (NOV) and a Settlement Agreement was reached (as mentioned above).

CARB also received 9 illegal outside/backyard burning complaints. Portable generator received 3 complaints. These get referred to the Air District for action. In addition, several complaints were received from 2021-2024, mostly consisting of odors, dust, leaf blowers, cannabis, and issues from stationary source facilities, which were referred to the Air District or other California Environmental Protection Agency (CalEPA) agencies for action. CARB did not receive any complaints regarding on-road HDDTs or other diesel programs.

An important part of AB617 is increasing community awareness of the tools that are available to residents. Reporting complaints to both the Air District and CARB enables members of the public to play an active role in addressing air pollution concerns in their community. Both agencies rely on community input for identifying additional locations and sources of concern. CARB accepts and addresses all air quality complaints as they come into the system, including mobile sources and oil and gas facilities. To report a complaint to CARB regarding

environmental concerns, please go to CARB's online complaint page at: https://ww2.arb.ca.gov/environmental-complaints. [179]

Supplemental Environmental Projects

The California Air Resources Board (CARB) has a Supplemental Environmental Project (SEP) policy that allows community-based projects to be funded from a portion, up to 50%, of the penalties received during the settlement of enforcement actions. SEPs can improve public health, reduce pollution, increase environmental compliance, and bring awareness to communities most burdened by environmental harm. Currently, three SEPs are funded in East Oakland:

- New Voices Are Rising (NVAR): Envisioning Resilience Hubs in the Community (SEP22-019): In partnership with Communities for Better Environment (CBE) and the Local Clean Energy Alliance (LCEA), the Rose Foundation engages with 15 New Voices Are Rising Fellows to lead community workshops in East Oakland and Contra Costa County. The workshops bring together residents to develop a vision for modifying affordable housing complexes to become clean powered resilient community hubs. Workshop participants develop visual and written representations of the changes that are required to convert a particular affordable housing development into a clean energy hub. The Rose Foundation's goal is to share this with relevant decision-makers. (Amount Funded: $42,676)

- Breathe Oakland (SEP24-016): Roots Community Health Center proposes to expand the scope and role of their existing Breathe Oakland program and Oakland Street Team Outreach Medical Program (STOMP) program. The goal of the Breathe Oakland program is to identify adults and children with asthma; assess their living environment and mitigate exacerbating conditions; help eliminate asthma triggers and improve indoor air quality; provide and ensure adherence to appropriate treatment; and equip them with knowledge and tools, including an action plan for self-management. The Oakland STOMP program provides widespread screening of homeless individuals throughout Oakland, as well as ongoing medical care and self-management support for those diagnosed with a respiratory condition. (Amount Funded: $300,000)

- East Oakland Air Quality Fund (SEP24-017): Rose Foundation for Communities and the Environment will utilize their experience and contacts to create and manage a community-centered grantmaking process which will provide grassroots activists and local organizations with the opportunity to submit a proposal for a grant. All Supplemental Environmental Project (SEP) funds would be allocated to community-based organizations that address crucial air quality concerns in East Oakland. (Amount Funded: $300,000)

CARB staff can help community members or organizations identify where SEPs would be more impactful and assist with the submittal of proposals. For more information on SEPs, please visit: Supplemental Environmental Projects (SEP) [180] or email us at SEP@arb.ca.gov.

[179] California Air Resources Board, "Environmental Complaints." 2025. https://ww2.arb.ca.gov/environmental-complaints.
[180] California Air Resources Board. "Supplemental Environmental Projects (SEP)." 2025. Supplemental Environmental Projects (SEP) | California Air Resources Board.

Strategies

CARB Enforcement has begun developing a community-based approach that builds on the fundamental idea that part of achieving environmental justice is making sure CARB is partnering directly with community members to truly understand community issues more holistically. Rather than solely focusing on our traditional enforcement programs in a community, CARB proposes instead, to bring our expertise and labor as part of a team collaborating with community members as partners to investigate and document community concerns more broadly and work together to identify strategies that may help to solve the problems community members are experiencing. CARB aims to provide a broader array of assistance through this approach. CARB's goal is to develop co-designed and co-led projects that empower communities, focus on community identified priorities, leverage enforcement, that result in community investigations that help CARB understand how to develop stronger enforcement approaches in East Oakland Communities.

See Chapter 7 Transportation and Mobile Sources Strategy 1 for actions related to CARB's enforcement efforts.

Chapter 7: Focus Areas, Strategies, and Actions

Introduction and Overview

This chapter describes the approach used by the Co-Leads, the Air District and Communities for a Better Environment (CBE), and the CSC to develop focus areas, community concerns, strategies, and actions. It also presents the Plan's strategies, organized by community concerns, and a list of actions to achieve each strategy.

The Co-Leads engaged in several months of data-gathering and information-sharing efforts (titled Preliminary Activities) to identify Plan focus areas and set the table for productive brainstorming with the CSC in early 2024. This was followed by ten months of strategy development in collaboration with the CSC, Air District technical experts, and agency partners.[181] Figure 7-1 represents the building blocks of this process, and the following sections go into these elements in some detail. The final sections of this chapter lay out Plan strategies and actions arranged by focus area.

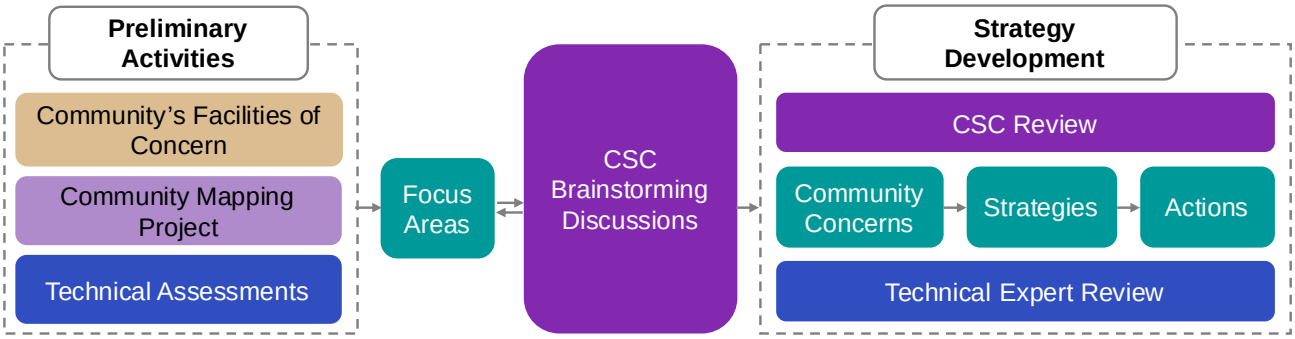

Figure 7-1: Strategy development process for the East Oakland Plan.

Preliminary Activities

Community's Facilities of Concern

As an early step to assist strategy development, Communities for a Better Environment (CBE) and the CSC identified facilities of concern in East Oakland that have been on the community's radar. For four critical facilities, CBE developed 'Problem Statements' to characterize their impact on the East Oakland community. These facilities and statements helped prioritize facility-focused actions, particularly in the Commercial and Industrial focus area. Key insights from this effort are documented in Appendix F-1: Facility Problem Statements.

Community Mapping Project

The Air District launched the East Oakland Community Mapping Project with community-based organizations[182] in September 2023 to better understand the air pollution concerns that are

[181] Agency partners include the City of Oakland, Port of Oakland, Alameda County Public Health Department (ACPHD), California Department of Transportation (Caltrans), California Air Resources Board (CARB), and the Office of Environmental Health Hazard Assessment (OEHHA).
[182] See Appendix A: Community Steering Committee, Public Process, and Community Outreach for further details on the Community Mapping Project.

most important to the community. Assisted through these organizations' outreach efforts, East Oakland community members were able to visit an online map and add information that identified air pollution concerns, community assets, and gathering places in their neighborhoods. This helped ensure that strategy development was grounded in community knowledge and lived experiences in addition to technical information.

The map received 488 pins and comments, most of which spoke about air pollution concerns. Key themes included climate impacts, commercial and industrial activity impacts, stationary and mobile emissions sources, enforcement, environmental justice and racism, health and infrastructure, land use and zoning, waste management, community strengths, resources, and spaces, and public safety. These themes were eventually grouped into the six Plan focus areas.

Technical Assessments

East Oakland Emissions Inventory

In 2023, the Air District generated an emissions inventory [183] for East Oakland and presented a summary to CSC members in August of that year. The East Oakland emissions inventory covered local stationary and mobile sources, included data for nearly 400 permitted facilities, and reported on Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs) for the year 2021. It provided critical information about pollution and sources that supported the development of Plan strategies and actions. The data from the emissions inventory is captured in Chapter 5.

Community Health Impacts in East Oakland

Alameda County Public Health Department (ACPHD) in 2023 presented community health data specific to East Oakland. The data included key indicators such as CalEnviroScreen (CES) cumulative percentiles, asthma emergency visits and hospitalizations, cancer, heart disease, and stroke mortality rates, and life expectancy in East Oakland as compared to Oakland and Alameda County. It also laid out key population characteristics such as demographics, poverty, and the age of housing units. This information increased understanding of the severity of health inequities in East Oakland as correlated to pollution burdens, and centered the improvement of health outcomes in Plan strategies. Chapter 4 includes updated 2019-2023 health data from ACPHD on a variety of health conditions related to air pollution.

Compliance and Enforcement in East Oakland

The Air District conducted a data review of compliance verification inspections, air quality complaints, and notices of violations (NOVs) from 2020 to 2023, [184] and presented this report to the CSC in December 2023. Among other information, the report laid out the number and types of air quality complaints, highlighting odor as a major complaint type. The report also noted sites with multiple violations in East Oakland. This information supplemented the community's concerns and helped develop actions for the Commercial and Industrial focus area. Chapter 6 captures compliance and enforcement data in East Oakland.

[183] An emissions inventory is an estimate of the amounts and types of air pollutants emitted by identified sources within a defined geographic region during a specified time period (e.g., one year).
[184] Report did not include data from December 2023.

Strategy Framework

Focus Areas

Focus areas are the overarching categories of the East Oakland community's air pollution concerns that organized strategy development for the Plan. They also help determine relevant subject matter expertise needed, as well as community and agency collaborators. The focus areas were derived from the preliminary activities described above, which provided foundational information on community perspectives and technical data. They evolved during the strategy development process based on discussions with the CSC (see Figure 7-2).

The six focus areas identified are listed as follows:

1. Built Environment and Land Use (Page 136)
2. Commercial and Industrial Sources (Page 144)
3. Illegal Dumping, Trash, and Odors (Page 162)
4. Public Health and Community Wellness (Page 164)
5. Transportation and Mobile Sources (Page 175)
6. Urban Greening and Workforce Development (Page 187)

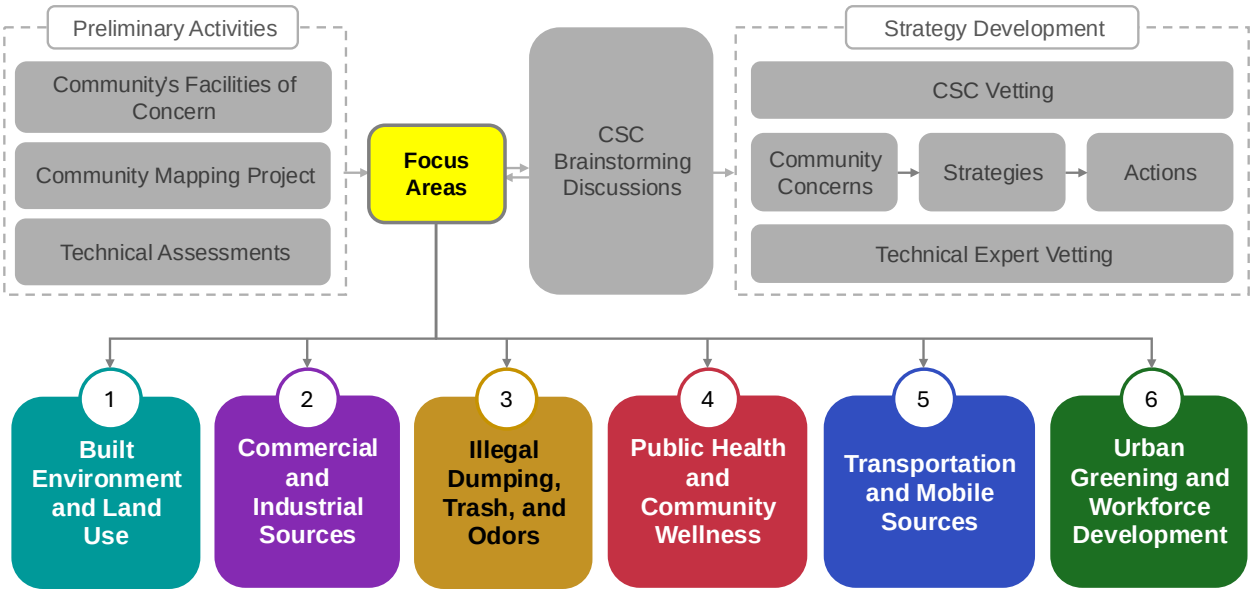

Figure 7-2: The six Plan focus areas.

Community Concerns

Community Concerns are foundational statements that identify the major challenges affecting air quality and health in East Oakland, describing concerns that have a significant negative impact on the lives of residents and families in the community. Each statement addresses three questions:

- **What is the concern?** A high-priority community issue that addresses air quality and health concerns.
- **What do we know?** Includes local knowledge, the technical assessment, complaints and violations data regarding the concern.
- **What are the consequences?** Describes the risk to the community and identifies sensitive populations that are near pollutants of concern.

Community concern statements are organized by focus area and were developed through three months [185] of brainstorming discussions with the CSC that followed the knowledge-sharing and community education stages mentioned under Preliminary Activities. The hybrid discussions primarily used a 'madlib' format to facilitate conversation, which asks participants to fill in the blanks to create a statement (see Figure 7-3). CSC members were given thematic prompts within each focus area (for example, freeways and highways in the Transportation and Mobile Sources focus area) to draw out points of concern. Staff then collected the results of these discussions and summarized them to create community concern statements. The topics of these concerns are listed in Figure 7-4, and the detailed statements are written under each focus area.

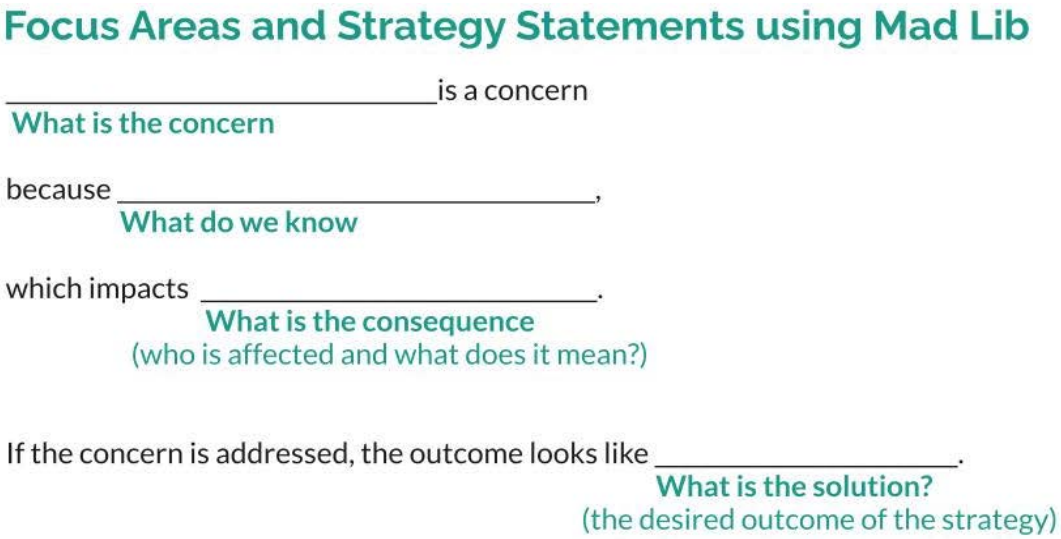

Figure 7-3: East Oakland CSC members and community members used this 'madlib' template to create community concerns and strategy objectives.

[185] CSC Meeting #16 on February 8, CSC Meeting #18 on April 11, 2024, CSC Meeting #19 on May 9, 2024, and responses submitted through Google Forms.

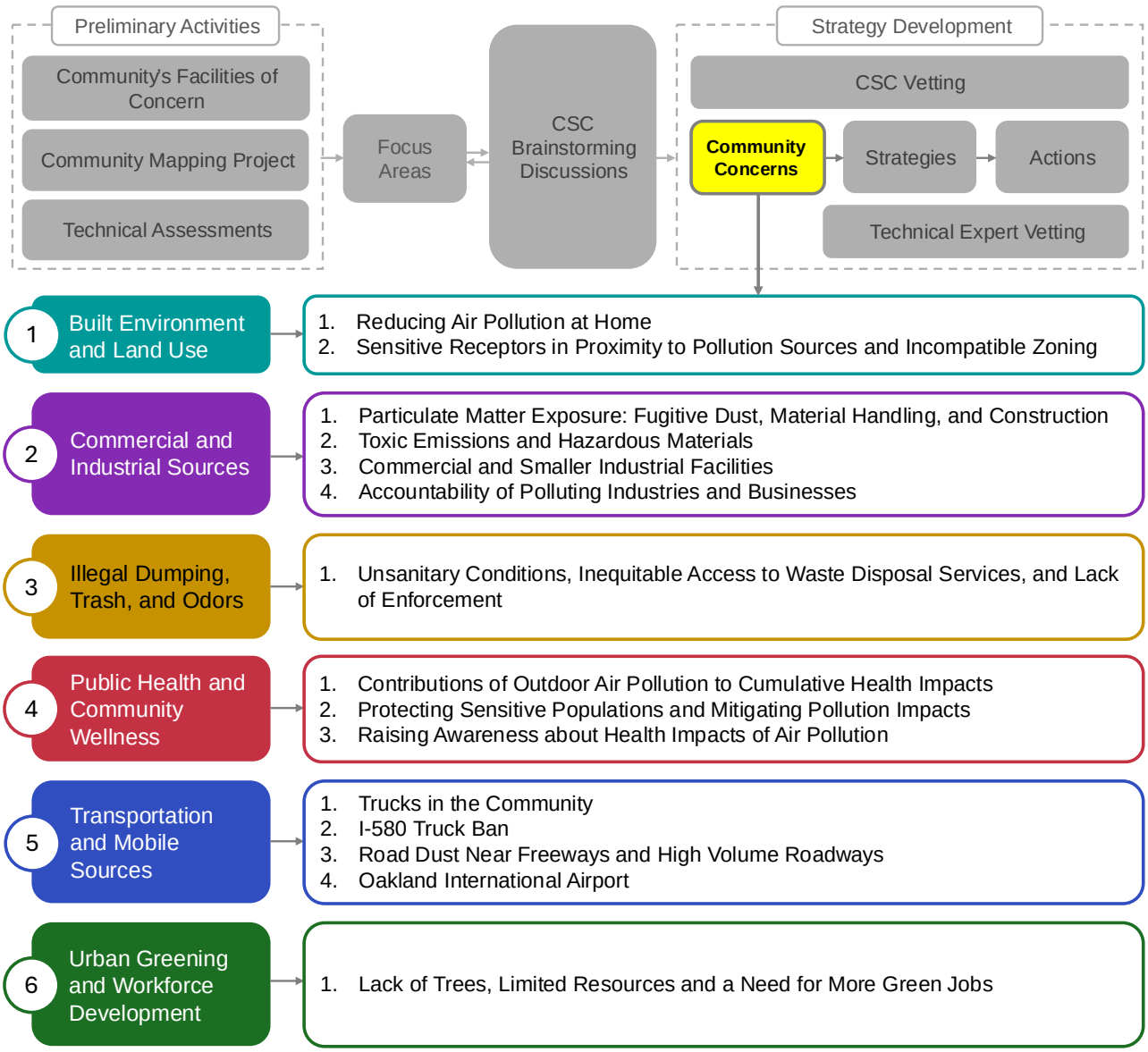

Figure 7-4: Titles of Community Concerns by Focus Area.

Strategies and Actions

Strategies and actions respond to the community concerns by identifying solutions and laying out a path to achieve the identified solution. Each strategy has the following components:

- **Strategy Objective:** The objectives state the changes that community members want a strategy to achieve, or the desired future outcome of the strategy.
- **Actions:** The actions chart specific and implementable measures that will achieve the strategy objective. Each action identifies the lead implementing agency or organization to implement the stated measure, along with an anticipated time frame.

From July 2024 to May 2025, strategy writers[186] developed strategies and actions for all focus areas in alignment with the community's desired future outcomes, while considering the specific goals of reducing emissions and improving health outcomes in East Oakland. The team conducted a landscape review of a vast set of adopted plans and policy documents to identify strategies and actions relevant to each of the focus areas. This process allowed scoping of ongoing efforts at partner agencies to avoid duplication and ensure tracking, while devising unique, specific, and actionable strategies for East Oakland. Alignment with the Air District 2024–2029 Strategic Plan[187] (Air District Strategic Plan) was also emphasized to allow more efficient use of resources, and a more coordinated approach towards addressing air quality and environmental justice issues, rather than a fragmented or siloed effort that could duplicate work, create inconsistencies, or limit the overall effectiveness of the actions (see Chapter 9). The development process followed the sequence outlined in Figure 7-5, starting with compiling community concern statements, conducting a landscape review, writing strategy objectives, developing draft actions, and completing the action compilation.

Figure 7-5: Strategy writing and review process.

The CSC vetted every step of this process, with each CSC meeting being dedicated to discussing strategy and action drafts of a particular focus area. The discussion formats were both in-person and virtual, based on CSC preference, with participants typically reviewing draft documents and answering prompts like "What resonates with you in this action?", "What is something we have not addressed through this action?", or "What thoughts and questions do you have?" Additionally, due to the technical nature of the Commercial and Industrial focus area, "office hours" were held by Communities for a Better Environment (CBE) to provide CSC members additional time to digest and discuss the actions.

The strategies and actions were simultaneously reviewed by subject matter experts and relevant external agencies to ensure alignment and to check if they were implementable. Reviewers were invited based on their assignment as lead implementers for actions and their expertise with particular focus areas. This included technical experts from the Air District, City of Oakland, Port of Oakland, Alameda County Public Health Department (ACPHD), California Department of Transportation (Caltrans), California Air Resources Board (CARB), and the Office of Environmental Health Hazard Assessment (OEHHA).

[186] Strategy writing team included staff from the Air District, CBE, and consultant Just Cities.
[187] "Bay Area Air District 2024-2029 Strategic Plan." Bay Area Air District. 2024. https://strategicplan.baaqmd.gov/

The following sections cover each focus area's community concerns, strategies, and actions in detail. Each action also notes an approximate timeframe of implementation. The timeframes, defined below, are meant to capture when an action can be initiated, as well as the length of time it could take to complete:

1. **Early Action:** Can be started immediately
2. **Short Term:** Within less than 2 years of Plan implementation
3. **Medium Term:** 2-3 years of implementation
4. **Long Term:** 4+ years of implementation

Built Environment and Land Use

Built environment refers to constructed spaces – such as homes, schools, stores, roads, and parks – that people use for living, working, and recreation.[188] As described in Chapter 4, East Oakland has seen rapid urbanization and industrial growth over the decades, reshaping its built environment as experienced by community members. Racist planning and policy practices such as redlining and urban renewal resulted in systemic inequities across quality-of-life outcomes in East Oakland communities.

Residents have raised issues about the way their neighborhoods look and feel, particularly with respect to housing quality and its impact on health. Chapter 4 describes that the housing stock in East Oakland is old - nearly 36% of homes in East Oakland were built in 1939 or earlier, compared to 19% across the county- exposing residents to indoor air pollutants. Community members have mentioned being unable to escape outdoor pollution inside their homes, and additionally experiencing exposure to lead, mold, and smoke, leading to allergies and asthma attacks.

This issue is compounded by the prevalence of industrial areas zoned for manufacturing, transportation, warehousing, and other high-impact industrial and commercial activities in East Oakland, which has created a pattern of incompatible land uses. As shown in Chapter 4, many locations where vulnerable populations[189] gather—such as in schools, daycare centers, and health clinics—are located near industrially zoned areas in East Oakland. Community members have raised concerns about the proximity of children and community spaces to polluting facilities, and the lack of general awareness about it. The East Oakland community is seeking equitable environmental standards and advocating for the same level of support and resources that are available to wealthier neighborhoods. They would like their children to breathe clean air in any building that they live, learn, and play in. Therefore, this focus area aims to leverage technology and incentive programs to improve air quality at home and in schools. It also aims to use zoning and land use tools like buffer zones and phasing out incompatible land uses to better protect populations that are particularly vulnerable to air pollution.

Fortunately, Oakland Unified School District (OUSD) is set to benefit from state funding aimed at improving air and water quality, in addition to energy efficiency. OUSD received $7 million in grant funding from the California Schools Healthy Air, Plumbing, and Efficiency (CalSHAPE) Program to upgrade heating, ventilation, and air conditioning systems at 83 schools. The work

[188] U.S. EPA webpage on Built Environment: https://www.epa.gov/smm/basic-information-about-built-environment.

[189] Vulnerable populations are groups of people who are especially at risk for adverse health effects from air pollution. This includes infants, children, the elderly, individuals with pre-existing conditions (e.g., asthma), pregnant women, and athletes (due to higher breathing rates). See also "Sensitive Populations" in the Glossary.

will include installing high-efficiency filters and carbon-dioxide sensors to improve air quality in classrooms. OUSD expects to complete these upgrades by December 2025.[190] This effort builds on a 5-year project by the Air District to install air-filtration upgrades and filter replacements to East Oakland schools, including Fruitvale Elementary School and Wilson Elementary School. The installations were completed in June 2020, and the most recent filter replacement took place in May 2024. These investments are a step in the right direction, but further action is needed to reduce the disproportionate pollution and exposure impacting vulnerable populations in East Oakland.

Strategies in this focus area would be closely coordinated with ongoing efforts at the City of Oakland, particularly in the implementation of relevant Oakland General Plan Environmental Justice Element (EJ Element), Housing Element, and Safety Element policies, while supporting the development of the Land Use and Transportation Element. The goal is to leverage cross-agency opportunities and tools to secure a clean and healthy built environment for the residents of East Oakland.

Actions from this focus area may be referenced with the abbreviation BE, followed by the strategy number and action number, for example, **BE 1.1**.

Community Concern Statement 1: Reducing Air Pollution at Home

Air pollution inside the home is the concern because it significantly impacts the respiratory health of East Oaklanders. Many homes in the area are older and prone to mold and lead exposure, and they often retain cigarette smoke odors. Indoor allergens and irritants are significant triggers for asthma attacks. Additionally, gas appliances can worsen indoor air quality. For example, studies have consistently shown that the use of gas appliances can result in indoor concentrations of nitrogen dioxide (NO_2) that exceed ambient (outdoor) air quality standards.[191] $PM_{2.5}$ (particulate matter with diameters that are generally 2.5 micrometers and smaller) is particularly dangerous because fine particles can penetrate deep into the lungs and bloodstream. This may lead to premature deaths, long-term conditions such as heart disease and emphysema, and short-term issues like bronchitis and asthma attacks. NO_x (nitrogen oxides) exposure is associated with coughing, wheezing, difficulty breathing, asthma, and increased susceptibility to respiratory infections. This exposure severely impacts respiratory health, especially for sensitive groups like the elderly and children, some of whom may already suffer from existing conditions such as asthma.

[190] A Presentation to the Facilities Committee, on the status of the District's California Schools Healthy Air, Plumbing and Efficiency (CalSHAPE) District-wide Energy Conservation and Infrastructure Improvement Project. Hearing before the OUSD Board of Education (2024). https://ousd.legistar.com/LegislationDetail.aspx?ID=6663762&GUID=C2B28552-835D-4859-8646-75F9EBF255A5&Options=ID|Text|&Search=CalSHAPE.

[191] Zhu, Y., Connolly, R., Lin, Y., Mathews, T., Wang, Z., 2020: Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California. UCLA Fielding School of Public Health. https://ucla.app.box.com/s/xyzt8jc1ixnetiv0269qe704wu0ihif7.

Strategy 1. Healthy Homes, Healthy Lives: Clean Indoor Air and Zero-Emission Homes

Strategy Objective: East Oakland homes have healthy indoor air quality to improve respiratory health among residents. Indoor air pollutants such as lead and asbestos are reduced, emissions from fuel-burning heat sources are eliminated, common indoor allergens are decreased, indoor exposure to volatile organic compounds (VOCs) is limited, and the infiltration of outdoor pollutants including smoke and particulate matter (PM) is minimized without passing costs of improvements to renters.

Every home, beginning with older ones, uses clean and renewable energy sources. Harmful emissions from household energy use are reduced or eliminated, leading to improved health. Existing homes become more energy efficient and protected from external air pollution through electrification, weatherization, air filtration, and other retrofitting measures. Frontline communities benefit first but are not burdened with the costs of improvements or retrofits. This effort contributes to a Just Transition in East Oakland. [192]

Strategy Metrics:

- Number of air filtration units provided to homes in East Oakland.
- Number of wood-burning heating equipment units decommissioned or replaced with heat pumps through incentive programs.
- Amount of funding available for community-identified projects.

#	Actions
BE 1.1	**Air Filtration for East Oakland Homes:** Explore and, if available, secure funding that continues the Air District's Home Air Filtration Programs to distribute home air filters, connect with community organizations, and conduct targeted outreach to vulnerable populations in East Oakland. **Lead:** Air District **Timeframe:** Short Term (Less than 2 years)
BE 1.2	**Access to Existing Clean Energy Home Retrofit and Weatherization Programs:** Explore and implement strategies to help more low-income East Oakland homeowners and renters benefit from existing local, state, and federal programs that offer financial assistance, energy audits, and other support for clean energy home retrofits and weatherization [193] improvements. Examples of existing programs include the Bay Area Regional Energy Network Home+ Program (BayREN), California Weatherization Assistance Program (California Department of Community Services and Development), and the Low-Income Home Energy Assistance Program (U.S. Department of Health and Human Services).

[192] The City of Oakland Climate Emergency and Just Transition Resolution (2018) defines "Just Transition" as "A framework for a fair shift to an economy that is ecologically sustainable, equitable, and just for all its members." The resolution can be accessed at: https://www.oaklandca.gov/files/assets/city/v/1/city-administrator/documents/sustainability/87397-cms-climate-emergency-declaration.pdf

[193] Weatherization involves making improvements to a home that reduce energy use and help keep it warm in the winter and cool in the summer. This can include adding or upgrading insulation, improving ventilation, or sealing gaps around doors and windows.

#	Actions
	Lead: Air District **Timeframe:** Medium Term (2-3 years)
BE 1.3	**Woodsmoke Reduction:** Evaluate and, within two years, report back to the CSC on incentives for removal or replacement of wood-burning equipment (used for heating or cooking) with cleaner technologies, such as electric heat pumps. If funding is identified, open a program and prioritize applicants in Community Emissions Reduction Plan (CERP) communities, including East Oakland, and look for ways to increase participation in East Oakland. Connect with the CSC to amplify existing woodsmoke reduction education efforts in East Oakland. **Lead:** Air District **Timeframe:** Short Term (Less than 2 years)
BE 1.4	**Explore Funding Opportunities for Community-Identified Projects:** Evaluate and, within two years, report back to the CSC on the availability of funding from sources outside of the Air District for the following community priorities: zero-emission appliances for homeowners, such as electric stoves or water heaters. This work may include engagement with external partners, such as BayREN, City of Oakland energy programs, and PG&E, to connect the community to their incentive programs or to collaborate on development or expansion of their funding programs. **Lead:** Air District **Timeframe:** Short Term (Less than 2 years)
BE 1.5	**Support Unhoused Communities During Air Quality Emergencies:** Partner with Alameda County to explore opportunities to improve existing outreach and support efforts for unhoused populations during wildfire smoke events and other air quality emergencies. **Lead:** Air District **Timeframe:** Long Term (4+ years)
BE 1.6	**Proactive City Updates & CSC Engagement on Safe and Healthy Homes:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives: • 2023 - 2031 Housing Element [194]

[194] City of Oakland, "2023-2031 Adopted Housing Element." Oakland General Plan. 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Housing-Element/2023-2031-Adopted-Housing-Element.

#	Actions
	• Environmental Justice [195] See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland, Planning & Building Department **Timeframe:** Long Term (4+ years)

Community Concern Statement 2: Vulnerable Populations in Proximity to Pollution Sources and Incompatible Zoning

Vulnerable populations—including infants, children, the elderly, individuals with pre-existing conditions (e.g., asthma), pregnant women, and athletes (due to higher breathing rates)—are especially at risk for adverse health effects from air pollution. Vulnerable populations in proximity to pollution sources and incompatible zoning is the concern because in East Oakland, sensitive land uses such as schools, playgrounds, daycare centers, and residential areas are located near or adjacent to pollution sources. This creates an environmental justice issue, as past land use planning and zoning decisions have resulted in a disproportionate concentration of pollution sources in Black, Indigenous, and People of Color (BIPOC) communities. For example, neighborhoods that were historically redlined often experience higher poverty rates, elevated temperatures, lower life expectancy, increased chronic diseases, poorer mental health, and reduced life expectancy at birth. In East Oakland, the high density of polluting facilities exacerbates these issues. The absence of vegetative barriers and buffer zones between these facilities and sensitive land uses, coupled with a lack of signage and community engagement to caution people of toxic pollution sources near them, worsens the problem. Significant pollution sources include warehouses, factories, and junkyards, which also generate heavy truck traffic. Additionally, the cannabis industry is noted by CSC members as contributing to both pollution and traffic concerns. The CSC cited three examples of land use conflicts. The first example is Sterling Environmental Corporation (Sterling Environmental), which temporarily stores asbestos waste from remediation work performed off-site. Sterling Environmental stores the asbestos waste at their property that is located next to Esperanza Elementary School, Korematsu Discovery Academy, Stonehurst Child Development Center and the Stonehurst Edible Schoolyard, where a school garden is located. A second example is the Evergreen Crematory which is surrounded by residential homes, multiple schools, and a park. The third example is Argent Materials, located less than a mile upwind from Acorn Woodland Elementary School, the 81st Ave Branch Library, and the Tassafaronga Recreation Center.

[195] City of Oakland, “Environmental Justice Element.” Oakland General Plan. 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.

Strategy 2. Promote Clean Air in High-Priority Facilities

Strategy Objective: Exposure to harmful pollutants is reduced and indoor air quality is improved at high-priority facilities where populations that are particularly vulnerable to air pollution gather outside the home. These include schools, libraries, or senior centers situated near significant sources of transportation-related, commercial, or industrial pollution, as identified through technical assessments and community knowledge.

Strategy Metrics:

- Number of air filtration upgrades delivered to high-priority facilities in East Oakland.

#	Actions
BE 2.1	**Air Filtration for East Oakland High-Priority Facilities:** Explore the feasibility of expanding the existing Air Filtration program, or starting a new program, to support high-efficiency air filtration upgrades for high-priority facilities, such as Head Starts in public buildings, schools, libraries, and senior centers. Connect with community organizations and conduct targeted outreach to vulnerable populations in East Oakland. **Lead**: Air District **Timeframe:** Long Term (4+ years)

Strategy 3. Advancing Environmental Justice Through Zoning and Land Use Tools

Strategy Objective: The City of Oakland (City) uses its land use authority to phase out existing nonconforming and incompatible land uses, resulting in improved health outcomes for populations that are particularly vulnerable to air pollution. New developments have more stringent requirements to limit pollution and protect residents and workers. Zoning rules are revised to ensure that new industrial and commercial developments are sited and designed to limit potential adverse effects on air quality and health. The clean-up and redevelopment of contaminated sites is encouraged, prioritizing the reduction of air quality impacts while promoting economic, social, health, and environmental benefits for the community.

Strategy Metrics:

- Protocols developed to track nonconforming truck-attracting activities or facilities (yes/no).
- Adoption of zoning or land use policy to address nonconforming land use conflicts in East Oakland (yes/no).
- Number of facilities in East Oakland included in the pilot amortization policy.

#	Actions
BE 3.1	**Tracking Nonconforming Truck-Attracting Businesses:** Develop protocols to identify and track nonconforming truck-attracting activities or facilities, as described by Chapter 17.114.050 of the Oakland Planning Code. The goal of this action is to ensure that when these businesses close, they are not improperly re-permitted, and the parcels are brought into compliance with the health-protective zoning regulations adopted by the City of Oakland in 2023 through the Industrial Planning Code Amendments.[196] One possible tracking method could involve keeping a list of businesses that became nonconforming following the adoption of 17.114.050 Nonconforming Activity—Discontinuance[197] and incorporating flags into the City's Accela permit tracking system. **Lead:** City of Oakland, Planning & Building Department **Timeframe:** Medium Term (2-3 years)
BE 3.2	**Air Quality Protection Information for Communities Located Near Sources of Harmful Pollutants:** For residents, workers, property and business owners, and community-serving institutions located within 1,000 feet of: ● Industrially zoned land, and ● Top permitted sources of fine particulate matter ($PM_{2.5}$) emissions, cancer and chronic Toxicity-Weighted Emissions (TWE) in East Oakland (as identified in Chapter 5 of the Plan), and ● I-880 and I-580 freeways. Create: 1. Multi-lingual, accessible informational materials that explain the potential health and environmental impacts of harmful pollutants in the area and offer practical guidance on how residents can protect themselves from this exposure. 2. List of recommended activities and measures that can meaningfully reduce pollution exposure and its impacts. 3. List of potential zoning and land use policy measures to facilitate the implementation of effective actions that reduce air pollution. Collaborate with the CSC to explore ways of making outreach more effective and equitable—for example, by engaging them in identifying community-serving institutions. **Lead:** City of Oakland, Planning and Building Department **Timeframe:** Medium Term (2-3 years)

[196] "Exhibit D. Industrial Zones Package." Accessed July 9, 2025. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Ord-Exhibit-D_-Industrial-Zones.pdf.
[197] "Oakland Planning Code 1997 (Supplement, December 17, 2024). Accessed July 9, 2025. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Planning-Code-after-12-17-24_Chpt.17.101B-Brooklyn-Basin_CLEAN.pdf.

#	Actions
BE 3.3	**Community Informed Amortization**: Implement a pilot amortization policy [198] in East Oakland, developed in consultation with the CSC and with support from the Air District. When identifying nonconforming uses, include: ● Any facility of concern to the CSC located within 1,000 feet of places where populations that are particularly vulnerable to air pollution gather. ● Any facility that no longer complies with the health-protective zoning adopted by the City in 2023. Consider the following criteria when designing the pilot: ● Establish clear timeframes for nonconforming uses to comply with updated zoning laws. ● Number of local East Oakland residents employed by these businesses and the potential unintended economic impacts, such as job losses or reduced income. ● Racial Equity Impact Analysis: Assess whether the pilot policy can help reduce health inequities and lower the disproportionate pollution burden in East Oakland. ● Incentives for businesses to relocate, such as relocation assistance and potential tax relief. ● Incentivize or require businesses to conduct environmental cleanup of their sites before ceasing operations, with technical assistance provided to help them apply for environmental cleanup grants. Evaluate the effectiveness of the amortization policy pilot, gather community input for potential revisions or updates, and establish timeframes to create a permanent program. Support from the Air District could include working with the City of Oakland to engage the CSC during a regularly scheduled quarterly meeting. **Lead**: City of Oakland, Planning & Building Department **Timeframe:** Long Term (4+ years)
BE 3.4	**Oakland's Anti-Displacement Action Plan**: Support the CSC's involvement in monitoring the implementation of the City of Oakland's Anti-Displacement Strategic Action Plan, [199] which builds upon the City's recently adopted Housing Element and other related housing initiatives. The equity framework for this plan includes: ● Homelessness Prevention ● Tenant Anti-Displacement ● Homeowner Anti-Displacement

[198] "Policy Strategy B – Non-Conforming Polluting-Use Transition Incentives." Air District. Accessed July 9, 2025. https://www.baaqmd.gov/~/media/files/planning-and-research/sb-1000/policy-initiatives/policy-b-stripped-pdf.pdf?rev=926daf44dd7b441d99ce4e3feb8a5e2b.

[199] "2023-2027 Strategic Action Plan." City of Oakland, Housing and Community Development. https://cao-94612.s3.us-west-2.amazonaws.com/documents/HCD-2023-2027-Strategic-Action-Plan.pdf

#	Actions
	• Citywide Stabilization, ensuring a protective policy and regulatory environment See Appendix F-2 for a list of other strategies, policies and actions of interest to the CSC. **Lead**: Communities for a Better Environment (CBE) **Timeframe:** Short Term (Less than 2 years)
BE 3.5	**Oakland's General Plan Update:** Support the CSC in participating in the City of Oakland General Plan Land Use and Transportation Element (LUTE) Update to identify opportunities to relocate truck attracting and heavy industrial business away from East Oakland neighborhoods. See Appendix F-2 for a list of other strategies, policies and actions of interest to the CSC. **Lead**: Communities for a Better Environment (CBE) **Timeframe:** Early Action (Immediate)
BE 3.6	**Proactive City Updates & CSC Engagement on Brownfield Sites and Other Contaminated Sites:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives: • Safety Element [200] • Environmental Justice Element [201] See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland, Planning & Building Department **Timeframe:** Long Term (4+ years)

Commercial and Industrial Sources

The Commercial and Industrial Sources focus area targets stationary (permitted and non-permitted) [202] sources of air pollution in East Oakland, including large industrial facilities and smaller sources. Due to its early industrial character and the ensuing history of discriminatory zoning and real estate lending practices, East Oakland has a disproportionate number of

[200] "Safety Element." City of Oakland. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Safety-Element
[201] "Environmental Justice Element." City of Oakland. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element
[202] For emissions inventory purposes, 'permitted facilities' refers broadly to sources with facility-specific emissions estimates, including those that are permitted, registered, or permit-exempt. 'Non-permitted sources' are stationary sources not tied to a specific facility, such as construction dust and commercial cooking. This definition is specific to the emissions inventory and differs from how 'permitted' and 'non-permitted' are used in Engineering and Compliance & Enforcement contexts, where the definition is more narrow.

commercial and industrial facilities adjacent to residential neighborhoods. Chapter 4 finds that Oakland has 17 solid waste facilities with the largest cluster in East Oakland, [203] following national trends for the siting of hazardous waste facilities near low-income communities of color. Chapter 5 finds that permitted stationary sources such as Davis Street Transfer Station and Miller Milling Company combine to account for 27% of local fine particulate matter ($PM_{2.5}$) emissions (particulate matter with diameters that are generally 2.5 micrometers and smaller), while non-permitted stationary sources such as construction dust and commercial cooking account for 44%. Over the decades, East Oakland residents in collaboration with grassroots organizations such as Communities for a Better Environment (CBE) have been a powerful voice against polluters in their community, but much work remains to be done in reducing the exposure of residents against these sources.

The development of this focus area began with CBE and the Community Steering Committee identifying facilities [204] that have been on the community's radar, developing 'Problem Statements' for four critical facilities to capture the community's understanding of issues. These statements are summarized in Appendix F-1: Facility Problem Statements. Results of the East Oakland Emissions Inventory also brought into focus facilities such as the Davis Street Transfer Station, Miller Milling Company, Peet's Coffee and Tea, and others (see Chapter 5); where 11 permitted facilities account for 98% of local $PM_{2.5}$ emissions from the permitted source sector. In terms of toxics exposure, permitted sources play a small role in the overall Toxic Air Contaminant (TAC) inventory, though individual facilities or groups may still be important emitters due to the specific compounds or their proximity to sensitive populations. Smaller commercial and industrial sources have also been an issue for the community for these reasons, with backup (diesel) generators, auto body shops, gas-dispensing facilities, cannabis production facilities, and smaller food production facilities contributing to localized exposure.

Finally, fugitive dust [205] remains a significant source of concern for the community, with residents speaking of being exposed to unknown dust, and having visible debris on their cars and front steps. This is reflected by the data, with fugitive dust sources in East Oakland accounting for about 40% of all $PM_{2.5}$ emissions from local stationary sources, while the other 60% is emitted by stationary sources such as commercial and residential fuel combustion, industrial processes, and commercial cooking (see Chapter 5).

Residents have voiced physical and mental health impacts due to living near commercial and industrial sources, with particular concern about the impacts of these sources on their children, the elderly and the disabled. Therefore, this focus area aims to address Particulate Matter (PM) exposure from fugitive dust, material handling, and construction, and toxics exposure from facilities producing toxic emissions. The strategies and actions leverage Air District authority over stationary sources and CBE's grassroots advocacy abilities to bring about meaningful changes in exposure to commercial and industrial sources in East Oakland.

Actions from this focus area may be referenced with the abbreviation C&I, followed by the strategy number and action number, for example, **C&I 1.1**.

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[203] Active, closed, and inactive as of February 2025. See Chapter 4.

[204] Community's Facilities of Concern list included AB&I Foundry (now Prologis Redevelopment), Argent Materials, Crematorium on 98th Ave (SE Combined Services of California), and Sterling Environmental, (CSC Meeting #10 on July 13, 2023).

[205] PM that enters the atmosphere without passing through a stack/duct designed to direct or control its flow. Via U.S. EPA webpage on Fugitive Dust: https://www.epa.gov/system/files/documents/2022-02/fugitive-dust-control-best-practices.pdf.

Community Concern Statement 1: PM Exposure: Fugitive Dust, Material Handling, and Construction

Fugitive dust from operations and facilities that process or store loose, raw, and/or uncovered materials is a concern because fugitive dust is a source of Particulate Matter (PM) that mixes into the air resulting in primarily PM_{10} (Inhalable particulate matter with diameter of 10 micrometers or less) and at times $PM_{2.5}$ (particulate matter with diameters that are generally 2.5 micrometers and smaller) exposure, which increases health risks for the community. Sources of fugitive dust in the East Oakland area include, but are not limited to, concrete and asphalt recycling and disposal, aggregate products such as sand, gravel and crushed stone, paving and grading materials, waste transfer, storage and sorting, wheat milling, and other raw/loose material operations. Additional sources of fugitive dust include construction, demolition, and environmental cleanup activities, such as those ongoing at the former AB&I property. Some fugitive dust can also have hazardous and toxic components, such as asbestos and toxic metals like lead.

Strategy 1. Reduce Exposure from Fugitive Dust, Material Handling, and Construction Activities

Strategy Objective: Exposure from sources of fugitive dust (dust in the air from open areas, uncovered materials, and construction), including from materials handling, recycling, disposal, and construction activities is minimized through the adoption of rule amendments and incentives, and dust complaints are reduced.

Strategy Metrics:

- Draft rule amendments published (yes/no)
- Opportunities to provide input on future rule amendments
- Rule amendments to address fugitive dust adopted (yes/no)

#	Actions
C&I 1.1	**Rule Amendments to Address Fugitive Dust:** The Air District will develop and propose rule amendments, as recommended in the Air District's Fugitive Dust White Paper.[206] This could include amendments to Regulation 6 - Rule 1 (General Requirements) and Rule 6 (Prohibition of Trackout), and should help address locations with the potential to generate fugitive dust, including construction sites, earth-moving facilities, and bulk material handling sites. The Air District will seek and consider community input during the rule development process. The rule amendments should aim to: ● Increase accountability through stronger rule requirements for facilities, ● Implement best management practices (BMPs) to control dust at facilities, ● Improve enforceability of the rules,

[206] Tang, Mark and Lara, Eric. "Fugitive Dust White Paper: Regulatory analysis and recommendations to further address fugitive dust and particulate matter emissions." Bay Area Air Quality Management District, March 2023. https://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-6-particulate-matter---common-definitions-and-test-methods/2023-amendment/documents/20230517_dustwhitepaper_r0601and0606-pdf.pdf

#	Actions
	● Add fenceline air monitoring requirements for some facilities, and ● Reduce fugitive dust emissions and exposure. Community engagement efforts should aim to educate the CSC and broader community on the rule development process, as well as seek feedback on the specific rule amendments being developed to reduce dust/particulate matter exposure. Engagement could be accomplished, for example, via workshops and/or meetings that are scheduled to provide appropriate lead time for the community to digest presented content and develop comments before the formal public comment period ends. Communities for a Better Environment (CBE) could serve as a community resource to help develop comments. **Lead**: Air District **Timeframe:** Early Action (Immediate)
C&I 1.2	**Advocate for and/or Implement Local Best Practices at Facilities with the Potential to Produce Fugitive Dust:** This action aims to ensure the application of Best Management Practices (BMPs) for fugitive dust at key East Oakland facilities including but not limited to Argent Materials, Davis Street Transfer Station, Gallagher & Burk, Sterling Environmental, and the former AB&I site. ● Air District maintains its list of BMPs on their CEQA webpage so that BMPs are easily accessible and available to local government agencies as well as project implementers. ● The recommended list of BMPs is updated as applicable, including adding any best practices that may result from the Air District's Fugitive Dust White Paper and subsequent rule development activity (i.e., implementation of C&I 1.1). ● Whenever the BMP list is updated, Air District will conduct outreach and education to City of Oakland Planning & Building Department staff with respect to conditions of approval for fugitive dust, emphasizing the importance of good site management (frequent waterings, etc.) and vigilant enforcement of permit conditions as some of the most powerful tools to address dust. **Lead**: Air District **Timeframe:** Early Action (Immediate)
C&I 1.3	**Review and Comment on California Environmental Quality Act (CEQA) Analysis of Proposed Projects:** The Air District reviews and comments on California Environmental Quality Act (CEQA) analysis of proposed projects that may have potentially significant air quality, climate, environmental justice, and/or cumulative impacts in East Oakland. The Air District also encourages CSC/community/local organizations to alert Air District to projects potentially having a significant impact within the purview of the Air District. The Air District reviews CEQA documents and comments on issues wherein the Air District holds expertise, and in alignment with the Air District's CEQA Thresholds and Guidelines including: air quality emissions, health risk assessment, health impacts, greenhouse gas (GHG) emissions, environmental justice, civil rights, transparency and

#	Actions
	adequacy of data and methodology, consistency with Air District policy and plans, sufficiency of relevant mitigation measures or alternatives. In particular, CEQA Guidelines Chapter 2, Best Practices for Centering Environmental Justice, Health and Equity will help with centering environmental justice and equity in project review. When reviewing projects, the Air District will aim to meet with CSC, Communities for a Better Environment (CBE), and/or other interested communities and organizations to discuss key concerns. The Air District will continue to alert relevant partner agencies of proposed projects of concern in a timely manner. **Lead**: Air District **Timeframe:** Early Action (Immediate)

Community Concern Statement 2: Toxic Emissions and Hazardous Materials

Facilities of concern: Crematoriums (Evergreen and East Bay), Cultured Marble Products, PCC Structurals.

Multiple large industrial and manufacturing facilities are a concern because of their Toxic Air Contaminant (TAC) emissions. Examples of toxic emissions include mercury, nickel, arsenic, hydrochloric acid, and styrene. These emissions may result in cancer, chronic health impacts, and other health hazards. As of May 2025, several facilities in East Oakland are required to be evaluated for existing health risk impacts from air toxic emissions pursuant to Air District Rule 11-18.

Strategy 2. Improve Implementation of Rule 11-18 and the Facility Risk Reduction Program While Engaging Community

Strategy Objective: Health risk from Toxic Air Contaminants (TACs) from existing facilities is reduced to below the cancer risk, chronic hazard, and acute hazard thresholds set in Rule 11-18.

Strategy Metrics:

- Name and number of applicable facilities for which Rule 11-18 implementation is initiated
- Draft Rule 11-18 amendments published (yes/no)
- Rule 11-18 amendments adopted (yes/no)
- Facility Risk Reduction Program website improvements completed (yes/no)

Note for details on Rule 11-18, see the Air District's webpage: https://www.baaqmd.gov/en/rules-and-compliance/rules/regulation-11-rule-18-reduction-of-risk-from-air-toxic-emissions-at-existing-facilities. [207]

[207] Bay Area Air District. "Regulation 11 Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities – 2025 Amendments (Draft)." 2025. https://www.baaqmd.gov/en/rules-and-compliance/rules/regulation-11-rule-18-reduction-of-risk-from-air-toxic-emissions-at-existing-facilities.

#	Actions
C&I 2.1	**Implement Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities:** The purpose of Rule 11-18 is to focus on existing facilities causing the highest toxic air contaminant (TAC) health impacts and require these facilities to reduce those impacts if shown to exceed the health protective thresholds in the regulation. The Air District will prioritize implementing Rule 11-18 at applicable facilities located in East Oakland, and engage the community throughout the process. This includes completing and publishing Health Risk Assessments and, when applicable, Risk Reduction Plans. The Air District will work with Communities for a Better Environment (CBE) and/or other community-based organizations to conduct outreach to notify and inform interested community members of the Health Risk Assessments and Risk Reduction Plans, if applicable using clear, non-technical, and otherwise accessible language in an effort to promote informed responses, particularly from community members who may be most impacted by the results. CBE will support community members in drafting public comment letters. The current list of applicable facilities in the East Oakland Plan area (as of April 2025) that trigger implementation of Rule 11-18 include Evergreen Cemetery (crematory), East Bay Crematory, and East Bay Municipal Utility District (EBMUD) Upper San Leandro Waste Treatment Plant. The list is evaluated each year based on the annual reported throughput and emissions. During this review, facilities may come off the list and/or additional facilities may be added. The list of facilities that trigger 11-18 is available on the website at https://www.baaqmd.gov/en/community-health/facility-risk-reduction-program/facility-risk-reduction-list **Lead**: Air District **Timeframe:** Long Term (4+ years)
C&I 2.2	**Rule Amendments to Improve Implementation of Rule 11-18 and the Facility Risk Reduction Program:** The Air District is developing amendments to Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities. The amendments are intended to streamline and expedite the implementation of Rule 11-18, including those concepts evaluated in the Rule 11-18 Amendments Concept Paper which proposed measures to accelerate health risk reductions and improve program efficiency. The Concept Paper was the initial step in the process of developing amendments to Rule 11-18 and can be found on the Rule 11-18 amendments webpage.[208] The development of Rule 11-18 amendments will occur in two phases: (1) the first phase will focus on efficiency and accelerating the timeframe to get to the Risk Reduction Plan phase faster, and (2) the second phase will focus on expanding the rule to make it more health protective. Additionally, the Air District may evaluate whether to require affected facilities to prepare and submit health risk assessments to the Air District for review. This includes considering improvements to ensure adherence to established and standardized guidelines. The Air District will engage with and seek feedback from the community during the rule development process using CSC meetings, public workshops, public comment periods

[208] Bay Area Air District, "Regulation 11 Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities - 2025 Amendments (Draft) ", 2025. https://www.baaqmd.gov/en/rules-and-compliance/rules/regulation-11-rule-18-reduction-of-risk-from-air-toxic-emissions-at-existing-facilities?rule_version=2024%20Amendments.

#	Actions
	and individual meetings as requested. Moreover, Communities for a Better Environment (CBE) will work with the CSC and the community to assist in reviewing the regulatory proposal and providing public comment during the rule development process (e.g., draft amendments and reports). **Lead**: Air District **Timeframe:** Early Action (Immediate)
C&I 2.3	**Webpage Improvements for Rule 11-18 Facilities**: Air District staff update the Rule 11-18 Risk Reduction Facilities webpage [209] to include Phase II facilities in a searchable table to improve accessibility, beginning with an update to include facilities located in AB617 communities and other priority communities (e.g., overburdened communities experiencing cumulative health impacts from facility operations). The current list of Phase II facilities is included in a PDF on the website at https://www.baaqmd.gov/community-health/facility-risk-reduction-program/facility-risk-reduction-list. [210] A map of permitted facilities and their prioritization scores is available on the website at https://www.baaqmd.gov/en/about-air-quality/emission-inventory/toxic-air-contaminants/toxic-mapping-tool. [211] **Lead**: Air District **Timeframe**: Short Term (Less than 2 years)

Strategy 3. Improve Regulatory Oversight, especially Pertaining to Permitting Processes, in order to Better Protect Communities that are already Heavily Impacted by Pollution

Strategy Objective: Air District permitting process for new and expanded facilities is timely, transparent, and accessible, and incorporates environmental justice principles to ensure stronger protections and health-protective measures for community members.

Strategy Metrics:

- Number of touch points (meetings, emails, etc.) with Air District to inform and engage the CSC members to discuss improvements to public outreach on permitting accessibility and transparency
- Launch an interactive web portal with facility related information including permitting, emissions and compliance information. (yes/no)
- Permit rule amendments initiated (yes/no)

[209] Bay Area Air District. "Rule 11-18 Risk Reduction Facilities." 2025. https://www.baaqmd.gov/community-health/facility-risk-reduction-program/facility-risk-reduction-list.
[210] Ibid.
[211] Bay Area Air District. "Facility Toxic Emissions and Prioritization Tool." 2025. https://www.baaqmd.gov/en/about-air-quality/emission-inventory/toxic-air-contaminants/toxic-mapping-tool.

#	Actions
C&I 3.1	**Improve Permitting Processes to be More Efficient and Timely:** The Air District will allocate resources and update resource management to ensure permits can be reviewed efficiently and in a timely manner to better align with timeframes outlined in our regulations. This includes better tracking of permit applications and addressing bottlenecks in the permitting process. This could be accomplished by improving internal coordination, identifying and utilizing enhanced resource management systems and tools, and/or establishing dedicated project teams for complex permits. At the same time, efforts will be made to ensure that improved timeframes does not sacrifice transparency, public participation, nor the proper application of permit requirements. This Action is to be completed in close alignment with the Air District Strategic Plan Strategy 4.1 “Timely Permits.” Permit applications for facilities located in overburdened communities, with a history of community concern, and/or with a history of notices of violation will be prioritized for timely review. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
C&I 3.2	**Provide Clear and Accessible Air District Permitting Information:** The Air District will improve the transparency of the permitting process by providing clearer, more accessible information to both applicants and the public. This may include offering user-friendly reports, enhancing web-based tools for permit applications and online tracking, using clear, accessible language in public notifications, and ensuring easy access to data on permitted sources, permit activity, and related emissions. The Air District will simplify communications about permits and the permitting process, using clear, less technical language to better engage communities and applicants. Action aligns with the Air District Strategic Plan Strategy 4.2 “Transparent Permit Process.” The Air District will improve public outreach through methods which may include working with the CSC to identify low-cost distribution channels such as email and social media. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
C&I 3.3	**Develop a Tool for Accountability and Transparency:** The Air District will develop a public-facing tool that leverages a map platform to consolidate facility permitting, enforcement and emissions information in one place. The tool may include permits, permit status, public notices, inspection frequency, violations, and emissions inventory data. The tool is intended to promote transparency, accountability and meaningful community participation. There is an existing facilities map on the Air District’s website, available at: https://www.baaqmd.gov/en/about-air-quality/interactive-data-maps **Timeframe**: Medium Term (2-3 years)

#	Actions
C&I 3.4	**Evaluate Rule Amendment Opportunities to Strengthen and Improve Permitting Rules:** The Air District envisions two phases of permit rulemaking. The first phase would address necessary clarifications and updates to promote timely and consistent permit review. The second phase would include substantive changes in how we evaluate permits and could include: ● Rule 2-1: Evaluate possible refinements of exemptions ● Rule 2-1: Assess potential adjustments to overburdened community (OBC) maps, including consideration of expanded buffer zones ● Rule 2-2: Evaluate potential updates to New Source Review requirements in light of $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) revisions ● Rule 2-5: Examine opportunities to update Table 2-5-1 Toxic Air Contaminant (TAC) Trigger Levels, which contains the list of TACs and health effects values [212] ○ Add newer California Office of Environmental Health Hazard (OEHHA) Assessment compounds and values and become consistent with the state laws ● When the rule development process is started, engage CSC and community to identify rule concepts **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
C&I 3.5	**Reduce Industrial Pollution on Unhealthy Air Quality Days**: The Air District will examine possible regulatory pathways in a white paper to curtail commercial & industrial pollution during unhealthy air quality days and assess potential rule and policy updates to reduce emissions and protect community health. The Air District will provide a 30–45-day public comment period on the whitepaper for Bay Area residents. Analysis should include a review of air quality data indicating unhealthy air quality days in East Oakland in recent years (Federal Air Quality Index "unhealthy for sensitive receptors" and more severe) and correlated health impacts in the context of East Oakland's high rates of respiratory disease and other environmental health indicators. The Air District will assess rule and policy strategies including, but not limited to, updating Regulation 4 Air Pollution Episode Plan, updating source-specific rules to curtail the most health-impacting industries, and targeted inspection to ensure commercial & industrial emissions do not increase during air quality events. **Lead**: Air District **Timeframe**: Long Term (4+ years)

[212] "Table 2-5-1 Toxic Air Contaminant Trigger Levels." Bay Area Air District. https://www.baaqmd.gov/~/media/Files/Engineering/Air%20Toxics%20Programs/table_2-5-1.ashx

Community Concern Statement 3: Commercial and Smaller Industrial Facilities

Facilities of concern: Auto body shops, gas-dispensing facilities (GDFs), cannabis production facilities, back-up (diesel) generators (BUGs), restaurants, food trucks, street food vendors, and unlicensed food production.

Commercial and smaller industrial facilities are a concern because, while individual sources and businesses within this category may be small, their collective impacts can present significant issues for the community, especially because these operations are located in or right next to residential neighborhoods. Restaurants, for example, can contribute to localized $PM_{2.5}$ and air toxics exposure. Auto body shops, gas-dispensing facilities (GDFs), cannabis production facilities, back-up (diesel) generators (BUGS), and smaller food production facilities and operations are additional sources, often similarly small in size and interspersed throughout neighborhoods; all of these have the potential to adversely impact nearby residences.

Source evaluation (e.g., white paper) for BUGs completed (yes/no)

Strategy 4. Reduce Emissions from Backup Diesel Generators (BUGs)

Strategy Objective: Local emissions from backup generators are evaluated and reductions are achieved via mechanisms such as new or modified rules and permitting requirements to regulate usage, especially near sensitive areas such as schools.

Strategy Metrics:

- Source evaluation (e.g., white paper) for BUGs completed (yes/no)

#	Actions
C&I 4.1	**Evaluate Opportunities to Reduce Localized Emissions and Address Impacts from BUGs:** Conduct a rule development source evaluation for Backup Diesel Generators (BUGs) through a white paper or rulemaking that reviews BUGs, BUG usage, and impacts, including scrutinizing the valid use of BUGs during emergencies (particularly those near sensitive areas like schools) and reviewing alternative technology options. The evaluation will also clarify what qualifies as an emergency under existing Rule 9-8 and how emergency use is tracked and verified through inspections and permit conditions. The analysis should also include a review of potential amendments to permitting rules for new or modified BUGs and amendments and/or new rules for existing BUGs. Additionally, the analysis should include a review of facilities with larger volumes of BUGs, such as the Oakland San Francisco Bay Airport. Evaluate further guidelines, compliance actions, and incentives that could be used to reduce impacts from backup generators. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)

Strategy 5. Reduce Exposures from Restaurants and Other Food Preparation Businesses Through More Sustainable Operations and Technologies

Strategy Objective: Restaurants and other food preparation operations operate in a sustainable manner and a framework is established that protects the health of workers, patrons, and neighbors by reducing localized Particulate Matter (PM) and toxics while still supporting local, small businesses.

Strategy Metrics:

- California Air Resources Board (CARB) commercial cooking technology assessment released (yes/no)
- Restaurants white paper produced (yes/no)
- Restaurants white paper recommendations initiated (yes/no)
- CSC discusses and submits comments/recommendations to the Oakland General Plan team about air quality and restaurant operations (yes/no)

#	Actions
C&I 5.1	**Rules Evaluation and Technology Assessments:** The California Air Resources Board (CARB) will conduct a technology assessment of commercial cooking rules and control strategies and propose incentives and/or a Suggested Control Measure for commercial cooking. Air District will collaborate with Communities for a Better Environment (CBE) to share CARB's commercial cooking technology assessment with interested CSC and community members. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)
C&I 5.2	**Restaurants White Paper:** Air District will develop a restaurants white paper that may integrate the California Air Resources Board (CARB) commercial cooking technology assessment, potential focus areas include: ● Examining air pollution sources from food preparation in East Oakland, including restaurants, food trucks, and street food vendors; ● Assessing strategies to enhance worker safety related to indoor air pollution exposure, including education and potential improvements in ventilation, filtration system maintenance, electrification of cooking equipment, and non-toxic cleaning methods; ● Evaluate further guidelines, compliance actions, and incentives that could be used to reduce impacts from restaurants, food trucks, and street vendors. **Lead:** Air District **Timeframe**: Long Term (4+ years)

#	Actions
C&I 5.3	**Food Preparation General Plan Policies and Incentives:** City of Oakland collaborates with the CSC to ensure new General Plan policies and zoning amendments about restaurants, food trucks, and street food vendors reflect the latest research and technology for reduced indoor and outdoor air pollution from commercial food preparation. These may include policies or zoning amendments related to ventilation and filtration systems upgrades and maintenance, electrification of cooking equipment, healthier cleaning products, location and design of businesses, among other characteristics. Policies should be sensitive to the limited resources of small businesses and provide incentives and support where possible. The City should educate restaurants in East Oakland's AB617 plan area about the City's restaurant electrification resources list.[213] See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe**: Medium Term (2-3 years)

Strategy 6. Reduce Emissions from Automobile-Related Operations (Auto Body Shops, Mechanics, and Gas Dispensing Facilities)

Strategy Objective: Air emissions from automobile-related operations, including volatile organic compounds (VOCs) such as toluene, benzene and formaldehyde, metals such as lead, and particulate matter (PM), are identified and reduced. A priority is given to areas of East Oakland where autobody shops, mechanics, and gas-dispensing facilities are most dense and in close proximity to sensitive receptors such as schools and daycares.

Strategy Metrics:

- Auto body white paper produced (yes/no)
- Unpermitted auto body list created by Communities for a Better Environment (CBE), vetted/prioritized by CSC, and submitted to Air District
- CSC discusses and submits comments/recommendations to the Oakland General Plan team about air quality and automobile-related operations (yes/no)

#	Actions
C&I 6.1	**Auto Body White Paper:** Air District develops an auto body white paper that may include an assessment of East Oakland sources. The white paper should evaluate stricter emission controls, best practices for auto body shops to reduce toxic fumes and airborne particles, and potential incentives to support auto body retrofits and technology upgrades

[213] City of Oakland. "Building Electrification for Business Owners and Commercial Property." 2025. https://www.oaklandca.gov/Government/Oakland-Improvement-Projects/Building-Electrification/Building-Electrification-for-Business-Owners-and-Commercial-Property.

#	Actions
	to reduce air quality impacts. The white paper could also consider the impact of smaller auto body businesses that may be exempt from permit requirements, as well as temporary auto body operations, and explore potential ways to address any related concerns. **Lead:** Air District **Timeframe**: Long Term (4+ years)
C&I 6.2	**Gather Community Knowledge of Unpermitted Auto Body Facilities:** Communities for a Better Environment (CBE) will work with community members and gather community knowledge to create a list or map of unpermitted auto body facilities in support of promoting regulatory compliance, including proper permitting, as described in **C&I 6.3**. Prioritize sites before sharing list with the Air District and City of Oakland indicating sites that may have safety/access issues. **Lead:** Communities for a Better Environment (CBE) **Timeframe**: Medium Term (2-3 years)
C&I 6.3	**Address Unpermitted Auto Body Facilities:** The Air District will work to verify compliance of unpermitted auto body facilities, including ensuring proper permitting. This work will be informed by community-gathered information with support from Communities for a Better Environment (CBE) as described in **C&I 6.2**. **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)
C&I 6.4	**Auto Body General Plan Policies:** City of Oakland collaborates with the Air District and the CSC to ensure that new General Plan policies and zoning amendments about auto body shops, mechanics, tow yards, and gas dispensing facilities reflect the latest research and technology for reduced indoor and outdoor air pollution from auto-related businesses and activities. Limit auto-related businesses near residential and other sensitive uses. A green auto body operations checklist example [214] provides some ideas from an effort in Oregon. **Lead:** City of Oakland **Timeframe**: Short Term (Less than 2 years)

[214] Eco-Logical Business Program. "Automotive Services Application." https://www.ecobiz.org/_files/ugd/fea5d8_e29b9f5f305044ceb7164816c382b110.pdf.

Community Concern Statement 4: Accountability of Polluting Industries and Businesses

The lack of accountability for polluting industries and businesses in East Oakland is the concern because this exposes residents to a disproportionate amount of harmful pollutants and serious health risks. This issue is exacerbated by illegal activities that cause pollution. Rules are complicated, bureaucratic and difficult for community members to wade through which limits the community's ability to hold polluters accountable and stop harmful practices.

Strategy 7. Enhance Investigation and Enforcement Protocols

Strategy Objective: The Air District enhances enforcement that aims to hold top polluting industries accountable.

Strategy Metrics:

- Number of touch points (meetings, emails, etc.) with Air District to inform and engage CSC members on the new Targeted Inspection Program
- Number of Notice of Violations (NOVs) issued and resolved
- Number of new permitted operations ("start-up inspections") at facilities that have been inspected
- Website improvements made (yes/no)

#	Actions
C&I 7.1	**Targeted Inspections to Address Repeat Violators:** The Air District is developing a new Targeted Inspection Program that enhances enforcement in overburdened communities (OBC), such as East Oakland. The program targets inspection resources to address community concerns by using comprehensive data analysis to prioritize inspections. The program will identify local compliance issues, pinpoint patterns of non-compliance and repeat violations, and establish inspection timeframes at priority facilities. The program will also seek new strategies with the Engineering Division to address compliance concerns at facilities operating with pending permit applications and increase opportunities to collaborate with regulatory agencies and community to enhance coordination, increase inspection transparency, spotlight compliance concerns, and ensure that inspection resources are directed strategically. The Air District is piloting new strategies in the Bayview Hunters Point (BVHP) community and will report back program findings and outcomes to the community. Program actions are detailed in the Air District Strategic Plan Strategy 4.5 “Improve Compliance Investigations.” **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)
C&I 7.2	**Improved Website Information and Accessibility:** Promote industry compliance by improving the compliance assistance program, which functions to assist facilities in understanding and complying with applicable air quality regulations. This will include use of better information technology (IT) tools (e.g., website tools) and access to compliance resources, as noted in the Air District Strategic Plan Strategy 4.5 “Improve Compliance Investigations.”

	Lead: Air District **Timeframe**: Medium Term (2-3 years)
C&I 7.3	**Inspection of Facilities with New Permits:** The Air District will inspect facilities to verify compliance with permit conditions and Air District, State and Federal rules for all newly permitted operations to ensure early compliance. **Lead**: Air District **Timeframe**: Short Term (Less than 2 years)
C&I 7.4	**Regular Enforcement Updates:** Provide annual updates to the CSC and the general public on facility inspections and enforcement activities initiated by the Targeted Inspection Program and identified by the community. **Lead**: Air District **Timeframe**: Short Term (Less than 2 years)

Strategy 8. Improve Accessibility to and Effectiveness of the Air Quality Complaint Program

Strategy Objective: The Air District Air Quality Complaint Program is more-widely understood and effective through the development of an expanded public information campaign and improved public engagement activities. Making program improvements and bridging gaps will help build community trust and confidence, and encourage greater participation in the program.

Strategy Metrics:

- Publicly accessible air quality complaint tool created (yes/no)
- Number of touch points (meetings, emails, etc.) with Air District to inform and engage CSC members on the air quality complaint tool

#	Actions
C&I 8.1	**Promote the Complaint Program Through a Public Information Campaign:** The Air District initiates a public information outreach campaign including press release, digital advertising and social media campaign to promote the Air Quality Complaint Program in overburdened communities (OBC). **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)

#	Actions
C&I 8.2	**Develop a Publicly Accessible Complaint Data Tool:** Develop a complaint data tool on the Air District's website for the public to easily search air quality complaints reported in their communities. The tool will make complaint information available in all nine Bay Area counties, while maintaining the confidentiality of complainants. The complaint tool will be developed and shared with the CSC for input and publicized through the Air District's social media posts, etc. This aligns with the Air District Strategic Plan Strategy 2.5 "Air Quality Complaints." **Lead:** Air District **Timeframe**: Medium Term (2-3 years)
C&I 8.3	**Develop an Air Pollution Log as a Tool to Collect Community Observations**: Develop a user-friendly Air Pollution Log for communities to submit observations of air pollution issues through the Air District website. The information will allow the Air District to identify potential patterns of non-compliance that would initiate further investigation and follow-up. **Lead:** Air District **Timeframe**: Medium Term (2-3 years)
C&I 8.4	**Explore Whistleblower Tip Line for Workers in Industrial Businesses:** The Air District will explore creating a whistleblower tip line for workers to anonymously report violations and concerning activities that may have an impact on air quality and public health. A plan will be developed to promote the tip line and shared with communities. This aligns with the Air District Strategic Plan Strategy 2.2 "Collect Community Data." **Lead:** Air District **Timeframe**: Medium Term (2-3 years)
C&I 8.5	**Invite Community Perspectives to Improve the Complaint Program:** Establish forums at CSC meetings where the Air District invites community members to share their ideas on how to improve the complaint program. **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)

Strategy 9. Improve Emissions Estimates and Emissions Monitoring Requirements

Strategy Objective: Improve estimates of emissions and the demonstration of compliance with emissions limits for key sources and facilities.

Strategy Metrics:

- Annual update provided on source testing conducted by the Air District (yes/no)
- List provided of any rules that included strengthened emissions monitoring, recordkeeping, or reporting over the past year (yes/no)

#	Actions
C&I 9.1	**Update Source Test Prioritization List for Improved Emissions Characterization:** The Air District will expand the Targeted Inspection Program (7.1), which includes feedback from the East Oakland CSC, to update the list of facilities prioritized for Air District-conducted source tests and review of facility-conducted source tests. In addition to compliance history of facilities and community input, we will also incorporate the level of uncertainty in emissions estimates. This list will identify facility processes and emission sources where current monitoring methods may not fully capture actual emissions profiles. The Air District will use this source test data collected from facilities on the prioritization list to reduce uncertainties in emissions estimates as resources allow. In addition to or in lieu of source testing, the Air District could conduct air and emissions monitoring projects to assess under-characterized emissions and check for compliance issues. The Air District could also reevaluate emissions estimate methods and existing relevant emissions information. Results from the studies could inform revisions to future emissions inventories and modeling, new or revised rules, or new or modified permits. This work is aligned with implementation of the Air District Strategic Plan Strategy 4.1 “Timely Permits” and Strategy 4.5 “Improve Compliance Investigations”. Progress reports will be available to the public on the Strategic Plan dashboard. **Lead**: Air District **Timeframe**: Short Term (Less than 2 years)
C&I 9.2	**Improve Facility Emissions Monitoring, Recordkeeping, and Reporting:** As Air District regulations are developed or revised, consider strengthening requirements for facilities to measure emissions or related operational source parameters, and to record and report emissions-related parameters. These requirements could include continuous emissions monitoring systems (CEMS), source tests, enhanced parametric monitoring, mass balance calculations, standardized data reporting, quality management systems to assess and document data uncertainty, or periodic evaluation studies. This work is aligned with implementation of the Air District Strategic Plan under Strategy 1.2 “Stronger Regulations”, Strategy 4.3 “Consistent Permits”, and Strategy 4.5 “Improve Compliance Investigations”. Progress reports will be available to the public on the Strategic Plan dashboard. **Lead**: Air District **Timeframe**: Long Term (4+ years)

Strategy 10. Empower Community Members with the Knowledge and Tools Needed to Promote Greater Environmental Accountability from East Oakland Polluters and Agencies

Strategy Objective: Community members are equipped with expanded knowledge and skills to actively engage in processes to improve air quality and hold industry and agencies accountable, fostering a culture of informed, impactful advocacy for environmental justice and community health to enhance community ownership of the Plan implementation.

Strategy Metrics:

- Number of air quality-related educational materials developed
- Number of educational events (meetings, trainings, etc.) held
- Number of air quality-related creative arts collaborations

#	Actions
C&I 10.1	**Informed Advocacy Around Air Quality Information.** Communities for a Better Environment (CBE) develops a curriculum and educational materials about air quality-related health and environmental impacts, science, regulations, and policy processes that aim to expand community capacity and skills to: ● Critically review and assess air quality claims, information, and data from and about East Oakland polluters; ● Understand regulatory and policy processes related to these polluters and advocate for transparency within the process; and ● Learn about the most effective pathways for posing questions, raising concerns, and promptly obtaining answers. Actions may include hosting community meetings and trainings, Environmental Justice tours, virtual engagement (post materials on website and on social media), at libraries, and other community spaces and institutions, collaborating with youth and family-oriented community-based organizations (CBOs) to support integrating information into parent groups and school curriculums, and fostering awareness through the arts and creative expression. **PH 6.1** "Improve Air Pollution Awareness" addresses improved Air District community engagement efforts. **Lead:** Communities for a Better Environment (CBE) **Timeframe**: Short Term (Less than 2 years)
C&I 10.2	**Creative Arts and Air Quality:** Communities for a Better Environment (CBE) explores funding and partnership opportunities with local artists and cultural arts groups to enhance outreach conducted under **C&I 10.1** through efforts such as community arts activities, educational performances, art for outreach materials, murals for community education, among other creative endeavors. **Lead:** Communities for a Better Environment (CBE) **Timeframe**: Medium Term (2-3 years)

Illegal Dumping, Trash, and Odors

Illegal dumping refers to the disposal of trash without legal permission or disposing to land that does not accept waste. This practice can impact public health by contaminating soil, water, and air, providing a habitat for rodents and insects which often carry pathogens and disease, and causing physical safety risks (toxic substances, sharp objects, etc.). Illegal dumping is linked to impacts such as neighborhood disinvestment, negative effects on property value, an increase in violent crime, and costs to taxpayer money for clean-up and abatement. [215]

East Oakland residents are severely impacted by illegal dumping. The Community Mapping project resulted in a significant volume of comments (235 out of 488) citing illegal dumping, uplifting the issue to a focus area. Residents have brought up acute mental and physical health impacts related to the presence of trash in their neighborhoods, including depression, lack of safety, reduced quality of life, and exposure to emissions and odors from trash burning. Burning waste such as metals, plastics, fuels, foams, fabrics, and other refuse releases harmful pollutants that may expose nearby communities to $PM_{2.5}$ (particulate matter with diameters that are generally 2.5 micrometers and smaller) and Toxic Air Contaminants (TACs) including particulate metals, volatile organic compounds (VOCs) such as benzene, polycyclic aromatic hydrocarbons (PAHs), and dioxins (Chapter 5). Additionally, dumped materials often contain or generate mold spores that can become airborne. Health impacts from these types of pollutants relate to increased asthma triggers, respiratory inflammation and exacerbate cumulative health impacts. However, the highly localized and ephemeral nature of these emissions make them challenging to characterize with tools such as air quality modeling and monitoring.

Given the pressing nature of this concern and the lack of Air District authority or expertise over illegal dumping, Community Steering Committee (CSC) members and the community came together to devise creative, community-driven solutions to address illegal dumping in East Oakland through collective action. The CSC engaged in a special meeting focused on illegal dumping on February 27, 2025, with multiple agencies at the table to brainstorm actions and held discussions at monthly CSC meetings. As a result of this process, the actions in this focus area aim to uplift the work of the Oakland Public Works Department (OPW) to strengthen enforcement. The actions also include improving educational outreach, finding funding for local clean-up, and tracking relevant EJ element policies by working closely with the City of Oakland.

Key collaborators include Oakland Public Works Department (OPW) as the responsible authority over illegal dumping, and the CSC and their valuable networks within the community.

Actions from this focus area may be referenced with the abbreviation ID, followed by the strategy number and action number, for example, **ID 1.1**.

[215] Marc A Zimmerman and Roshanak Mehdipanah, “Preventing Illegal Dumping to Address Community Violence,” accessed May 19, 2025, https://reporter.nih.gov/search/34EDAMTwq0WpTTi-UxMBwg/project-details/10593246.

Community Concern Statement: Unsanitary Conditions, Inequitable Access to Waste Disposal Services, and Lack of Enforcement

Illegal dumping is a concern because it creates unsanitary conditions, promotes mold, and releases toxic compounds from burning of trash and cars. This impacts mental, physical, and financial health due to hospital costs, lost workdays, depression, lowering property values and other effects, compounded by lack of studies on public health impacts of unaccounted pollutants.

Lack of enforcement measures and resources for cleaning up illegal dumping is a concern, particularly in vacant lot dumping hotspots, because there is insufficient allocation of resources and consequences to prevent and prohibit illegal dumping.

Inequitable access to waste disposal services and high fees associated with bulky item disposal is a concern because it leads to irresponsible waste disposal practices. This issue is particularly significant for tenants who rely on their landlords' waste management systems.

Strategy 1. Collective Action to Tackle Illegal Dumping

Strategy Objective: East Oakland's collective action helps transform the area into a well-maintained collection of neighborhoods where residents are not subjected to piles of unsightly, hazardous and foul-smelling debris and instead feel uplifted by their clean environment.

Strategy Metrics:

- Advocacy campaign for better waste hauling services (yes/no)
- Were illegal dumping prevention outreach materials developed and disseminated? (yes/no)

#	Actions
ID 1.1	**Improve Waste Hauling Services:** With the support of the CSC, Oakland City Council District 7 Councilmember creates a campaign to support better waste hauling services (including but not limited to more public trash cans, more bulky waste pickups, and more opportunities for free bulky waste pickups) for East Oakland. **Lead:** Oakland City Council District 7 Councilmember **Timeframe**: Medium Term (2-3 years)
ID 1.2	**Illegal Dumping Prevention Community Outreach:** Oakland Public Works Department (OPW) works with the CSC to increase awareness about illegal dumping prevention. Oakland Public Works Department (OPW) consults with the CSC on effective outreach and education in East Oakland. The materials focus on the CSC-identified outcomes to: 1) boost collective responsibility for reporting illegal dumping and publicize success; 2) promote recycling initiatives; 3) encourage a zero-waste mindset and support reusing materials whenever possible; and 4) boost awareness about

#	Actions
	Oakland Public Works Department's (OPW) licensed haulers and list of permitted construction and demolition haulers. **Lead:** Oakland Public Works Department (OPW) **Timeframe**: Short Term (Less than 2 years)
ID 1.3	**CSC Dissemination of Illegal Dumping Prevention Materials:** The CSC works to disseminate illegal dumping education and outreach materials generated through **ID 1.2** to East Oakland community members. **Lead:** Community Steering Committee (CSC) **Timeframe**: Short Term (Less than 2 years)
ID 1.4	**Driving Local Clean Up and Beautification Activities:** The CSC actively drives clean up and beautification in the East Oakland Plan area by informing local non-profit organizations and networking partners of locally available grants available to fund projects benefiting East Oakland. **Lead:** Community Steering Committee (CSC) **Timeframe**: Medium Term (2-3 years)
ID 1.5	**Proactive Policy Tracking by the CSC Related to Illegal Dumping:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives: ● EJ Element (policies related to Blight Control and Prevention; Proactive Illegal Dumping Cleanup; Illegal Dumping Enforcement; Community Education on Illegal Dumping) See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland **Timeframe**: Short Term (Less than 2 years)

Public Health and Community Wellness

Public health focuses on protecting and improving the health of people and their communities.[216] It considers recurring health patterns across communities and the structural roots of health disparities. The issues affecting the health of East Oakland residents often occur at a community scale and are linked to the cumulative impacts and disproportionate pollution burdens that the community experiences (See Chapter 4). According to the Alameda County Public Health Department (ACPHD), life expectancy at birth can vary by over 10 years between

[216] Centers for Disease Control and Prevention (CDC) Foundation, https://www.cdcfoundation.org/what-public-health

certain East Oakland and Oakland Hills census tracts.[217] Rates of asthma-related emergency care visits and hospitalizations among children under the age of 5 in East Oakland are almost twice those in Alameda County. Similarly, East Oakland also experiences higher premature birth rates, and rates of mortality for cardiovascular disease, lung cancer, and chronic obstructive pulmonary disease (COPD) than Alameda County.

Community members have frequently spoken about their experiences with respiratory illnesses, cardiovascular diseases, cancer, and other health issues among their families and community. They have also raised the extreme stress and mental health impacts of managing health conditions, like lost income and school days, and increased financial insecurity. Access to healthcare and community resources remains an issue in East Oakland, with particular concern about resource availability during pollution events such as wildfires.

Residents want to address the structural roots of their health issues as well as the lack of physical and social infrastructure available to them, caused in part by a history of systemic disinvestment in East Oakland. They also want pollution burdens and health impacts to be considered cumulatively, considering the multiple environmental and economic stressors they face daily. Though the Plan as a whole aims to reduce health disparities in the long term, this focus area houses targeted actions towards improving community health. The actions use varied mechanisms of inter-agency collaboration, community-directed funds, local air monitoring, community resilience spaces, data accessibility, and community empowerment to begin addressing the community's concerns. Key collaborators include the Alameda County Public Health Department (ACPHD) given their charge of protecting public health in the county, and the City of Oakland due to aligned efforts in the Oakland General Plan.

Actions from this focus area may be referenced with the abbreviation PH, followed by strategy number and action number, for example, **PH 1.1**.

Community Concern Statement 1: Contributions of Outdoor Air Pollution to Cumulative Health Impacts

Cumulative health impacts from outdoor air pollution and other stressors are a concern because low-income Black, Indigenous, and People of Color (BIPOC) communities experience disproportionately higher rates of respiratory illnesses, lower life expectancy, increased emergency room visits and hospitalizations from asthma, child development issues, stress, and overall poor health. These issues are exacerbated by the impacts of air pollution from businesses like auto body shops and cleaners, the I-880 freeway with its high volume of truck traffic, and the airport. These problems are also tied to systemic racial segregation and the lasting impacts of government-sanctioned discrimination measures like redlining.

Strategy 1. Consider Cumulative Health Impacts in Decision Making

Strategy Objective: Environmental justice and health equity informs all air quality-related decision-making processes in East Oakland. There is improved consideration of cumulative health impacts in Air District programs, while advocating and coordinating for similar best practices among other agencies. Health protective methodologies developed with community

[217] Alameda County Public Health Department, Healthy Alameda County Dashboard: https://www.healthyalamedacounty.org/indicators/index/view?indicatorId=8195&localeTypeId=4.

input are used to determine potential effects of proposed policy, program, or project on community health. Improved tools exist for identifying cumulative health impacts in East Oakland and are shared with other agencies.

Strategy Metrics:

- Begin working with the Air District Advisory Council to address cumulative impacts of air pollution (yes/no)
- Develop recommendations for more fully incorporating cumulative impacts into the permitting process for the Air District Board of Directors (yes/no)

#	Actions
PH 1.1	**Develop Methods for Understanding Cumulative Impacts:** Collaborate with partners (e.g. California Air Resources Board (CARB), California Office of Environmental Health Hazard Assessment (OEHHA)) and engage interested East Oakland community members to develop methods for understanding which communities and community members are most heavily impacted by cumulative environmental burdens and other chronic stressors and why. Identify or develop approaches for integrating multiple data sources and perspectives. Identify or develop approaches for characterizing the potential health-protective effects of proposed policies, programs, or projects. This action is aligned with implementation of the Air District Strategic Plan Strategy 2.11 "Cumulative Health Impacts" and Strategy 2.4 "Community Health Data." **Lead:** Air District **Timeframe:** Medium Term (2-3 years)
PH 1.2	**Consider Cumulative Impacts in Air District Programs**: In parallel with PH 1.1, expand and refine the consideration of cumulative impacts in Air District programs. Explore applications in permitting, regulations, and compliance. This action is aligned with implementation of the Air District Strategic Plan Strategy 2.11 "Cumulative Health Impacts" and Strategy 4.3 "Consistent Permits." **Lead:** Air District **Timeframe:** Long Term (4+ years)
PH 1.3	**Support Local Government in Incorporating Cumulative Impacts in Decision Making:** Provide the City of Oakland with guidance on how to incorporate a more complete understanding of cumulative impacts in land use plans, policies, and practices for siting, designing, and permitting projects. This action is aligned with implementation of the Air District Strategic Plan Strategy 2.11 "Cumulative Health Impacts." **Lead:** Air District **Timeframe:** Long Term (4+ years)

The following actions in the Commercial and Industrial focus area additionally address this strategy objective:

- C&I 2.2. Rule Amendments to Improve Implementation of Rule 11-18 and the Facility Risk Reduction Program
- C&I 3.3. Evaluate Rule Amendment Opportunities to Strengthen and Improve Permitting Rules

Strategy 2. Increase Community Investment

Strategy Objective: Increased community investments form part of the effort to redress the health impacts of structural disinvestment in East Oakland. Increased community input on the allocation of penalties, community benefit funds and other community investments equitably benefit East Oakland. Through increased partnerships between agencies, industries, and the community, efforts are made towards building and establishing trust and care in the East Oakland community.

Strategy Metrics:

- Implement community investment initiative (yes/no)
- Amount of penalty dollars awarded to East Oakland communities through the Community Investments Office
- Number of touchpoints (meetings, emails, etc.) with Air District to inform and engage Community Steering Committee (CSC) members on the Air District's community-benefit initiatives
- Number of touch points with City of Oakland to inform and engage CSC members on the Economic Development Action Plan and the General Plan Environmental Justice (EJ) Element Actions EJ-A.34 and EJ-A.3 regarding participatory budgeting

#	Actions
PH 2.1	**Reinvest in Community:** Engage the East Oakland CSC and local community-based organizations to provide input to the Air District's community-benefit initiatives. This action is aligned with the implementation of the Air District Strategic Plan Strategy 2.8 "Community-Directed Funds." **Lead:** Air District **Timeframe:** Early Action (Immediate)
PH 2.2	**Proactive City Updates and CSC Engagement on Improving the Local Economy:** The City of Oakland will proactively update and seek input from the CSC during the development and implementation of the Economic Development Action Plan (EDAP) in order to retain, support, and grow local businesses in East Oakland. See Appendix F-2 for a list of other strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe:** Medium Term (2-3 years)

PH 2.3	**Proactive City Updates and CSC Engagement on Participatory Budgeting:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of Environmental Justice (EJ) Element Actions EJ-A.34 and EJ-A.36. These actions aim to develop a participatory budgeting process for EJ Community investments and integrate community-led and community-driven initiatives into City planning processes, such as "the Capital Improvement Program (CIP) process, the adopted City budget, bond measures, and other City investments and resource allocations." (Environmental Justice Element). See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe:** Short Term (Less than 2 years)

Other targeted or place-based investments through Air District incentives programs included across focus areas additionally address this strategy objective.

Community Concern Statement 2: Protecting Sensitive Populations and Mitigating Pollution Impacts

Protecting sensitive populations and mitigating pollution impacts is the concern because children, seniors, and unhoused individuals are particularly vulnerable to poor air quality. This issue is exacerbated by frequent wildfires, which increase cumulative pollution exposures for East Oakland residents and further impact their health.

Strategy 3. Provide Air Pollution and Health Impact Data, and Center Community Knowledge

Strategy Objective: Improved partnerships with communities are established to understand their lived experience and knowledge about air pollution, including understanding of sources. Resources and partnerships are made to meaningfully involve community members in collecting data, particularly near pollution hotspots and sensitive receptors. There is increased transparency and accessibility of air pollution and health data, provided to the East Oakland community in ways that meet their needs.

Strategy Metrics:

- Feedback loop with East Oakland residents to inform Alameda County Health Dashboard created (yes/no)
- East Oakland air monitoring project findings shared with CSC (yes/no)
- Inventory of air monitoring and related datasets made available (yes/no)
- Number of workshops, trainings, and other convenings regarding air monitoring data and projects, and the number of attendees at those events.

#	Actions
PH 3.1	**East Oakland Air Monitoring Project:** Collaborate with the CSC to engage with community members interested in informing the East Oakland Air Monitoring Project, which will use the Air District's monitoring van to perform exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM), including ultrafine particles (UFPs). Follow-up studies will use short- or medium-duration stationary measurements to investigate issues identified through exploratory measurements. Measurements will be focused around specific facilities and air quality concerns identified and prioritized by community members, including (but not limited to): ● Oakland San Francisco Bay Airport ● Argent Materials ● Davis Street Transfer Station ● AB&I redevelopment ● Crematories (East Bay Crematory and Evergreen Cemetery) ● Sterling Environmental ● Gallagher & Burk (asphalt manufacturer) ● CEMEX Construction Materials ● Miller Milling Co. ● Restaurants and food preparation operations ● Auto body shops ● Gasoline-dispensing facilities ● East Bay Municipal Utility District (EBMUD) Upper San Leandro Water Treatment Plant ● Metal operations/recyclers ● Other industrial and commercial facilities and operations, many of which are located along the I-880, International Blvd., Hegenberger Rd., High St., and San Leandro St. corridors, and ● Nearby community assets where people spend time, such as schools and parks The measurements are expected to aid in identifying areas where VOC and PM levels are unusually high compared to surrounding areas and inform efforts to reduce pollution emissions and exposure through a variety of Air District programs. Broader outreach about this project will be conducted in several ways, including (but not limited to) community meetings to communicate insights and findings and publicly accessible reports and underlying datasets. This action is aligned with the implementation of the Air District Strategic Plan Strategy 2.2 "Collect Community Data" and 2.7 "Understand Local Air Pollution." **Lead:** Air District **Timeframe:** Short Term (Less than 2 years)
PH 3.2	**Make Air and Emissions Monitoring Data More Accessible:** Coordinate with the CSC and interested local partners to build descriptions of existing air and emissions monitoring data, enable data downloads where feasible, and provide resources or visualization tools to clearly communicate insights, empowering communities to interpret and act on air and emissions data effectively. Initial work will include developing an inventory of air monitoring and emissions data in East Oakland. This action is aligned with the implementation of the Air District Strategic Plan Strategy 2.3

#	Actions
	"Make Data Accessible." **Lead:** Air District **Timeframe:** Medium Term (2-3 years)
PH 3.3	**Support Local Air Monitoring or Air Quality Data Projects:** The Air District and the Bay Air Center [218] (an Air District-sponsored community resource) will work with community based organizations that are conducting air monitoring or data projects in the East Oakland Plan area, such as air monitoring projects funded by California Air Resources Board (CARB) Community Air Grants or U.S. EPA grants (for example, projects led by Lifers' Leaving a Legacy and by New Voices are Rising). Bay Air Center support for these projects can include grant application assistance, guidance on air monitoring technology and network design, on-site troubleshooting, and data analysis and interpretation. The Air District and Bay Air Center will work with the CSC to implement new types of support for the East Oakland community. These new activities will include (but are not limited to) 1) informational workshops for the CSC and community on using and interpreting information from different air quality data websites and on insights from local air monitoring projects and 2) convening recurring meetings to bring together community air monitoring project teams to facilitate collaboration and strengthening of air quality monitoring projects throughout the Bay Area. This action is aligned with the implementation of the Air District Strategic Plan Strategy 2.2 "Collect Community Data" and 2.7"Understand Local Air Pollution." **Lead:** Air District **Timeframe:** Early Action (Immediate)
PH 3.4	**Health Dashboard:** Share information about the Alameda County Health Dashboard [219] with East Oakland community members. Take into account community experiences and ground-truthing, to deliver localized health information and facilitate the monitoring of health metrics for East Oakland. Develop a feedback loop with East Oakland residents to assess accessibility and allow iterative improvement. **Lead:** Alameda County Public Health Department (ACPHD) **Timeframe:** Early Action (Immediate)

Strategy 4. Improve Access to Healthcare Services

Strategy Objective: Access to comprehensive healthcare services including preventative health is increased for East Oakland residents. Social determinants of health and mental health

[218] Bay Air Center website: https://bayaircenter.org/
[219] Alameda County Public Health Department. "Healthy Alameda County." Accessed October 2, 2025. https://www.healthyalamedacounty.org/

impacts are improved for East Oakland residents, particularly among vulnerable populations.

Strategy Metrics:
- Number of meetings among partner agencies and community-based health centers to facilitate access to healthcare

#	Actions
PH 4.1	**Facilitate Linkages to Health Services:** Support partnerships and coordination with Alameda County and community-based health centers in East Oakland to increase awareness and access to Asthma Start Program, and preventative services for asthma and other health conditions associated with air pollution exposure. Support linkages to other healthcare services such as mental health services, and efforts to equitably serve East Oakland residents. As part of this effort, identify potential solutions to address barriers to healthcare services. Services should be community-friendly and reach populations vulnerable to air quality, including but not limited to children and youth, seniors, low-income communities, transit-dependent and unhoused populations. **Lead:** Alameda County Public Health Department (ACPHD) **Timeframe:** Long Term (4+ years)

Strategy 5. Equitable Distribution of Emergency and Climate Response Services

Strategy Objective: Emergency and climate response services like hospitals, health care facilities, clean/cool air centers, and resilience hub spaces are distributed equitably across Oakland to alleviate the burden on East Oakland during emergencies and extreme climate impacts like wildfire events, with a priority on protecting vulnerable populations. These services are easily accessible, culturally supportive, responsive to community needs, and usable by everyone, regardless of their age, ability, language spoken, or citizenship status. Backup power for individuals who rely on life-supporting medical devices, such as wheelchairs and oxygen tanks, is prioritized.

Strategy Metrics:
- Resilience hub established (yes/no)
- Number of emergency response toolkits delivered to low-income households in East Oakland

#	Actions
PH 5.1	**Help Create Community Resilience Spaces:** Partner with established community resilience groups like Communities for a Better Environment (CBE), East Oakland Collective (EOC), Rise East organizations, and East Oakland Neighborhood Initiative (EONI) implementation to develop a Resilience Hub network[220] in East Oakland with reference to San Leandro's network. This includes supporting community-based organizations in securing funding from the state Community Resilience Centers

[220] Urban Sustainability Directors Network. 2024 (August 23). "The Resilience Hub Series: East Bay Resilience Hub Network" (Video): https://www.youtube.com/watch?v=XN6q7xYOdjc

	program, [221] among other sources. In collaboration with the community, identify and prioritize well-used community facilities such as places of worship, schools, libraries in underserved neighborhoods, while supporting existing informal resilience hub spaces in East Oakland. In the long term, ensure that all residents in the East Oakland AB617 area have easy access to a resilience hub that provides indoor air filtration, power backup, has programming to meet community members' needs, and is sustainably funded. **Lead:** City of Oakland **Timeframe:** Long Term (4+ years)
PH 5.2	**Bring Emergency Response Tools to Households:** In collaboration with partner agencies such as Alameda County Public Health Department (ACPHD) and Emergency Medical Services (EMS), and community-based organizations such as Communities for a Better Environment (CBE), deliver emergency response toolkits to low-income households in East Oakland. Toolkits may include air filtration units, masks, first aid supplies, and other essential items during an air quality/climate emergency. For residents living within 1,000 feet of freeways, the toolkit should include information and resources on air pollution exposure reduction. Materials are best delivered in preparation for, and not in reaction to, a potential emergency event. **Lead:** City of Oakland **Timeframe:** Medium Term (2-3 years)
PH 5.3	**Proactive City Updates and CSC Engagement on Emergency Training for Community Members:** In alignment with Oakland General Plan Safety Element [222] policy SAF-8.10 “Community Training and Awareness”, connect interested East Oakland community members with the CORE (Communities of Oakland Respond to Emergencies) Program, Community Emergency Response Training (CERT) program, and other emergency training opportunities, particularly as they align with air quality incidents and emergencies like wildfires. See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe:** Short Term (Less than 2 years)

The following air filtration actions in the Built Environment and Land Use focus area additionally address this strategy objective:

- BE 1.1. Air Filtration for East Oakland Homes
- BE 2.1. Air Filtration for East Oakland High-Priority Facilities

[221] Strategic Growth Council.”Community Resilience Centers” webpage: https://sgc.ca.gov/grant-programs/crc/
[222] “Oakland Safety Element.” City of Oakland. https://www.oaklandca.gov/files/assets/city/v/1/planning-amp-building/documents/sp/gp/safety-element/safety-element_adopted-9.26.23_89907-c.m.s-1.pdf

Community Concern Statement 3: Raising Awareness about Health Impacts of Air Pollution

Raising awareness about the health impacts of air pollution is the concern because individuals often engage in normal activities without understanding the harmful effects of poor air quality. As wildfires throughout California increase in frequency and intensity, East Oakland residents are facing cumulative exposure to toxic chemicals and Particulate Matter (PM) from wildfire smoke. This added pollution compounds the existing emissions from industrial operations. The lack of awareness about these combined sources of pollution negatively affects overall health and exacerbates health disparities.

Strategy 6. Increase Awareness of Health Impacts of Air Pollution and Solutions to Pollution Problems

Strategy Objective: There is enhanced awareness of the health impacts of poor air quality among residents of East Oakland, with an emphasis on youth, along with the availability of resources to reduce impact of pollution events like wildfires and facilities releases. Residents are kept informed of local air pollution problems, health impacts, and air pollution improvement initiatives. Community members are also educated about the risks associated with poor indoor air quality, including lead hazards, indoor air pollutants, and asthma triggers, as well as methods and resources available to help protect their health. Information is accessible to all community members, is American Disability Act (ADA) compliant, and is also culturally relevant and provided in diverse formats, such as text, videos and graphics, in the languages spoken within East Oakland communities.

Strategy Metrics:

- Air pollution health impact educational materials developed and disseminated (yes/no)
- Number of touch points (meetings, emails, etc.) with City of Oakland to inform and engage CSC members on Oakland General Plan Environmental Justice (EJ) Element Policy EJ-4.4 related to indoor air pollution awareness

#	Actions
PH 6.1	**Improve Air Pollution Awareness:** Improve understanding of local air pollution problems, pollution reduction opportunities, health improvement goals, and the air pollution improvement initiatives currently planned or in development. In consultation with the CSC, determine the outreach channels most likely to reach diverse groups. Provide information that is culturally and linguistically appropriate. **Lead:** Air District **Timeframe:** Medium Term (2-3 years)

#	Actions
PH 6.2	**Proactive City Updates and CSC Engagement on Indoor Air Pollutant Awareness:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of Environmental Justice (EJ) Element Policy EJ-4.4, which aims to provide property owners and residents with culturally appropriate and linguistically accessible information and resources about indoor air pollutants, asthma triggers, and other home health topics to raise awareness. See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe:** Early Action (Immediate)

Strategy 7. Improve Response to Air Quality Incidents and Notification Systems

Strategy Objective: The East Oakland community is proactively notified of air quality incidents and potential health concerns with accessible alerts in multiple languages, including transparency around post-incident resolution. This includes warnings around wildfire events, air pollution incidents, and strong odor.

Strategy Metrics:

- Information is disseminated about the Air District's new Air Quality Incident Notifications system (yes/no)
- All schools and other sensitive receptors in East Oakland are signed up to receive alerts (yes/no)

#	Actions
PH 7.1	**Air Quality and Odor Incident Notifications System:** Information and dissemination on the Air District's new Air Quality Incident Notifications system [223] is improved in East Oakland, ensuring that sensitive receptors such as schools are aware of the notifications system and signed up to receive alerts. The CSC along with interested community-based organizations in East Oakland make recommendations to the Air District on improving the notifications system, with including improving and expanding odor notifications. The incident alerts should be short, language-accessible, understandable, and actionable, and include robust and transparent after incident resolution and investigations. **Lead:** Air District **Timeframe:** Medium Term (2-3 years)

[223] Bay Area Air District webpage on Air Quality Incident Notifications: https://www.baaqmd.gov/contact-us/sign-up-for-information/air-quality-incident-notifications

Transportation and Mobile Sources

Transportation and mobile sources refer to on-road sources of air pollution such as cars, trucks, motorcycles, and off-road equipment such as aircraft, locomotives, heavy equipment, etc. [224] Per Chapter 5, mobile sources operating in East Oakland are a significant source of $PM_{2.5}$ (particulate matter with diameters that are generally 2.5 micrometers and smaller), nitrogen oxide (NO_x) emissions, Diesel particulate matter (DPM), and benzene. East Oakland's exposure to mobile source emissions is of concern because of its proximity to I-880, the Oakland San Francisco Bay Airport, and the presence of truck-attracting businesses. The I-580 truck ban likely has a significant impact on emissions in the East Oakland flatlands, routing truck movement through I-880 and increasing DPM exposure for residents living near the transit corridor, which include sensitive receptors (see Chapters 4 and 5 for more details).

Community members have spoken about regular truck idling near their homes, citing increased traffic, noise, road damage, and safety concerns. They have brought up certain neighborhood streets such as East 14th Street and International Boulevard being used as highways. They are experiencing daily impacts on their lives from mobile source pollution, including dust on their windowsills, limited ability to spend time outdoors, and negative health impacts. Among these intersecting problems, emissions and noise pollution from the Oakland San Francisco Bay Airport remain high on their list of concerns, particularly as expansion is considered. The East Oakland Emissions Inventory using 2021 data finds that aircraft and other airport-related sources are the largest contributors to NO_x emissions in East Oakland at 36%, and aircraft is the largest sulfur oxides (SO_x) source in the community at 80%.

Given these concerns, the focus area aims to leverage technology, incentives, improved enforcement, health protective policies, and restorative justice principles to reduce the impacts of mobile emissions in East Oakland. Strategies and actions include the use of cleaner fuels, electrification of heavy-duty trucks and airport operations, and creating safer streets for walking and biking. Key collaborators include the City of Oakland Department of Transportation (OakDOT), California Air Resources Board (CARB) as the primary authority managing mobile source emissions, Port of Oakland as overseeing the Oakland San Francisco Bay Airport, and Caltrans as the agency responsible for managing the state's transportation system, including freeways.

Actions from this focus area may be referenced with the abbreviation T&M, followed by the strategy number and action number, for example, **T&M 1.1.**

[224] U.S. EPA webpage on Mobile Source Pollution: https://www.epa.gov/mobile-source-pollution/learn-about-how-mobile-source-pollution-affects-your-health.

Community Concern Statement 1: Trucks in the Community

Diesel trucks are a concern because they travel near residential areas and on residential streets and park and idle (leave their engines on while parked) illegally in neighborhoods. Trucks traveling with raw materials in open containers release fugitive dust and contribute to litter in the community. Diesel trucks and delivery trucks contribute to traffic in residential neighborhoods. The City and Port foreign trade zone policy incentivizes truck operators to use East Oakland neighborhood streets. Heavy trucks cause road damage, adding to disrepair on already poorly maintained streets and freeways. Truck traffic exposes East Oaklanders to Diesel Particulate Matter (DPM), nitrogen oxides (NO_x), road dust and other air pollution through vehicle emissions and brake and tire wear. Exposure to air pollution contributes to negative health effects, including respiratory diseases, heart attacks, increased medical expenses and early death for East Oaklanders. Community members are particularly worried about the effects on the elderly, and children with asthma, who must limit outdoor activities like running, playing sports, or being outside on days with poor air quality.

Strategy 1. Address Trucking Near Neighborhoods through Proactive Truck Management and Enforcement

Strategy Objective: Truck management (including establishment of limited truck routes, design guidelines, signage, enforcement, etc.) becomes a priority for local and regional agencies to minimize the impact of transport trucks and freight activities in East Oakland with special emphasis on minimizing truck impacts to surrounding neighborhoods. Streets are retrofitted with truck traffic calming measures designed to minimize community exposure to air pollution and to alleviate conflicts between freight vehicles and other travel modes in collaboration with residents. Public agencies are held accountable to regular collaboration with the Community Steering Committee (CSC). East Oaklanders are treated with the reverence that other more affluent neighborhoods have historically received in Oakland.

Strategy Metrics:

- Indirect Source policy package developed (yes/no)
- Truck management update initiated (yes/no)
- Number of roadside inspections of heavy-duty trucks
- Number of touch points (meetings, emails, etc.) with the California Air Resources Board (CARB) to inform and engage CSC members on preventing idling

#	Actions
T&M 1.1	**Indirect Source Policy Package:** Study feasibility and approach for a Bay Area Indirect Source (Magnet Source) policy package to address the impacts of large warehouses and other types of businesses that are “magnets” for heavy duty truck trips. The policy package could include rule making, model ordinances and technical support to local governments to develop their own policies. The Air District will proactively update and seek input from all Bay Area CSCs and other impacted communities across the region. **Lead**: Air District

#	Actions
	Timeframe: Short/Medium Term (2-3 years)
T&M 1.2	**Truck Signage and Safety Improvements:** Identify and secure funding to implement improvements at location prioritized in the *Northern Alameda County Truck Access Management Plan* (2021) to incorporate treatments such as signage communicating truck routes, installation of pedestrian and bicycle facilities and safety treatments at the following locations: 42nd Ave./High St./ Alameda Ave. (Fruitvale to International), Hegenberger Rd. (Doolittle to International), and 98th Ave. (Airport Access Road to San Leandro). **Lead**: Caltrans and Oakland Department of Transportation **Timeframe**: Long Term (4+ years)
T&M 1.3	**Truck Management Update:** City of Oakland Department of Transportation (OakDOT) will engage with the CSC to get feedback on opportunities to better manage trucks in East Oakland including potential updates to truck routing, truck signage and truck parking regulations. Topics will also include truck conflicts with pedestrians, bicyclists, transit and rail. Engagement efforts will include a focus on community members most affected by heavy duty trucking in East Oakland (e.g. unhoused residents on International Boulevard and residents of the Hegenberger tiny home community). **Lead**: City of Oakland Department of Transportation **Timeframe**: Long Term (4+ years)
T&M 1.4	**Proactive Enforcement:** Use proactive, coordinated enforcement to uphold high standards in East Oakland. Conduct traffic enforcement spot-checks on non-truck routes where trucks are often seen and conduct targeted truck parking and truck idling enforcement at specific times and locations. Ensure coordinated and prompt response to enforcement of trucking-related issues for neighborhoods adjacent to industrially zoned land and within 500 feet of truck routes. Develop non-carceral traffic enforcement techniques and provide support to small, local businesses and independent truck operators for complying with truck-related regulations. This builds on the Environmental Justice Element policy EJ-1.6. **Lead**: California Air Resources Board (CARB) (idling; engine compliance), City of Oakland Department of Transportation (OakDOT) (truck parking enforcement), City of Oakland Police Department **Timeframe**: Medium Term (2-3 years)
T&M 1.5	**Idling Prevention and Outreach:** The California Air Resources Board (CARB) will work with the CSC and local agencies to identify locations, where it's feasible, to install No Idling signs on roadsides, at schools, and parks. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)

#	Actions
T&M 1.6	**Enhance Diesel Program Enforcement**: The California Air Resources Board (CARB) will work with the CSC and California Highway Patrol (CHP) to identify locations to deploy roadside inspections within the East Oakland area, that have high heavy-duty truck traffic or are a concern to the community. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)
T&M 1.7	**Heavy-Duty Diesel Trucks Inspections:** The California Air Resources Board (CARB) will work with CSC to review enforcement data to determine how to direct and prioritize diesel vehicle enforcement activities and locations. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)
T&M 1.8	**Update Enforcement Strategies as Applicable:** The California Air Resources Board (CARB) staff are committed to updating enforcement strategies as requested by the CSC, if said strategies are enforceable by CARB staff or if CARB can reasonably accommodate the request. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)

Strategy 2. Landscaped, Clean Streets Allow for Comfortable Walking, Biking and Public Transit Use

Strategy Objective: East Oakland's streets are clean, landscaped and well maintained. Streets are designed to control vehicle speed and to encourage walking and biking and are accessible for all mobility levels. The streetscape environment encourages walking and other active transportation choices through culturally sensitive and celebratory design which promotes a sense of pride and dignity for East Oaklanders. Transit, bike and walking improvements outlined in the City of Oakland existing plans such as the East Oakland Mobility Action Plan are prioritized, funded and built that provide safe, comfortable and affordable options to connect residents to jobs, education, healthcare and recreation.

Strategy Metrics:

- Number of traffic safety/calming, bikeway and transit projects initiated or constructed
- Number of touch points (meetings, emails, etc.) with the City of Oakland to inform and engage CSC members on the City of Oakland's implementation of the East Oakland Mobility Action Plan and the Equitable Climate Action Plan (ECAP)

#	Actions
T&M 2.1	**Street Design to Lower Speeds:** Advance and assess East Oakland-focused implementation of the Environmental Justice (EJ) Element policy EJ-7.3 to implement street redesign policies focused on lowering speeds and increasing safety through the City of Oakland's Safe Oakland Streets initiative. The City will proactively update and seek input from the CSC. **Lead**: City of Oakland Safe Oakland Streets Initiative: City of Oakland Department of Transportation (OakDOT), Department of Race and Equity, Police Department, and City Administrator's Office **Timeframe**: Long Term (4+ years)
T&M 2.2	**Foothill Boulevard Transit Study:** Participate in the development of Alameda County (AC) Transit's Foothill Boulevard Project Planning Study focused on improving transit on Foothill Boulevard. **Lead**: Communities for a Better Environment (CBE) **Timeframe**: Medium Term (2-3 years)
T&M 2.3	**Implement Transportation Improvements that Advance Transit Access and Safety in East Oakland:** ● Install more bus boarding islands and bus bulbs to improve rider boarding safety, enhance American Disability Act (ADA) accessibility, and reduce bus dwell time ● Upgrade crosswalks, sidewalks and curb ramps, including at bus stops ● Add bus shelters in East Oakland ● Modify traffic signals throughout East Oakland to include transit signal priority and reduce bus waiting time at lights to improve reliability **Lead**: City of Oakland Department of Transportation (OakDOT) **Timeframe**: Medium Term (2-3 years)
T&M 2.4	**Proactive City Updates and CSC Engagement on Traffic Safety, Walkability, and East Bay Greenway Projects:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives: ● Safe Oakland Streets ● Equitable Climate Action Plan (ECAP) See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland **Timeframe**: Short Term (Less than 2 years)

Strategy 3. Transition to Zero Emission Vehicles and Related Funding

Strategy Objective: A comprehensive funding landscape is assembled through inter-agency collaboration, community outreach and engagement, to focus on funding and incentivizing zero emissions technology, vehicles, equipment, and supporting infrastructure (including provisions for small local businesses) and fleet transition to clean power sources.

Strategy Metrics:

- Incentive funds awarded
- Number of projects completed
- Emission reduction estimates

#	Actions
T&M 3.1	**Lawn and Garden Equipment:** Launch a new program that will offer up to $4.5 million to lawn and garden equipment owners who scrap combustion equipment and replace it with new, all-electric alternatives. Over the next five years fund at least $500,000 to projects that benefit East Oakland through dedicated marketing and specialized assistance to eligible local equipment owners. **Lead:** Air District **Timeframe**: Early/Short Term (Less than 2 years)
T&M 3.2	**Cleaner Automobiles and Automobile Alternatives Vehicle Buy Back Program:** Operate the Vehicle Buy Back (VBB) program to give Bay Area residents the opportunity to receive a cash award of $1,500 for retiring and scrapping an operable, registered, 1998 model year or older vehicle that they have owned for at least two years. Use targeting marketing to local residents to complete over 200 vehicle buybacks in the next five years that benefit East Oakland. To increase the possibility of success, pursue approval from the California Air Resources Board (CARB) to increase the cash award for scrapping a vehicle and to include cars newer than model year 1998. **Lead:** Air District **Timeframe**: Early Action (Immediate)
T&M 3.3	**Cleaner Automobiles and Automobile Alternatives Clean Cars for All Program:** Operate the Clean Cars for All program that will pay Bay Area residents up to $12,000 to turn in their qualifying 2007 or older vehicle and replace it with a new or used plug-in hybrid electric vehicle (PHEV), a battery electric vehicle, or a fuel cell electric vehicle. Residents that don't want a replacement vehicle can receive up to $7,500 for a mobility option that can be used for public transit and/or bicycle sharing. **Lead:** Air District **Timeframe**: Early/Short Term (Less than 2 years)
T&M 3.4	**Replacement of Heavy-Duty Vehicles and Equipment:** Offer grants to owners of older, heavy-duty diesel on-road trucks and buses and off-road cargo-handling, construction, agricultural, and airport ground support equipment to help reduce the cost of replacing

#	Actions
	vehicles and equipment with new, cleaner, and all-electric alternatives. Over the next five years, find and fund over $10 million for projects benefiting East Oakland through a combination of dedicated marketing and specialized assistance to local small business owners. **Lead:** Air District **Timeframe**: Early/Short Term (Less than 2 years)
T&M 3.5	**Grant Assistance:** Develop a new, specialized, heavy-duty diesel vehicle replacement program that streamlines the application process. Collaborate with the California Air Resources Board (CARB) and other partners to help local businesses and small fleet and independent truck operators learn about and apply successfully for these funds. Launch program in early 2026 and over five years find and fund $1 million in projects that benefit East Oakland through a combination of dedicated marketing and specialized assistance to local small businesses and equipment owners. **Lead:** Air District and California Air Resources Board (CARB) **Timeframe**: Early/Short Term (Less than 2 years)

Community Concern Statement 2: I-580 Truck Ban

The I-580 truck ban is a concern because it forces diesel trucks to use I-880 and travel through East Oakland neighborhoods. The I-580 ban is an environmental justice issue because it is a government sanctioned policy from the 1960s prohibiting truck traffic on I-580 and instead directing diesel truck traffic to I-880 which disproportionately impacts the health of low-income Black, Indigenous and People of Color (BIPOC) communities in the East Oakland flatlands. I-880 truck traffic exposes East Oaklanders to diesel pollution which is linked to adverse health problems and is a human carcinogen. Vehicle emissions from brake wear, tire wear, and road dust also contribute to Particulate Matter (PM) emissions, which is a significant health concern.

Strategy 4. Restorative Justice Guides Decisions about the Future of the I-580 Truck Ban

Strategy Objective: Restorative justice principles are applied to ensure the harm caused by the I-580 truck ban is meaningfully addressed. These principles include examining the harmful impact of the policy and determining measures to repair the harm. East Oakland residents are actively and equitably represented in the community process evaluating the I-580 truck ban. Restorative justice, specifically as it pertains to the I-580 truck ban, is clearly defined and prioritized in future planning processes to guide new investments. Racial equity criteria are integrated into future project planning and investment decisions to assess whether a project could create disparate impacts based on race, color, socioeconomic status, or other factors. Additionally, government actions related to future decisions comply with the Civil Rights Act, ensuring that disparate impacts are addressed effectively.

Strategy Metrics:

- I-580 truck ban study conducted (yes/no)
- Number of I-580 truck ban study meetings in East Oakland
- Study materials developed and disseminated to East Oaklanders (yes/no)

#	Actions
T&M 4.1	**Study Impacts of I-580 Truck Ban:** Conduct comprehensive studies to assess the air quality and public health impacts of allowing truck traffic on I-580. **Lead**: California Department of Transportation (Caltrans) **Timeframe**: Short Term (Less than 2 years)
T&M 4.2	**Consider Racial Equity in Future Decision-making Related to the I-580 Truck Ban:** Examine the racial and environmental inequities of the I-580 truck ban by completing a Historical Disparities and Root Causes Memo that documents the historical disparities and root causes that have led to social, economic, health and racial inequalities and barriers to opportunity in areas impacted by the I-580 truck ban including East Oakland. Base recommendations for restorative policy on the Memo findings and engagement with impacted communities including the East Oakland CSC. **Lead**: California Department of Transportation (Caltrans) **Timeframe**: Short Term (Less than 2 years)
T&M 4.3	**Implement Findings from Racial Equity Assessment:** Upon the conclusion of the Historical Disparities and Root Causes Memo (Action T&M 4.2) Caltrans will seek to implement the report findings to further restorative outcomes related to the I-580 truck ban in East Oakland and elsewhere. **Lead:** California Department of Transportation (Caltrans) **Timeframe**: Short Term (Less than 2 years)

Community Concern Statement 3: Road Dust Near Freeways and High Volume Roadways

Road dust (resuspended dust from paved roads) contributes to on-road fine particulate matter $PM_{2.5}$ emissions. $PM_{2.5}$ poses serious health risks to community members living in homes and senior housing, attending school, or visiting recreation centers near the I-880 freeway and arterial roads. Road dust emissions are projected to increase due to the growth of vehicular traffic.

Strategy 5. Road Dust Control

Strategy Objective: Road dust is significantly reduced through the implementation of diverse dust control measures to minimize exposure to Particulate Matter (PM) generated by brake wear, tire wear, and road dust.

Strategy Metrics: Study findings evaluated (yes/no)

#	Actions
T&M 5.1	**Study Efficacy of Street Sweeping Programs**: Evaluate findings from available studies to validate the efficacy of street sweeping and identify areas in greatest need, particularly communities disproportionately impacted by disinvestment. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
T&M 5.2	**Enhance Street Sweeping Programs**: Pending results of the street sweeping study in Action **T&M 5.1,** City to develop an enhanced street sweeping program, likely increasing street sweeping frequency near schools, truck routes, and freeways, and businesses that generate fugitive dust avoiding increased ticketing as a result of more aggressive street sweeping. **Lead**: Oakland Public Works Department (OPW) **Timeframe**: Medium Term (2-3 years)

Community Concern Statement 4: Oakland San Francisco Bay Airport

The airport is the concern because it is a large source of several types of harmful emissions (toxics, Particulate Matter (PM), Greenhouse Gases (GHGs), and lead) from ground equipment, aircraft, and passenger auto traffic to and from the airport. These emissions impact East Oaklanders' health. In addition, there is an airport expansion proposal, which community members and public health stakeholders are concerned could have compounding negative impacts on the health of frontline workers and East Oakland residents.

Strategy 6. Emission Reductions at the Oakland San Francisco Bay Airport

Strategy Objective: Relevant government agencies will utilize their respective authority to assess and implement airport-related emissions reduction strategies to lower airport-related emissions. Projects may include electrification of airport ground support equipment and ground access vehicles, and eliminating leaded aviation gas. Reductions will be achieved through a combination of policies, regulations, projects, and incentives.

Strategy Metrics:

- Airport Emissions Reduction Plan completed (yes/no)
- Number of airport ground support equipment electrified
- Zero Emissions Airport Ground Operation Regulation adopted (yes/no)

#	Actions
T&M 6.1	**Port Zero Emissions Plan Airport-specific Elements:** The Port of Oakland is preparing a Port-wide Zero Emissions Plan that will include Airport Carbon Accreditation Program elements (Carbon Management Plan, Stakeholder Engagement Plan, etc.), provide emissions inventories, when possible, and incorporate relevant Plan actions below. The Port of Oakland - Wide Zero Emissions Plan will include stakeholder engagement which will include engagement with the CSC, partner agencies, neighboring communities in East Oakland, airport workers and labor unions, independent third-party experts, and environmental organizations. The Port of Oakland will assess opportunities and pursue grant funding with community partners to implement potential improvements such as air filters and weatherization of homes and community hubs to reduce airport impacts. Alameda County Public Health Department (ACPHD) will contribute research on best practices to reduce health impacts and pollution exposure near airports. The Port of Oakland will maintain public-facing reporting with annual updates to the CSC on the Port's implementation progress on environmental initiatives. The Port of Oakland will also continue to attend and participate in the CSC meetings and activities. The Port of Oakland will prioritize early implementation of airport-related elements of the Zero Emissions Plan to meet pressing air quality and climate change issues to the extent possible. **Lead**: Port of Oakland **Timeframe**: Short Term (Less than 2 years)
T&M 6.2	**Electric Ground Support Equipment:** The Port of Oakland to use legal means to support and drive transition of remaining fossil-fuel Ground Support Equipment (GSE) to Electric GSE (eGSE) where commercially available by 2030. The Port of Oakland and Air District to identify and deploy incentives as available for eGSE and necessary electrical infrastructure. **Lead:** Port of Oakland, Air District **Timeframe**: Medium Term (2-3 years)
T&M 6.3	**Accelerate Airport Ground Access Vehicle Electrification:** The Port of Oakland to use legal means to facilitate accelerated transition of ground access vehicles (GAV) that provide passenger pickup services at commercial airports, such as buses and taxis, and necessary electrical infrastructure, including Port-owned and tenant or operator-owned vehicles. The Port of Oakland and Air District to identify and deploy incentives as available for all-electric vehicles and necessary electrical infrastructure. **Lead:** Port of Oakland, Air District **Timeframe**: Medium Term (2-3 years)

#	Actions
T&M 6.4	**Best Practices in Construction and Maintenance Work:** As identified in the Port of Oakland's 2023 Airport Carbon Accreditation Carbon Management Plan, Port to update standard contract language so all construction and maintenance work requires zero emissions equipment or reduced emissions technology to the fullest extent possible. Update request for qualifications (RFQ) and request for proposals (RFP) criteria. Require contractors to submit fuel tracking logs for construction activities. Update to be completed by 2026. **Lead**: Port of Oakland **Timeframe**: Short Term (Less than 2 years)
T&M 6.5	**Accelerate Phase-Out of Leaded Aviation Gas:** The Port of Oakland to use legal means to promote early compliance with Senate Bill 1193, the statewide ban on leaded aviation gas (AvGas) going into effect in 2031. Port will consider and evaluate phase-out strategies including developing an incentive program for fixed-base operators ("FBOs") to help ensure unleaded AvGas is available at a competitive price. **Lead**: Port of Oakland **Timeframe**: Long Term (4+ years)
T&M 6.6	**Zero Emissions Airport Ground Operation Regulation:** California Air Resources Board (CARB) will propose Zero Emission Airport Ground Operations Regulation to require zero emissions taxiing, ground support equipment, and/or gate operations. CARB expects to introduce regulatory concepts for Board consideration by 2027. CARB will consult with CSC, East Oakland residents and organizations, and airport workers to prioritize community needs in ongoing airport regulatory work. **Lead**: California Air Resources Board (CARB) **Timeframe**: Medium Term (2-3 years)

Strategy 7. Collaboration With and Accountability to Community on Airport Impacts

Strategy Objective: East Oakland communities neighboring the airport will be meaningfully informed of airport impacts and partner with The Port of Oakland and relevant agencies to lessen impacts. The Port of Oakland collaborates with neighboring communities, airport workers, and organizations to advance environmental justice initiatives and ensure transparency and accountability. This community collaboration will be consistent, accessible, and proactive.

Strategy Metrics:

- Number of grants secured to conduct airport-related outreach
- Number of meetings or events to educate the community about the air quality impacts of the airport
- Port of Oakland implementation of environmental health awareness training (yes/no)

- Port of Oakland implementation of fenceline monitoring at Oakland International Airport (yes/no)

#	Actions
T&M 7.1	**Proactive Community Engagement on Airport Issues:** The Port of Oakland pursues grant funding to fund partnerships with community organizations and the Alameda County Public Health Department (ACPHD) to conduct proactive, culturally competent outreach and health education on airport impacts to airport workers, neighboring communities, and relevant community organizations. Education and engagement will include youth and East Oakland representatives. The Port of Oakland expands opportunities for the community to inform decision-making throughout major project developments and to receive feedback such as ideas, questions, and concerns through various means such as public forums, online surveys, community events, and working group meetings. Further, the Port of Oakland will expand equitable engagement with and reporting to all communities and local governments impacted by Oakland International Airport operations. **Lead**: Port of Oakland, Alameda County Public Health Department (ACPHD) **Timeframe**: Short Term (Less than 2 years)
T&M 7.2	**Airport Worker Air Pollution Mitigation:** The Port of Oakland to develop and implement on-going and regular environmental health awareness training, evaluate and implement protocol for reducing pollution impacts on workers. The Port of Oakland will distribute appropriate personal protective equipment (PPE) to its employees and collaborate with tenant companies to help ensure non-Port employees also have health awareness and access to employer-provided PPT. The Port of Oakland will consult airport workers, unions, environmental organizations, and relevant agencies with health expertise in developing protocols. Implementation will begin no later than 2026. **Lead**: Port of Oakland **Timeframe**: Short Term (Less than 2 years)
T&M 7.3	**Investigate Airport Impacts on Nearby Air Quality:** The East Oakland Air Monitoring Project (see **PH 3.1**) will include exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM) (including ultrafine particles (UFPs), a key aviation-related pollutant) around specific facilities and air quality concerns identified and prioritized by community members. Oakland San Francisco Bay Airport is one of the identified facilities. Using information collected from this project, the Air District will analyze and evaluate data and summarize and report findings with attention to occurrences of unusually high levels of different pollutants, including UFPs, that may be associated with airport-related emissions. Findings from the overall project are expected to inform efforts to reduce pollution emissions and exposure or need for additional information. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)

#	Actions
T&M 7.4	**Airport Fence Line Air Quality Monitoring:** The Port of Oakland shall install fence line air quality monitor(s) no later than one year after the opening of the new terminal as described in the 2024 Oakland San Francisco Bay Airport Terminal Modernization and Development Project Final Environmental Impact Report and the monitor(s) shall be maintained for a period of five (5) years thereafter. The air quality monitoring program document and monitoring data shall be available to the public on the Port of Oakland website. CSC prefers The Port of Oakland to install and maintain permanent fence line air quality monitors regardless of terminal modernization project. **Lead:** Port of Oakland **Timeframe**: Short Term (Less than 2 years)

Urban Greening and Workforce Development

According to findings in Chapter 4, Oakland's tree canopy is not equitably distributed, leaving many low-income, vulnerable communities with significantly less tree cover than wealthier areas. Tree cover varies from 9% in certain neighborhoods to 43% in others, with East Oakland's Council District 5 having seen a canopy loss of more than 5% between 2014 and 2018 (see Chapter 4). Residents in East Oakland have spoken about the visible differences between the number of trees and the quality of green infrastructure in their neighborhoods as compared to more affluent parts of Oakland. They have a hard time using or accessing parks and public spaces, and find that most such spaces are not well-maintained. These community concerns are also reflected in Oakland's Urban Forest Master Plan, which mentions funding reductions that have resulted in deferred tree maintenance and a shortage of services available to the community. [225]

Engaging with issues around urban greening presents an opportunity to consider the development of green jobs in East Oakland, which is defined as jobs that benefit the environment or conserve natural resources. [226] According to findings in Chapter 4, East Oakland residents experience higher rates of poverty, unemployment, and lower educational attainment compared to Alameda County and the San Francisco Bay Area overall. Approximately 40% of East Oakland's population lives below 200% of the federal poverty level, more than double the rate in Alameda County. The unemployment rate in East Oakland is also higher at 4.3% as compared to 3.3% in Alameda County (see Chapter 4, page 39). These statistics indicate economic marginalization and unequal access to opportunities in the region, which is historically connected to structural disinvestment and economic segregation in the East Oakland community.

Community members would like to tackle urban greening (UG) issues through workforce development in East Oakland. They would like their neighborhoods to match the most tree-rich, well-maintained areas in Oakland, while creating local and sustainable jobs that stay in the

[225] City of Oakland. "Urban Forest Plan," December 16, 2024. https://www.oaklandca.gov/Community/Community-Development/Sustainability-Environment/Sustainability-Plans/Oakland-Urban-Forest-Plan.
[226] U.S. Department of Labor, Bureau of Labor Statistics webpage on green jobs: https://www.bls.gov/green/green_definition.htm.

community. To achieve these outcomes, this focus area identifies important ongoing planning efforts to lend support and momentum towards, for example, the Oakland General Plan OSCAR (Open Space, Conservation, and Recreation Element) Element and the East Oakland Neighborhood Initiative (EONI). The strategies aim to bolster existing programs rather than duplicate and dilute efforts, while honing in on the Community Steering Committee (CSC) as a critical knowledge source towards successful implementation.

Key collaborators include the City of Oakland Tree Division, City of Oakland Economic and Workforce Development Department (EWD), Oakland Public Works Department (OPW), and Alameda County given their ongoing efforts towards urban greening, workforce development (UGW), improvement of the local economy, and advancing career pathways.

Actions from this focus area may be referenced with the abbreviation UGW, followed by the strategy number and action number, for example, **UGW 1.1**.

Community Concern Statement: Lack of Trees, Limited Resources and a Need for More Green Jobs

East Oakland has some of the lowest tree canopy coverage in the city. The lack of trees contributes to a myriad of issues, including the urban heat island effect where temperatures are higher compared to other areas of the city with more greenery. Today, the lack of vegetative buffers and barriers near pollution sources, combined with poor maintenance of existing buffers, is a concern because it fails to protect sensitive receptors from harmful pollutants.

A shortage of parks and green spaces is a concern because East Oakland neighborhoods lack these essential areas that promote active lifestyles and improved physical and mental health. The Oakland flatlands have a much smaller share of the city's parkland, with most parks being small neighborhood spaces.

Additionally, limited resources for the City of Oakland to sustain and maintain urban forestry pose a challenge for the near future.

More local, sustainable jobs are needed in East Oakland. The East Oakland workforce lacks the skills to be competitive in sustainable jobs (e.g., contractors skilled in zero-emission appliance installation and maintenance such as those skilled in the HVAC and plumbing trades, etc.). Efforts to employ local residents in trash pick-up have promoted care for the community and viable employment avenues for local residents while supporting environmental improvements. However, these efforts need to be fortified to continue. Without dedicated resources and the necessary training to grow a skilled workforce to improve air quality and community health, the community will continue to face economic and environmental challenges.

Strategy 1. Sustainable Funding Options to Support Urban Greening and Sustainable Jobs

Strategy Objective: Local tree planting and stewardship programs are supported by a sustainable funding model that generates green jobs and fosters community partnerships. Carbon sequestration, reduced energy consumption, and improved air quality are key benefits and considerations in setting tree planting targets. Temperatures in East Oakland areas most impacted by the urban heat island effect are reduced, reaching levels comparable to other parts of Oakland with the highest tree canopy cover.

Strategy Metrics:

- List of funding sources identified

#	Actions
UGW 1.1	**Research Sustainable Funding Options to Support Urban Greening:** Research opportunities for sustainable funding to support installation, ongoing maintenance, and community stewardship of urban greening projects in AB617 communities negatively impacted by air pollution. Evaluate if funding options can support projects advancing the City of Oakland's green infrastructure objectives. Identify how partnerships with local and regional nonprofits in the green infrastructure and environmental justice space can be leveraged to ensure equitable investments. **Lead**: Bay Area Regional Collaborative, Air District **Timeframe**: Short Term (Less than 2 years)
UGW 1.2	**Research Sustainable Funding Options Related to Employment Pathways for Green Jobs:** Through the Air District's building electrification work, and the Bay Area Regional Climate Action Plan (BARCAP), the Air District will assemble information about funding sources for workforce development in sustainable sectors. **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)

Strategy 2. Improving Air Quality Through Vegetative Buffers and other Green Infrastructure for Vulnerable Populations

Strategy Objective: Green infrastructure, including vegetative buffers and barriers, is implemented, effectively installed, and maintained at targeted locations such as schools, daycare centers, medical facilities, and residential communities near high pollution sources like freeways and industrial zones. Nature-based solutions are promoted and new co-beneficial green infrastructure is introduced to mitigate air quality impacts and reduce air pollution exposure for sensitive populations.

Strategy Metrics:

- Tool developed to help prioritize urban greening locations (yes/no)
- Number of meetings to discuss tool/locations for vegetative buffers
- Funds invested to support East Oakland urban greening
- % completion of prioritized urban greening projects

#	Actions
UGW 2.1	**Create a Resource to Help Prioritize Installation of Vegetative Buffers:** Starting with the locations identified in the East Oakland Neighborhood Initiative and adding locations as new information becomes available, the Air District consults with the CSC and the City of Oakland Tree Division to create a resource that identifies high priority areas in

	East Oakland that are in need of vegetative buffers or other forms of green infrastructure. These nature-based solutions can help mitigate local air quality impacts and reduce air pollution exposure for vulnerable populations such as children, elderly, and individuals with respiratory conditions. Some initial locations could include the following areas: ● E Street and (partial) Gould Streets ● Union Pacific Railroad Right of Way (select locations) ● I-880 freeway vegetative buffer project ● G Street, from 92nd Ave to 77th Ave ● AC Transit corporate yard between Seminary Ave and 63rd Ave ● Other locations identified for tree planting This action will help achieve the City's tree planting goal of increasing the tree canopy cover over Oakland to 22.5% by 2034.[227] **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
UGW 2.2	**Urban Greening Funding.** With attention to the resource developed in action UGW 2.1, the Air District will design a funding strategy that can support urban greening. **Lead:** Air District **Timeframe:** Medium Term (2-3 years)

Strategy 3. Equitable Access to Green Spaces

Strategy Objective: East Oakland green spaces are safe, clean, high quality, and are equitably accessible to all residents. Investments are made in the infrastructure, services, and maintenance of existing parks in East Oakland. New green spaces are created, old parks are reopened, and vacant lots are repurposed, while promoting safe routes for pedestrians, cyclists, and transit users. East Oakland neighborhoods are connected with a citywide greenway network including trails, bikeways, and walking paths to recreational and green spaces. Access to healthy, local, and culturally relevant food, as well as traditional medicines, is expanded for community members through urban agriculture, including home gardens, community gardens, and urban farms.

Strategy Metrics:

- Number touch points (meetings, emails, etc.) with City of Oakland to inform and engage CSC members on the Open Space, Conservation, and Recreation (OSCAR) update

[227] Oakland Urban Forest Plan (p.72-74) https://cao-94612.s3.us-west-2.amazonaws.com/documents/Oakland-Urban-Forest-Plan-2024-v241124-pages.pdf

#	Actions
UGW 3.1	**City of Oakland Engages the CSC in the General Plan OSCAR Update:** The City of Oakland consults with the CSC in its park planning efforts to prioritize improvement of greenway networks between parks and neighborhoods in East Oakland, as part of the Open Space, Conservation, and Recreation (OSCAR) Element in Phase 2 of the General Plan Update. The CSC is also engaged in designing high-quality, inclusive programming, with a simplified process for permissions or approvals, that encourages diverse usage of park facilities throughout the day and into the evenings, catering to older adults, youth, and people with disabilities. See Appendix F-2 for a list of other strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland **Timeframe**: Short Term (Less than 2 years)
UGW 3.2	**Proactive City Updates and CSC Engagement Related to Neighborhood Gardening:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of Environmental Justice Element Policy EJ-5.3: Community and Home Gardening. This will support community and home gardening efforts, particularly in Environmental Justice communities underserved by healthy food retail. City of Oakland will work with CSC to improve community gardens, focusing on making them more accessible, inviting, safe, and secure. This will help improve air quality as home and community gardens, as well as farms can help reduce reliance on on-road mobile sources (such as delivery trucks and long-haul trucks) that can be diesel fueled or high polluting. See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe**: Short Term (Less than 2 years)

Strategy 4. Proactive Workforce Development

Strategy Objective: Sustain and expand local green workforce development in East Oakland by exploring resource opportunities, strengthening partnerships with local governments and nonprofits, and increasing access to training and employment pathways that address air quality concerns and further climate-resilience. Focus on opportunities such as zero-emission appliance installations, HVAC and plumbing trades, and community beautification efforts such urban greening efforts that promote environmental improvements, increase tree canopy coverage, promote economic vitality, and foster community well-being by ensuring a stable and compensated workforce, particularly for those who have been historically underrepresented in employment opportunities.

Strategy Metrics:

- Number of touch points (meetings, emails, etc.) with City and County to inform and engage CSC members on sustainable jobs-related initiatives

#	Actions
UGW 4.1	**Tracking Employment Pathways for Green Jobs**: Support local green jobs by strengthening partnerships, improving recruitment strategies targeting youth members, and conducting workforce demand analysis to align training opportunities with emerging green industries. The City of Oakland and Alameda County will regularly engage the CSC for input and updates during the development and implementation of proactive workforce development policies focused on East Oakland's priority sectors, including clean energy, vegetation installation and maintenance, building electrification, and waste management: ● City of Oakland 2030 Equitable Climate Action Plan (ECAP) - Just Transition ● City of Oakland Zero Emission Vehicle (ZEV) Action Plan ● Alameda County Climate Action Plan for Government Services and Operations through 2026 See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe**: Short Term (Less than 2 years)
UGW 4.2	**Engage the Oakland Workforce Development Board with the CSC:** The City of Oakland engages the CSC in the Oakland Workforce Development Board activities to connect Oakland residents to green jobs opportunities in zero-emission appliance installations, HVAC and plumbing trades, clean energy, waste management, and urban greening, to support local air quality improvements. **Lead:** City of Oakland **Timeframe**: Short Term (Less than 2 years)

Chapter 8: Overview of California Air Resources Board's Statewide Actions

As explored in Chapter 5, community-scale air pollution exposure is caused by many factors, including the impacts of multiple pollution sources. Effective solutions require multiple strategies at both the statewide and local levels to deliver new emissions reductions directly within these communities. California Air Resources Board (CARB) has adopted several comprehensive air quality and climate plans over the last several years that lay out new emissions reduction strategies. These plans include the recent State Strategy for the State Implementation Plan (SIP), [228] California's 2022 Climate Change Scoping Plan, [229] the California Sustainable Freight Action Plan, [230] the Short-Lived Climate Pollutants Reduction Strategy, [231] and the 2020 Mobile Source Strategy, [232] along with a suite of incentive programs. CARB is continuing to develop air quality and climate plans that will further reduce emissions. The Community Air Protection (CAP) Blueprint 2.0 contains additional strategy implementation guidance to reduce emissions of toxic air contaminants and criteria air pollutants in communities affected by a high cumulative exposure burden, and reflects the experience and lessons learned from the first years of the program development and implementation. [233] Blueprint 2.0 further identifies additional actions to reduce the air pollution burden in heavily impacted communities throughout the State. Together, these plans provide a foundation for the new actions identified as part of this community emissions reduction program.

This section illustrates CARB's role in the community emissions reduction program by broadly describing the regulatory and incentive-based statewide actions CARB has taken to reduce emissions statewide. It also highlights specific actions that address areas of concern identified by the East Oakland Community Steering Committee.

Incentive Programs

CARB operates incentive programs that reduce the costs of developing, purchasing, or operating cleaner technologies. The programs help ensure cleaner cars, trucks, equipment, and facilities are operating in our neighborhoods by driving the development of new, cleaner technologies and by accelerating their sale and adoption. Specifically, these programs accelerate the introduction of advanced technology vehicles and equipment, advance the turnover of older and higher-emitting vehicles and equipment, and increase access to clean vehicles and transportation in disadvantaged communities and lower-income households.

While CARB is responsible for program oversight, some programs are implemented in

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[228] California Air Resources Board, 2022 State Strategy for the State Implementation Plan, September 12, 2022, available at: https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy.

[229] California Air Resources Board, California's 2017 Climate Change Scoping Plan, September 2022, available at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents.

[230] California Department of Transportation, California Sustainable Freight Action Plan, July 2016, available at: https://dot.ca.gov/programs/transportation-planning/freight-planning/california-sustainable-freight-action-plan.

[231] California Air Resources Board, Short-Lived Climate Pollutant Reduction Strategy, March 2017, available at: https://ww2.arb.ca.gov/resources/documents/slcp-strategy-final.

[232] California Air Resources Board, 2020 Mobile Source Strategy, October 2021, available at: https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy.

[233] California Air Resources Board, Community Air Protection Program Statewide Strategy and Implementation Guidance Blueprint 2.0, October 2023, available at: https://ww2.arb.ca.gov/capp/mdc/bp2/community-air-protection-program-blueprint-20.

partnership with local air districts. Examples of CARB incentive programs include:

- Carl Moyer Memorial Air Quality Standards Attainment Program, [234]
- Community Air Protection (CAP) Incentives Program, [235]
    - The Community Air Protection Incentives are implemented by the air district through this program,
- Proposition 1B: Goods Movement Emission Reduction Program, [236]
- Funding Agricultural Replacement Measures for Emission Reductions Program, [237] and
- Low Carbon Transportation Investments and Air Quality Improvement Program (which includes the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project). [238]

Community Air Protection (CAP) Incentives

Since 2017, the California Legislature has appropriated money annually from the Greenhouse Gas Reduction Fund (GGRF) for incentives to support AB617. In advance of initial community selection in 2018, the Legislature directed that Community Air Protection (CAP) Incentives appropriated in Fiscal Year (FY) 2017-18 be focused on disadvantaged and low-income communities through the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) and the Proposition 1B Goods Movement Emission Reduction Program (Proposition 1B Program) to provide immediate air quality benefits in heavily impacted communities.

Between Fiscal Years 2017-18 and 2022-23, the Legislature appropriated $1,204 million in CAP Incentives. The Legislature initially appropriated incentives to generate immediate air quality benefits in communities most likely to participate in AB617 – primarily disadvantaged communities – as the program began to develop. Additionally, the Board set specific priority population investment targets for the funds: 70 percent in and benefiting disadvantaged communities and 80 percent in and benefiting disadvantaged or low-income communities. Through November of 2024, air districts have expended over $632 million dollars with $245 million in Assembly Bill 617 (AB617) communities. Air districts have expended over $452 million or roughly 71 percent in disadvantaged communities and over $537 million or roughly 85 percent in disadvantaged and low-income communities. [239]

To expand on initial funding options in the CAP Incentives Guidelines, CARB developed a process for the air districts to fund new projects responsive to community priorities and to expand stationary source incentives. CARB staff worked with the air districts and California Air Pollution Control Officers Association (CAPCOA) through late 2019 and early 2020 to ensure the process maximized flexibility to support projects requested by community members while

[234] For more information on the Carl Moyer Memorial Air Quality Standards Attainment Program, visit: https://ww2.arb.ca.gov/our-work/programs/carl-moyer-memorial-air-quality-standards-attainment-program.
[235] For more information on the Community Air Protection Incentives, visit: https://ww3.arb.ca.gov/msprog/cap/capfunds.htm.
[236] For more information on the Proposition 1B: Goods Movement Emission Reduction Program, visit: https://ww2.arb.ca.gov/our-work/programs/proposition-1b-goods-movement-emission-reduction-program.
[237] For more information on the Funding Agricultural Replacement Measures for Emission Reductions Program, visit: https://ww2.arb.ca.gov/our-work/programs/farmer-program.
[238] For more information on the Low Carbon Transportation Investments and Air Quality Improvement Program, visit: https://ww2.arb.ca.gov/our-work/programs/low-carbon-transportation-investments-and-air-quality-improvement-program.
[239] Disadvantaged and low-income communities as defined by Assembly Bill 1550 (Gomez, Chapter 369, Statutes of 2016), read more here: https://calepa.ca.gov/envjustice/ghginvest/.

simultaneously meeting the need to assess emissions reductions and other benefits. Staff published this expanded version of the CAP Incentives Guidelines in October 2020.

The revised guidelines allow air districts to expeditiously develop and fund projects to reduce emissions from stationary sources and to address those concerns identified and prioritized in each CERP through Community-Identified Projects. As a criterion for CARB's approval of a CERP, air districts must describe the level of support it received from the CSC. Subsequent proposed project plans to implement incentives-based- strategies and Community Identified Projects must also document strong, widespread, and clear community support and include descriptions of community benefits, both those benefits that are quantifiable and those more qualitative in nature. Figure 8-1 illustrates the process by which a Project Plan is developed and approved. This iterative process allows districts and CARB to account for complicated, unique, or unusual projects and ensure that they will be responsive to community needs.

Figure 8-1: CARB’s Community Air Protection Project Plan Review Process.

Several innovative incentive projects were initiated in 2022 and funded by CAP Incentives. San Joaquin Valley Air Pollution Control District (SJVAPCD) has numerous Community-Identified Projects totaling over $5 million, including wood stove replacements, EV charging infrastructure, low-dust nut harvesters, lawn and garden, and alternatives to agricultural burning. With support from Portside Environmental Justice Neighborhoods' CSC, San Diego Air Pollution Control District (SDAPCD) proposed, and CARB approved, an electric truck pilot project for Portside to incentivize e-truck purchases without requiring scrapping old trucks as a Community-Identified Project. On behalf of their AB617 communities, South Coast Air Quality Management District (SCAQMD) has submitted a Draft AB617 Truck Incentives Workplan to CARB for review that will provide opportunities for fleet owners to assess the suitability of zero-emission or near-zero-emission medium- or heavy-duty trucks and supporting infrastructure by allowing them to test drive the cleaner trucks for some time.

In 2023, staff recognized that other communities, particularly those that have been consistently nominated but not yet selected for participation in AB617, could likewise benefit from their air districts implementing these kinds of innovative new projects, and began to work with the air

districts through a public process to revise the CAP Incentives Guidelines to expand eligibility to such projects statewide. Staff published *revised CAP Incentives Guidelines* [240] in May 2025, incorporating many of the approved community-identified projects as new chapters eligible for any air district to implement in their most heavily impacted communities. New chapters include incentives for agency partnerships, vegetative barriers and urban greening, emergency diesel generator replacement, paving and bike path projects, dial-a-ride vehicle replacements, alternatives to agricultural burning, and low-dust nut harvester replacements.

Following the April 2024 update to the CAP Incentives Guidelines, staff began phase II updates to the Guidelines. After extensive collaboration with the air districts and CAPCOA [241] and following a public workshop at the end of April, staff published the newly updated Guidelines in May 2025. The phase II update aligns the Guidelines' administrative requirements with those of the Carl Moyer Memorial Air Quality Standards Attainment Program and includes a new chapter on woodsmoke reduction projects patterned off the existing CAPCOA Woodsmoke Reduction Program.

Regulatory Programs

Federal, State, and local air quality agencies all work together to reduce emissions. At the federal level, the U.S. Environmental Protection Agency (U.S. EPA) has primary authority to control emissions from certain mobile sources, including sources that are all or partly under federal jurisdiction (e.g., some farm and construction equipment, aircraft, marine vessels, locomotives), which it shares in some cases with air districts and the California Air Resources Board (CARB). The U.S. EPA also establishes National Ambient Air Quality Standards (NAAQS) for some air pollutants. At the State level, CARB is responsible for controlling emissions from mobile sources and consumer products (except where federal law preempts CARB's authority), controlling toxic emissions from mobile and stationary sources, controlling greenhouse gases from mobile and stationary sources, developing fuel specifications, and coordinating State-level air quality planning strategies with other agencies.

Regionally, air districts are primarily responsible for controlling emissions from stationary and indirect sources through rules and permitting programs within their regions (except for consumer products in most cases).

CARB regulatory programs are designed to reduce emissions to protect public health, achieve air quality standards, reduce greenhouse gas (GHG) emissions, and reduce exposure to toxic air contaminants (TACs). CARB establishes regulatory requirements for cleaner technologies (both zero and near-zero emissions) and their deployment into the fleet for cleaner fuels and to ensure in-use performance. CARB's regulatory programs are broad – impacting stationary sources, mobile sources, and multiple points within product supply chains from manufacturers to distributors, retailers, and end-users. CARB's regulations affect cars, trucks, ships, off-road equipment, consumer products, fuels, and stationary sources.

One important and relevant regulatory authority of CARB is to adopt measures to reduce emissions of toxic air contaminants from mobile and non-mobile sources, known as Airborne Toxic Control Measures (ATCM). [242] These regulatory measures include process requirements,

[240] California Air Resources Board, "Community Air Protection Incentives Guidelines," 2025 (May). https://ww2.arb.ca.gov/capp/resources/community-air-protection-incentives-guidelines.
[241] CAPCOA is a non-profit association the represents the 35 local air quality agencies in California.
[242] California Health and Safety Code § 39650 et seq.

emissions limits, or technology requirements. Additionally, CARB implements the Statewide Air Toxics "Hot Spots" Program [243] to address the health risk from toxic air contaminants at individual facilities across the State. The Air Toxics "Hot Spots" Program includes several components to collect emissions data, identify facilities having localized impacts, ascertain health risks, notify nearby residents of significant risks, and reduce those significant risks to acceptable levels.

Under the Air Toxics "Hot Spots" Program, air districts are required to set a threshold for facilities that pose a significant health risk and prioritize facilities for health risk assessments. Air districts also establish a risk value above which facilities must conduct a risk reduction audit and emissions reduction plan. Facilities must develop these health risk assessments, risk reduction audits, and emission reduction plans. CARB provides technical guidance to support smaller businesses in conducting health risk assessments and developing emissions reduction plans.

Additionally, CARB has pursued enforceable agreements with industry that result in voluntary but enforceable adoption of the cleanest technologies or practices and provide assurance that emissions reductions will be realized. CARB's agreement with the Union Pacific Railroad Company and BNSF Railway Company to accelerate the introduction of cleaner locomotives in the South Coast Air Basin (SCAB) is an example of an enforceable agreement.

The recent actions regarding California's Clean Air Act waiver actions taken under the guise of the Congressional Review Act were illegal. As Governor Newsom and CARB Chair Liane Randolph said, California will defend its rights to protect public health. To address the need for immediate guidance, CARB issued this advisory to auto manufacturers: Manufacturers Advisory Correspondence (MAC) ECCD-2025-03. [244]

On June 12, 2025, Governor Newsom announced California is suing the Trump administration over the President's approval of illegal resolutions aiming to undo key parts of the state's clean vehicles program. Below are links to statements from the Governor, Attorney General Rob Bonta, and CARB Chair Liane Randolph.

- 'Assault on California continues': Governor Newsom sues Trump over illegal attempt to revoke state's clean air policies. [245]
- California Will Not Waver in Defending Itself from Federal Overreach: Attorney General Bonta Sues Trump Administration for Attack on California's Clean Vehicles Program. [246]

[243] Assembly Bill 2588, Air Toxics "Hot Spots" Information and Assessment Act, Connelly, Statutes of 1987, California Health and Safety Code § 44300 et seq.

[244] California Air Resources Board, "Manufacturers Advisory Correspondence (MAC) ECCD-2025-03." 2025 (May 2023). https://www.rvia.org/system/files/media/file/CARB%20Manufacturers%20Advisory%20Correspondence%205%2023%2025.pdf

[245] State of California. 2025. "'Assault on California Continues': Governor Newsom Sues Trump over Illegal Attempt to Revoke State's Clean Air Policies." *Governor of California*, June 12. https://www.gov.ca.gov/2025/06/12/assault-on-california-continues-governor-newsom-sues-trump-over-illegal-attempt-to-revoke-states-clean-air-policies/.

[246] Office of the Attorney General Rob Bonta. 2025. *California Will Not Waver in Defending Itself from Federal Overreach: Attorney General Bonta Sues Trump Administration for Attack on California's Clean Vehicles Program*. June 11. https://oag.ca.gov/news/press-releases/california-will-not-waver-defending-itself-federal-overreach-attorney-general.

- CARB Chair Liane Randolph responds to President Trump's approval of illegal resolutions to revoke California's Clean Air Act waivers. [247]

CARB Actions Related to the East Oakland Community

This section highlights California Air Resources Board (CARB) actions that specifically relate to the East Oakland Community actions identified by the CSC. This list should not be interpreted as exhaustive but rather illustrative of some of the major statewide strategies driving emissions reductions in conjunction with those local-level strategies identified in this community emissions reduction program. More information on CARB's regulatory process can be found in the Online Resource Center. [248] The list of CARB actions and their anticipated benefits in current AB617 communities is also available on the Program Community Hub. [249] Some of these waivers have been subject to unlawful Congressional Review Act revocation actions and may be the subject of pending litigation.

Recently Adopted CARB Regulations

In September 2017, CARB approved Incentive Funding to Support Immediate Emissions Reductions [250] to fund advanced technologies that cut pollution in heavily impacted communities. Updated in April 2024, the program expanded eligibility and added new project categories based on five years of community-driven efforts.

In December 2017, CARB approved Short-Lived Climate Pollutant (SLCP) Reduction Strategy - Organic Waste in Landfills [251] The SLCP Reduction Strategy seeks to reduce methane emissions by cutting the disposal of organic waste in landfills by 75% by 2025, promoting the diversion of organic materials into compost, renewable natural gas, and energy.

In December 2019, CARB approved Advanced Clean Truck. [252] Its goals are 100% zero-emission pickup and delivery by 2040, zero-emission drayage trucks by 2035, and a self-sustaining zero emission vehicle (ZEV) market that benefits disadvantaged communities.

In August 2020, CARB approved Heavy-Duty "Omnibus" Low NOx Rulemaking, [253] setting stricter nitrogen oxides (NO_x) and particulate matter (PM) standards, extending vehicle warranty and useful life, introducing new compliance programs and zero emission vehicles (ZEV) incentives, and aligning regulations with federal standards to support emissions reduction goals.

In August 2020, CARB approved Heavy-Duty On-Road and Off-Road Engine In-Use Testing [254]

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[247] California Air Resources Board. n.d. "CARB Chair Liane Randolph Responds to President Trump's Approval of Illegal Resolutions to Revoke California's Clean Air Act Waivers." Accessed September 25, 2025. https://ww2.arb.ca.gov/news/carb-chair-liane-randolph-responds-president-trumps-approval-illegal-resolutions-revoke.

[248] Community Air Protection Program Resource Center: https://ww2.arb.ca.gov/ocap_resource_center.

[249] Community Air Protection Program Communities: https://ww2.arb.ca.gov/capp-communities.

[250] For more information on Incentive Funding to Support Immediate Emissions Reductions, visit: https://ww2.arb.ca.gov/our-work/programs/resource-center/strategy-development/incentive-funding.

[251] For more information on Short-Lived Climate Pollutant Reduction Strategy - Organic Waste in Landfills, visit: https://ww2.arb.ca.gov/our-work/programs/slcp.

[252] For more information on Advanced Clean Truck, visit: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks.

[253] For more information on Heavy-Duty "Omnibus" Low NOx Rulemaking, visit: https://ww2.arb.ca.gov/our-work/programs/heavy-duty-low-nox.

[254] For more information on Heavy-Duty On-Road and Off-Road Engine In-Use Testing, visit: https://ww2.arb.ca.gov/heavy-duty-in-use-compliance-program.

This strategy will involve real world screening of heavy-duty trucks and off-road engines operating in selected communities to target heavy-duty in-use compliance testing.

In February 2021, CARB approved Consumer Products Standards,[255] that lower volatile organic compound (VOC) limits, expand bans on toxic and high-GWP compounds, remove most fragrance exemptions, promote innovative propellants, and strengthen emissions controls and transparency.

In March 2021, CARB approved Clean Miles Standard[256] to cut emissions from Transportation Network Companies (TNCs) like Uber and Lyft, addressing increased travel, congestion, and pollution. The rule supports Advanced Clean Cars II and SB 375 goals for regional Greenhouse Gases (GHG) reductions.

In July 2021, CARB approved On-Board Diagnostic System Requirements (OBD II & HD OBD)[257] to enhance emissions and performance monitoring with stricter standards, revised phase-in timelines, and new reporting rules, balancing manufacturer concerns with air quality goals.

In September 2021, CARB approved Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate[258] to require diesel truck TRUs to transition to zero-emission by 2029, adopt stricter particulate matter (PM) standards, use low-GWP refrigerants, and meet new reporting, labeling, and fleet turnover rules.

In December 2021, CARB approved Heavy-Duty Inspection and Maintenance.[259] Dubbed the Clean Truck Check, a program combining periodic testing, emissions monitoring, and enhanced enforcement to ensure heavy-duty vehicles are properly repaired, cutting smog and toxic pollution to meet air quality standards.

In December 2021, CARB approved Small Off-Road Engine Amendment[260] CARB amended regulations for small off-road engines (SORE) to transition toward zero-emission equipment by 2035, setting stricter standards by 2024 and achieving zero emissions for generators by 2028. This initiative aims to reduce pollution from SORE and improve public health, while aligning with California's climate and air quality goals.

In June 2022, CARB approved Advanced Clean Cars 2.[261] The Advanced Clean Cars 2 regulations will cut emissions from light-duty vehicles between 2026 and 2035 by boosting zero-emission vehicle sales and tightening gasoline car standards. In October 2023, CARB began

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[255] For more information on Consumer Products Standards, visit: https://ww2.arb.ca.gov/our-work/programs/consumer-products-program

[256] For more information on Clean Miles Standard, visit: https://ww2.arb.ca.gov/our-work/programs/clean-miles-standard.

[257] For more information on On-Board Diagnostic System Requirements (OBD II & HD OBD), visit: https://ww2.arb.ca.gov/our-work/programs/obd

[258] For more information on Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate, visit: https://ww2.arb.ca.gov/resources/fact-sheets/2022-amendments-tru-atcm

[259] For more information on Heavy-Duty Inspection and Maintenance, visit: https://ww2.arb.ca.gov/our-work/programs/CTC

[260] For more information on Small Off-Road Engine Amendment, visit: https://ww2.arb.ca.gov/our-work/programs/small-off-road-engines-sore

[261] For more information on Advanced Clean Car 2, visit: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii

considering updates to GHG tailpipe limits and revisions to low-emission vehicles (LEV) and zero emission vehicles (ZEV) rules, supporting the state's goal for all new cars to be zero-emission by 2035.

In October 2022, CARB approved Advanced Clean Fleets [262], requiring targeted fleets to adopt ZEVs and mandating only ZEV truck sales by 2036. The regulation is projected to deploy 1.69 million ZEVs by 2050, improve air quality, and deliver $26.5 billion in health benefits and $48 billion in fleet savings.

In November 2022, CARB approved In-Use Off-Road Diesel Fueled Fleets Amendment [263], effective January 2024, to speed up the phase-out of older diesel vehicles, tighten emissions controls, and improve air quality with funding support for cleaner technology.

In November 2022, CARB approved National Locomotives Standards Petition [264] to review and strengthen national locomotive emission standards, aiming to phase out older engines, promote zero-emission technology, and cut pollution in disadvantaged communities.

In November 2022, CARB approved Off-Road Diesel Engine Emission Standards [265] to phase out older engines, adopt cleaner technology, and meet reporting deadlines by fleet size to reduce emissions and improve air quality in impacted communities.

In September 2024, CARB approved Zero Emission Off-Road Forklift Regulation [266] to phase out gas and propane forklifts by 2026, replacing them with battery-electric and fuel-cell models to cut nitrogen oxides (NO_x) and fine particulate matter ($PM_{2.5}$), supporting climate goals and delivering health and economic benefits through 2043.

Future and Upcoming CARB Rulemakings

The California Air Resources Board (CARB) is advancing a comprehensive suite of future and upcoming rulemakings aimed at accelerating California's transition to zero-emission (ZE) technologies across multiple sectors. These efforts support the state's ambitious air quality, climate, and public health goals, with a strong emphasis on protecting communities most impacted by pollution. From mobile source strategies and off-road equipment regulations to building standards and industrial controls, each initiative reflects CARB's commitment to environmental justice and technological innovation.

Cargo Handling Equipment Regulation to Transition to Zero-Emissions - CARB plans to amend the Cargo Handling Equipment regulation to require ZE technology at seaports and railyards, replacing diesel and other combustion-powered equipment like yard trucks and forklifts. The amendments may include an implementation schedule for new equipment and infrastructure, prioritizing early adoption in communities most impacted by air pollution. For

[262] For more information on Advanced Clean Fleets, visit: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets.
[263] For more information on In-Use Off-Road Diesel Fueled Fleets Amendment, visit: https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation
[264] For more information on National Locomotives Standards Petition, visit: https://ww2.arb.ca.gov/resources/documents/us-epa-responds-carbs-petition-strengthen-locomotive-emission-standards
[265] For more information on Off-Road Diesel Engine Emission Standards, visit: https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation
[266] For more information on Zero Emission Off-Road Forklift Regulation, visit: https://ww2.arb.ca.gov/our-work/programs/zero-emission-forklifts

more information, visit: https://ww2.arb.ca.gov/our-work/programs/cargo-handling-equipment [267]

California Clean Construction Program - CARB's voluntary program encourages fleets to adopt advanced and zero-emission vehicles beyond requirements, using a rating system and offering incentives like job access, recognition, and marketing to promote early adoption of clean technologies.

Composite Wood Products Control Measure Amendments - This strategy updates CARB's 2007 Composite Wood Products ATCM, which set formaldehyde limits for hardwood plywood, particleboard, and medium density fiberboard (MDF), and requires all products containing these materials—like flooring, cabinets, and furniture—sold in California to comply. For more information, visit: https://ww2.arb.ca.gov/our-work/programs/composite-wood-products-program/about [268]

Phased Advanced Clean Equipment (PACE) Rule- CARB plans to propose a regulation requiring off-road equipment manufacturers to sell a percentage of zero emission (ZE) equipment annually. This measure aims to increase ZE options in the off-road sector and support initiatives that encourage or mandate the adoption of cleaner technologies.

Tier 5 Off-Road New Compression-Ignition Engine Standard - CARB's proposed Tier 5 amendments would cut off-road diesel engine emissions by 90% for NO_x and 75% for PM, introduce carbon dioxide (CO_2) standards, and strengthen compliance, with implementation starting in 2029 to improve air quality. For more information, visit: https://ww2.arb.ca.gov/our-work/programs/tier5 [269]

Transport Refrigeration Unit Regulation Part 2 - CARB's new Transport Refrigeration Units (TRU) regulation phases in ZE technology to replace diesel units, aiming to cut emissions, protect public health near distribution centers, and support California's climate goals. For more information, visit: https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/new-transport-refrigeration-unit-regulation [270]

Zero-Emission Standard for Space and Water Heaters - CARB's Zero-Emission Space and Water Heater Standards target GHG and NO_x reductions from buildings by promoting ZE technologies, with a focus on affordability, equity, and statewide health benefits. Air District modeling conducted to support amendments to Rules 9-4 and 9-6 shows that the health of East Oaklanders is disproportionately impacted by appliance NOx emissions. [271] For more information, visit: https://ww2.arb.ca.gov/our-work/programs/zero-emission-space-and-water-heater-standards [272]

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[267] CARB. "Cargo Handling Equipment." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/cargo-handling-equipment
[268] CARB. "Composite Wood Products Airborne Toxic Control Measure." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/composite-wood-products-program/about
[269] CARB. "Potential Amendments to the Off-Road New Diesel Engine Emission Standards: Tier 5 Criteria Pollutants and CO2 Standards." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/tier5
[270] CARB. "New Transport Refrigeration Unit Regulation in Development." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/new-transport-refrigeration-unit-regulation
[271] Bay Area Air District. "Exposure and Equity Assessment of Natural Gas Appliances in the San Francisco Bay Area." Accessed May 29, 2025. https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-9-rule-4-nitrogen-oxides-from-fan-type-residential-central-furnaces/2021-amendments/documents/20221220_sr_appf_rg09040906-pdf.pdf?rev=5bc72160fb8e43fcbd26ba854a909218&sc_lang=en
[272] CARB. "Zero-Emission Space and Water Heater Standards." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/zero-emission-space-and-water-heater-standards

Chapter 9: Implementation and Reporting

Achieving the goals outlined in the East Oakland Plan will require a strong commitment to both sustained implementation and consistent reporting on progress, including successes and challenges. This chapter outlines the strategy for implementing the Plan and providing annual updates to the CSC, Air District Board of Directors, and the California Air Resources Board (CARB).

The Plan has been designed to be implemented within a five-year horizon, starting from its adoption by the Air District Board of Directors. It also includes a 10-year horizon for continued tracking to ensure sustained progress toward the Plan-level Goals that will be achieved through the strategies and actions described in Chapter 7 in alignment with the Plan's Vision and Principles.

Government Collaboration & Agency Roles

Successful implementation will require coordination among multiple government agencies. The Air District will facilitate the inter-agency collaboration necessary to advance the Plan. Key government implementation partners include CARB and local agencies such as the City of Oakland, the Alameda County Public Health Department (ACPHD), and the Port of Oakland. This section details the authority and responsibilities of each agency designated as a lead in implementing the Plan's actions.

As implementation progresses and actions are developed and refined, new government partners may be identified and engaged.

Air District

The California Legislature created the Air District in 1955 as the first regional air pollution control agency in the country. The Air District is responsible for regulating stationary sources of air pollution in in the nine counties that surround the San Francisco Bay Area: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties.

The Air District passes and enforces a wide variety of regulations on industries, businesses, and activities, from wood burning in fireplaces to refining fossil fuels, to ensure air pollution is minimized. We also distribute over $150 million in state and federal incentive funding every year to reduce air pollution from mobile sources, such as cars, trucks, school buses, port and construction equipment, lawn and garden equipment, and wood-burning stoves and fireplaces. This core work of the Air District is foundational to our efforts to reduce air pollution, protect people's health and mitigate climate change. [273]

The Air District will play a central role implementing the Plan alongside the East Oakland CSC, CARB, local agencies, and other partners in East Oakland. The Air District is uniquely positioned to bring together those responsible for carrying out the Plan. It is committed to providing the necessary resources for successful implementation, which includes efforts such as strengthening regulations and improving enforcement. Actions implemented by the Air District include, for example:

[273] Bay Area Air District. "2024-2029 Strategic Plan," 2024. https://strategicplan.baaqmd.gov/.

- **C&I 2.1.** Implement Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities.
- **C&I 8.1.** Promote the Complaint Program Through a Public Information Campaign.

City of Oakland

Implementing the Plan requires collaboration between the Oakland City Council and multiple City of Oakland departments. The City of Oakland holds authority over land use—through its Planning & Building Department—and over local roads, sidewalks, and bike lanes via the City of Oakland Department of Transportation (OakDOT).

The City Council exercises this authority by adopting general and specific plans, zoning ordinances, and bike, pedestrian, and corridor plans. It also approves conditional use permits and certifies environmental reports for projects such as housing, commercial, and industrial developments.

The Oakland Public Works Department (OPW) is responsible for maintaining and enhancing public infrastructure and environmental quality, including efforts like urban greening and addressing illegal dumping.

The Sustainability Office leads efforts focused on environmental improvement, energy efficiency, support for green businesses, and initiatives to mitigate and adapt to climate change.

Lastly, the Economic & Workforce Development Department (EWD) and the Workforce Development Board work to build a strong local economy by providing job training and employment opportunities for Oakland residents. Actions implemented by the City of Oakland include, for example:

- **ID 1.2.** Illegal Dumping Prevention Community Outreach.
- **BE 3.2.** Air Quality Protection Information for Communities Located Near Sources of Harmful Pollutants.

Alameda County Public Health Department (ACPHD)

The Alameda County Public Health Department (ACPHD) is responsible for a broad range of public health services aimed at improving community well-being. These services include assessing residents' health status, preventing and controlling disease, mobilizing and engaging the community, developing policies, providing education, and ensuring access to quality medical and health care services.

The Department strives to reduce health inequities and improve community health through various efforts, such as providing health and social data, conducting disease surveillance, offering immunization services, and coordinating public health emergency preparedness. Actions implemented by ACPHD include, for example:

- **PH 3.4.** Health Dashboard.
- **T&M 7.1** Proactive Community Engagement on Airport Issues.

California Air Resources Board (CARB)

The California Air Resources Board (CARB) is the state agency responsible for regulating

emissions from mobile sources (such as vehicles) and consumer products. While the U.S. EPA sets nationwide air quality and emissions standards, CARB addresses California's unique air quality challenges by establishing stricter emissions standards for a variety of pollution sources, including vehicles, fuels, and consumer products.

CARB's mission is to protect public health, welfare, and the environment by reducing air pollutants, while balancing the economic impact of these efforts. The agency also works to safeguard the public from the harmful effects of air pollution and develop programs to combat climate change. Initiatives include requirements for clean cars and fuels, as well as other innovative solutions to reduce greenhouse gas emissions. Actions implemented by CARB include, for example:

- **T&M 1.5.** Idling Prevention and Outreach.
- **T&M 1.7.** Heavy-Duty Diesel Trucks inspections.

Port of Oakland (Port)

The Port of Oakland is a local agency that manages the Oakland Seaport, Oakland San Francisco Bay Airport, and approximately 20 miles of waterfront including Jack London Square. It operates as an independent department of the City of Oakland. The Port is governed by the Board of Port Commissioners, which is made up of seven members nominated by the Mayor and appointed by the City Council. Plan Actions implemented by the Port of Oakland include, for example:

- **T&M 6.2.** Electric Ground Support Equipment.
- **T&M 7.4.** Airport Fence Line Air Quality Monitoring.

Community Partnerships

Successful implementation will require close collaboration between the Air District, CSC, Co-Leads, and others. These community partners will play a vital role in ensuring accountability and transparency while helping to prioritize and advance implementation of the Plan.

Community Steering Committee (CSC)

The CSC will play a vital role in implementing the Plan by guiding efforts to achieve Plan-level Goals and priorities.

Throughout the implementation process, the CSC will be responsible for reviewing progress and providing input on the implementation of strategies and actions. Clear and effective communication between the CSC and Air District will be critical to ensure priorities are established early, and that the selected actions are in line with the community's goals.

The current Charter will conclude upon adoption of the Plan. To support implementation, a revised charter aligned with implementation objectives will be developed. A process to reconstitute the CSC will be established. Once reconstituted, the CSC will operate under the revised charter. The current CSC will be invited to help shape the implementation phase, and an application process will be used to fill any open seats. Meeting frequency and structure will be designed to support meaningful participation and align with the Annual Implementation Schedule. Full CSC meetings are expected to occur quarterly to share updates, celebrate progress, and reassess priorities for the coming year.

As implementation of the Plan progresses and actions are refined, new Co-Lead and CSC ad-hoc working groups or subcommittees may be formed as needed, depending on available resources. The formation of these groups will depend on the strategy and action priorities, availability of stipend funding, the capacity of staff and partner organizations, as well as community interest and availability.

Co-Leads

During the implementation phase of the Plan, and contingent on continued funding from the State of California, Communities for a Better Environment (CBE) and the Air District will serve as Co-Leads, supporting the CSC as they engage with implementing strategies and actions outlined in the plan. As Co-Leads, CBE and the Air District will be responsible for providing background materials to support CSC-member participation and preparation for meetings. The Air District and CBE will also manage committee membership, including filling vacancies, and coordinate the development of meeting agendas in collaboration with the meeting facilitator. CBE will also support outreach, education and action implementation. The Air District will provide administrative support to the CSC.

Strategic Plan Working Groups

As part of implementing its 2024–2029 Strategic Plan, the Air District will convene community-centered working groups on a range of topics that align with Plan-level Goals. These working groups will bring together diverse stakeholders to help shape policies, programs, and initiatives that reflect community needs and lived experience.

Opportunities to join specific working groups will arise over time as different components of the Strategic Plan move forward. The Air District is committed to early and ongoing engagement with East Oakland and other Assembly Bill 617 (AB617) communities throughout this process.

Community Engagement During Implementation

Throughout implementation, the CSC will continue its ongoing role of overseeing and guiding efforts to achieve Plan-level Goals, as previously described. In addition, community engagement efforts will continue, strengthening the relationships and partnerships with community members, business owners, and other stakeholders established during the planning phase to support implementation of the strategies and actions. The Air District, in collaboration with other partners, may also include periodic listening sessions and community workshops to build community awareness, share progress, and connect community to resources and services that address immediate needs. This will provide an opportunity to address community concerns, gather feedback, and make necessary adjustments to improve progress towards strategy and action implementation.

Certain actions in the Plan call for engagement and outreach in East Oakland to address a range of issues of importance to the CSC. For example, **Illegal Dumping Action 1.3** calls for the Oakland Public Works Department (OPW) to collaborate with the CSC in developing outreach and education materials that raise awareness about illegal dumping prevention. **Action 1.4** supports this effort by positioning the CSC as a key driver in distributing these materials to East Oakland community members, ensuring that the messaging reaches and resonates with the broader community.

To the extent possible, outreach and other materials developed for the implementation of actions will be accessible and translated, including using clear, plain language and be provided

in multiple formats—for example, printed flyers for people without internet access—and through a variety of channels, such as social media and library bulletin boards.

Policy Alignment

This section explains how the implementation of the Plan will align with the Air District's Strategic Plan and with the policies of existing, locally adopted plans from various government agencies. By ensuring alignment, the implementation process will build on established frameworks, promote consistency, and avoid duplication of efforts, ultimately strengthening the impact of the Plan.

Air District Strategic Plan

In fall 2023, the Air District began developing its 2024–2029 Strategic Plan ("Strategic Plan") through collaboration among community leaders, staff, the Board of Directors, and partners. After identifying key strengths and areas for improvement, the Board of Directors approved the Strategic Plan on September 4, 2024.

Over the next five years, the Air District will transform its workforce, operations, programs, and community engagement efforts to improve air quality, build trust, and lead with equity-centered environmental stewardship.

Adoption of the Strategic Plan coincided with strategy development for this Plan. Therefore, one of the key considerations for developing strategies and actions was ensuring alignment with the Air District's Strategic Plan. This alignment offers several benefits, with two key advantages being:

1. **Efficient Use of Resources**: Aligning with the Air District's broader organizational priorities allows for more targeted and effective allocation of resources, including funding, staff capacity, and technical expertise. This approach minimizes duplication across initiatives and ensures focus on areas with the greatest potential for impact.

2. **Greater Coordination**: Aligning with the Strategic Plan ensures implementation of East Oakland strategies and actions is part of a larger, unified effort. This fosters collaboration across the Air District and with community partners, leading to a more coordinated approach in addressing the air quality and environmental justice issues identified in the Plan.

Locally Adopted Plans

Strategy development also involved aligning with existing plans adopted by multiple government agencies. Rather than duplicating efforts, several strategies in the Plan focus on proactively tracking the implementation of adopted policies that address issues important to the CSC (Appendix F-2: Proactive City Updates and CSC Engagement). The following local plans include policies for which government agencies will seek input from the CSC:

- Alameda County Climate Action Plan for Government Services and Operations through 2026 (Adopted: 2023)
- City of Oakland 2023-2031 Housing Element (Adopted: 2023)
- City of Oakland 2030 Equitable Climate Action Plan (ECAP) (Adopted: 2020)
- City of Oakland Environmental Justice (EJ) Element (Adopted: 2023)

- City of Oakland Safety Element (Adopted: 2023)
- City of Oakland Transit Action Strategy (Adopted: 2020)
- City of Oakland Urban Forest Plan (Adopted: 2024)
- City of Oakland Zero Emission Vehicle Action Plan (Adopted: 2023)
- City of Oakland Safe Oakland Streets Initiative (Adopted: 2021)
- East Oakland Neighborhoods Initiative (EONI) (Completed: 2019)

Additionally, the City of Oakland is currently in Phase 2 of its General Plan update, which involves major revisions to land use, transportation, parks, and other policies relevant to the Plan. Engaging with and aligning efforts in this process offers an additional opportunity to address issues important to the CSC.

Implementation Mechanisms

This section outlines a range of actions included in the Plan, categorized by the specific mechanisms they use to reduce emissions and exposure in East Oakland.

Incentives

The Air District's Community Air Protection (CAP) Incentives Program reduces pollution in Bay Area communities most affected by air quality issues. This program funds projects that replace older, high-emission heavy-duty vehicles and equipment with cleaner alternatives. Priority is given to projects in communities heavily impacted by air pollution, including AB617 communities such as West Oakland, Richmond-North Richmond-San Pablo, East Oakland, Bayview Hunters Point/Southeast San Francisco, and other disadvantaged and low-income areas identified by California Climate Investments. Examples of incentive-based actions include:

- **BE 1.3.** Woodsmoke Reduction.
- **T&M 3.1.** Lawn and Garden Equipment.

Rule Development

California law outlines the process for creating air quality regulations. CARB and local air districts develop and implement rules to improve air quality and public health. Examples of rule-based actions include:

- **C&I 1.1.** Rule Amendments to Address Fugitive Dust.
- **C&I 2.2.** Rule Amendments to Improve Implementation of Rule 11-18 and the Facility Risk Reduction Program.

Enforcement

Several agencies oversee enforcement in East Oakland. CARB enforces statewide rules and regulations related to mobile sources such as those ensuring heavy-duty truck engines meet the latest clean-air standards. The Air District enforces rules and regulations related to stationary sources, for example industrial facilities or wood burning devices. Cities and counties enforce local zoning, planning and traffic regulations, for example, helping keep transport trucks on designated routes. Under an environmental justice framework, communities are essential partners to enforcement agencies in ensuring that rules and regulations are enforced effectively,

promptly, and equitably. Examples of enforcement-based actions include:

- **C&I 7.1.** Targeted Inspections to Address Repeat Violators.
- **C&I 7.4.** Regular Enforcement Updates.

Engineering & Permitting

In California, stationary sources such as factories may be required to obtain permits that specify allowable air pollution emission limits. The Air District has the authority to issue these permits. Additionally, land use and building permits are managed by the City's planning department and the County's health department oversee hazardous materials permits. Various state agencies, including the Department of Toxic Substances Control (DTSC) and California Environmental Protection Agency (CalEPA), permit industrial activities involving hazardous materials. Examples of permitting-based actions include:

- **C&I 3.1.** Improve Permitting Processes to be More Efficient and Timely.
- **C&I 2.1.** Implement Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities.

Zoning and Land Use

Zoning and land use policies are mechanisms used by local governments (*e.g.,* the City of Oakland) to regulate how land can be developed and used in different areas of a city or county. Zoning typically divides land into districts—such as residential, commercial, industrial, or mixed-use—with rules about what types of buildings and activities are allowed in each zone. These policy mechanisms help shape the built environment and can be used to protect public health and the environment. When applied thoughtfully, zoning and land use policies can improve air quality by creating buffer zones between pollution sources and sensitive land uses like homes, schools, and parks; restricting the expansion of polluting industries in overburdened neighborhoods; and encouraging development patterns that reduce vehicle use and emissions. Examples of zoning-based actions include:

- **BE 3.1.** Tracking Nonconforming Truck-Attracting Businesses.
- **BE 3.3.** Community-Informed Amortization.

Air Monitoring

Air monitoring provides information on levels of different pollutants in the outdoor air we breathe in our communities. Air monitoring can identify air quality issues and inform efforts to reduce emissions and limit exposure. There are several methods for monitoring air quality, each with different purposes, strengths, and limitations. For example, stationary monitors (fixed in one location) can provide continuous data useful for comparison with air quality standards and for evaluating changes in air quality over time. In contrast, shorter-term monitoring projects using other types of approaches, such as mobile monitors (mounted on vehicles), can offer more targeted information, such as data on the air quality impacts of a specific facility or other community air quality concerns. Examples of monitoring-based actions include:

- **PH 3.1.** East Oakland Air Monitoring Project.
- **PH 3.3.** Support Local Air Monitoring or Air Quality Data Projects.

Education

Ongoing education efforts will focus on two key areas: equipping community with technical knowledge related to Plan implementation and informing agencies about on-the-ground conditions in the East Oakland community. Examples of education-based actions include:

- **PH 6.1.** Improve Air Pollution Awareness.
- **ID 1.3.** CSC Dissemination of Illegal Dumping Prevention Materials.

Research and Further Study

Further research, data analysis, and additional studies will be necessary to deepen understanding of critical topics and guide strategic decision-making. Examples of research-based actions include:

- **UGW 1.1.** Research Sustainable Funding Options to Support Urban Greening.
- **UGW 1.2.** Research Sustainable Funding Options Related to Employment Pathways for Green Jobs.

Tracking Plan Implementation Progress

This section outlines the processes for creating the Annual Implementation Schedule and Annual Progress Reports, key tools for tracking and reporting on Plan progress. The Implementation Schedule will serve as an annual work plan, while the Progress Report will document progress, refine strategies, assess needs, and highlight successes. Together, these tools will support the continuous improvement and successful implementation of the Plan.

Annual Implementation Schedule

Each year, the Air District and the CSC will collaborate to create an Implementation Schedule that outlines priority topics for the upcoming year. For each of these topics, the schedule will identify related strategies and actions. This schedule will be developed in coordination with relevant Air District, government agency, and partner implementors. The process will begin with an annual call to gather information on priorities for the upcoming year. This will help ensure that the implementation of Plan strategies and actions align with planned initiatives.

The Implementation Schedule will serve as an annual work plan. CSC meetings will be agendized to align with the CSC priorities in the Implementation Schedule. The Implementation Schedule is a coordination tool; it is not expected to require significant additional resources beyond those already allocated for Plan implementation.

As needed, the CSC may identify community-level implementation opportunities—such as education, resource development, and engagement activities—to be included in the schedule. [274]

Starting in the second year of implementation, the development of each annual schedule will begin with an evaluation of the previous year's activities. This evaluation will help identify and

[274] These activities may not involve lobbying or any other form of political advocacy.

address any challenges that may be hindering progress toward achieving Plan-level Goals.

Annual Progress Reports

The Plan is a dynamic document that will be updated as needed to reflect progress and evolving priorities. The annual progress reports serve as the primary tool for evaluating the implementation of the Plan.

The Annual Progress Report will document the implementation of the Plan and provide an opportunity to refine strategies and actions, assess the need for additional measures, and highlight key successes and lessons learned, in alignment with CARB's guidance (Blueprint 2.0). [275] Refining strategies and actions may involve revising the language based on an evaluation of implementation progress - including successes, challenges, emerging opportunities, and updates to the community description. These reports provide a formal mechanism for the Air District and CSC to communicate agreed-upon changes to the public and CARB.

Monitoring progress toward achieving Plan-level Goals is crucial. Therefore, every strategy in the Plan includes metrics that are specific, measurable, community-focused, and directly tied to the actions. When these metrics are combined, they will provide a clear overview of progress on the Plan.

Further, the Annual Report will be evaluated by CSC. During its evaluation, the CSC will help determine which actions may need adjustment based on their implementation status. This will also help determine alignment with the next Annual Implementation Schedule and whether any adjustments are needed.

Five-Year Report

The fifth annual report marks a significant milestone, as it represents the final year of the five-year implementation horizon for the Plan. This report provides an opportunity for the Air District and the CSC to evaluate overall progress and develop an approach for completing any remaining actions.

The fifth annual report will also evaluate the effectiveness of the CSC process. This review will highlight strengths, challenges, and areas for improvement, particularly in governance and community engagement. Publication of this report is currently expected to occur during the 2030–2031 calendar years.

For the 5-year implementation milestone, the Air District will conduct a comprehensive emissions inventory update that includes all emissions sources, such as stationary and mobile sources. The 5-year update will be included in the fifth annual report. This information will be made publicly available to the CSC and other stakeholders. The Air District will also continue exploring new methods to compare emissions inventory data with exposure data to help advance Plan-level Goals and reflect progress made.

[275] California Air Resources Board. "Community Air Protection Program Blueprint 2.0." 2025. Community Air Protection Program Blueprint 2.0 | California Air Resources Board.

Plan Acronyms and Glossary

Acronyms

The East Oakland Plan uses the following acronyms.

Acronym	Phrase/Term
AB617	Assembly Bill 617
ACPHD	Alameda County Public Health Department
Air District	Bay Area Air District
BAAD	Bay Area Air District or Air District
BIPOC	Black, Indigenous, and People of Color
BMP	Best Management Practices
BTEX	Benzene, toluene, ethylbenzene, and xylene
BUGs	Backup diesel generators
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CAP	Criteria Air Pollutant
CAP	Community Air Protection
CAPCOA	California Air Pollution Control Officers Association
CAPP	CARB's Community Air Protection Program
CARB	California Air Resources Board
CBE	Communities for a Better Environment
CBO	Community-based organization
CCCTA	Contra Costa County Transportation Authority
CEQA	California Environmental Quality Act
CHC	Commercial Harbor Craft
CHE	Cargo Handling Equipment
CO	Carbon Monoxide
COPD	Chronic Obstructive Pulmonary Disease
DPM	Diesel Particulate Matter
DTSC	State of California Department of Toxic Substances Control
GHG	Greenhouse Gases

HDDTs	Heavy Duty Diesel Trucks
HEPA	High Efficiency Particulate Air Filter
HRA	Health Risk Assessment
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NO_2	Nitrogen Dioxide
NOV	Notice of Violation
NO_x	Nitrogen Oxides
NTC	Notice to Comply
O_3	Ozone
OEHHA	California Office of Environmental Health and Hazard Assessment
OGV	Ocean Going Vessel
PAH	Polycyclic Aromatic Hydrocarbon
Pb	Lead
PTCA	Path to Clean Air
PM	Particulate Matter
PM_{10}	Inhalable Particulate Matter (with diameter of 10 micrometers or less)
$PM_{2.5}$	Fine Inhalable Particulate Matter (with diameter of 2.5 micrometers or less)
PPB	Parts Per Billion
PPM	Parts Per Million
RELs	Reference Exposure Levels, can be acute or chronic
ROG	Reactive Organic Gases
RRP	Risk Reduction Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
TAC	Toxic Air Contaminant
TOG	Total Organic Gases
TMP	Truck Management Plan
TWE	Toxicity-Weighted Emissions, can be for cancer potency or chronic or acute health effects

UFP	Ultrafine particle
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle miles traveled
VOC	Volatile Organic Compound
WHO	World Health Organization
ZE	Zero emission
ZEV	Zero emission vehicle

Glossary

The East Oakland Plan uses the following terms.

AB617 – Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) directs the state, in consultation with local air districts, to select communities in California that are exposed to high levels of air pollution. Selected communities will work with local air districts on action plans to reduce people's exposure to particulate matter and toxic air contaminants, and/or to develop community air monitoring plans.

Abatement Device – Devices designed to capture, remove and/or reduce pollutants that would otherwise be emitted into the air. Examples are baghouses, scrubbers, dust collectors, direct flame afterburners, vapor recovery units, and water sprayers.

Air District or Bay Area Air District – The regional air pollution control agency with jurisdiction over the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, Santa Clara, San Mateo, and the southern portions of Solano and Sonoma counties. The Air District oversees policies and adopts regulations for the control of air pollution from stationary sources, adopts clean air plans, offers incentives for emission reductions from mobile sources, enforces air quality rules, and collects, monitors, and models air quality data.

Area Sources – Stationary sources of air pollutants that individually emit relatively small quantities of air pollutants, but that may emit considerable quantities of emissions when aggregated over a large area. Examples include water heaters, lawn maintenance equipment, and consumer products.

Best Practices to Reduce Emissions – Measures that reduce emissions and therefore reduce health risks from air pollution. Examples include retrofitting diesel generators to low or zero emitting technology, electrifying loading docks, limiting truck idling times, requiring low or zero emitting truck engines, and adding abatement devices to stationary sources.

Best Practices to Reduce Exposure – Measures that may not reduce actual emissions but reduce people's exposure to pollutants and reduce health risks. Examples include HVAC (heating ventilation, air conditioning) air filters, planting vegetation between a source of pollution and residential units and prohibiting trucks on residential streets.

Back-up Diesel Generator (BUG) – BUGs include stationary generators and portable generators. Stationary generators are often sources of emergency power for commercial, industrial, and residential buildings. Portable generators are used as temporary power when and where an electrical grid is not available, at construction sites, outdoor gatherings such as concerts and festivals, and disaster recovery sites. See also diesel engine.

Black Carbon – Black carbon (BC) is the sooty black material emitted from gasoline and diesel engines, coal-fired power plants, and other sources that burn fossil fuel. It comprises a significant portion of particulate matter. Inhalation of black carbon is associated with health problems including respiratory and cardiovascular disease, cancer, and birth defects.

California Air Resources Board (CARB) – The state agency that oversees policies and adopts regulations for the control of air pollution from mobile sources and some stationary sources. CARB's mission is to promote and protect public health, welfare, and ecological resources through the reduction of air pollutants.

California Environmental Quality Act (CEQA) – State environmental legislation designed to protect the environment and to inform and engage the public about projects considered by California public agencies. Applies to many projects proposed to be conducted or approved by a California public agency, including private projects requiring government approval. The public is engaged through scoping meetings, public notice, public review, hearings, and the judicial process. Documents to inform the public include an initial study (IS), to determine if a negative declaration or environmental impact report is needed; a negative declaration (ND), if no environmental impacts are identified in the initial study; and an environmental impact report (EIR), if the initial study does identify environmental impacts that need to be mitigated. On the whole, CEQA and these documents help prevent or minimize environmental impacts through development of project alternatives, mitigation measures, and mitigation monitoring.

Cancer Risk – The likelihood that a person will develop cancer during their lifetime due to their level of exposure to toxic air contaminants.

Carbon Monoxide – CO is a colorless, odorless gas that can be harmful when inhaled in large amounts. CO is released when something is burned.

Cargo Handling Equipment (CHE) – Includes a variety of equipment at ports, warehouses, and rail yards including yard tractors, cranes, forklifts, and container handlers such as top picks and side picks, and bulk handling equipment, such as tractors, loaders, dozers, excavators, and backhoes.

Commercial Land Use – Commercial land use is a land use designated by the local governing body for retail, service, or office use, such as shopping malls, restaurants, office buildings, grocery stores, pharmacies, banks, hotels, or movie theatres.

Community-scale Modeling – Community scale modeling is air quality modeling at the local level, to determine air pollution concentrations within a community. See also regional-scale modeling.

Construction Equipment: Heavy equipment such as excavators, bulldozers, and loaders that are used in construction projects. This equipment are usually diesel powered.

Criteria Air Pollutants (CAPs) – Criteria air pollutants are defined by the U.S. EPA and include six air pollutants that the Clean Air Act directs the U.S. EPA to set standards for: particulate matter, photochemical oxidants (including ozone), carbon monoxide, sulfur oxides, nitrogen oxides and lead. These pollutants are found all over the U.S. They can harm human health and the environment, and cause property damage. See also National Ambient Air Quality Standards (NAAQS).

Cumulative Air Quality Impact – A cumulative air quality impact is an environmental impact which results from the incremental impacts of an action or project when added to other past, present, and reasonably foreseeable future actions. For example, a manufacturing facility, a high-traffic freeway, and a construction site may each have an air quality impact that is not substantial when considered by itself but may have a substantial cumulative air quality impact when all three are considered together.

Diesel Engine – A diesel engine is an internal combustion engine powered by diesel fuel that creates incomplete combustion that results in the release of particulate matter and other pollutants. Also called a compression-ignition engine. Diesel engines can power mobile, portable, and stationary equipment.

Diesel particulate matter (DPM) – Diesel particulate matter is the solid material in diesel exhaust. Diesel particulate matter is typically composed of carbon particles ("soot", also called black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. DPM is a toxic air contaminant.

Environmental Justice (EJ) – Scholar Robert Bullard, the father of Environmental Justice, defines environmental racism as "any policy, practice, or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups, or communities based on race. [276]

Environmental Protection Agency (U.S. EPA) – The environmental protection agency is the federal agency responsible for control of air and water pollution, toxic substances, solid waste, and cleanup of contaminated sites. The U.S. EPA sets national ambient air quality standards for criteria air pollutants, such as ozone, particulate matter, and lead.

Discriminatory Zoning - Involves local governments enacting ordinances to designate separate living areas for Black and white families. [277]

Discriminatory Real Estate Lending Practices – Government policies to create and maintain housing segregation, primarily through lending practices like the Federal Housing Association's (FHA's) redlining (denying credit to predominantly Black neighborhoods). [278]

Fine Particulate Matter ($PM_{2.5}$) – See particulate matter.

Gasoline Dispensing Facilities (GDF) – Gasoline dispensing facilities are gas stations.

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[276] Bullard, Robert D. "Environment and Morality: Confronting Environmental Racism in the United States." United Nations Research Institute for Social Development, 2004. https://www.csu.edu/cerc/documents/EnvironmentandMorality-ConfrontingEnvironmentalRacismInTheUnitedStates-Bullard2004.pdf.

[277] Rothstein, Richard. The Color of Law: A Forgotten History of How Our Government Segregated America, page 40.

[278] Rothstein, Richard. The Color of Law: A Forgotten History of How Our Government Segregated America, page 60.

Green Workforce – A broad group of careers that contribute directly to moving society and the built environment towards sustainability.

Greenhouse Gases (GHG) – Greenhouse gases are gases in the atmosphere that have a warming effect on the climate, including but not limited to: carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, perfluorocarbons and hydrofluorocarbons.

Ground-level Ozone (O_3) – Ozone is a gas composed of three atoms of oxygen. Ozone occurs both in the Earth's upper atmosphere and at ground level. Ozone can be good or bad, depending on where it is found. Ozone at ground level is a harmful air pollutant, because of its effects on people and the environment, and it is the main ingredient in “smog."

Health Risk Assessment (HRA) – A health risk assessment is the calculation of probable health impacts based on exposure to pollution. See also toxic air contaminants.

High Efficiency Particulate Air Filters (HEPA filters) – High efficiency particulate air filters are a type of mechanical air filter that work by forcing air through a fine mesh filter that traps small harmful particles such as pollen, pet dander, dust mites, and tobacco smoke. HEPA filters can also remove between 50% and 98% of particles in air, depending on the particle size and the filter minimum efficiency reporting value (MERV) rating. See also minimum efficiency reporting value.

Hot Spot – A hot spot is an area where air toxic contaminant concentration levels are higher than in the overall region. See also toxic air contaminants.

Indirect Sources – Indirect sources are land uses and facilities that attract or generate motor vehicle trips and thus result in air pollutant emissions, for example, shopping centers, office buildings, warehouses, and airports.

Industrial Land Use – Industrial land use is land designated by the local governing body for manufacturing, assembly, and distribution of goods; may include land uses such as ports, factories, warehouses, and repair and equipment maintenance shops.

Lead (Pb) – Lead is a naturally occurring element found in small amounts in the earth’s crust. While it has some beneficial uses, it can be toxic to humans and animals, causing health effects.

Micrograms per meter cubed ($\mu g/m^3$) – Micrograms per meter cubed is a unit of measurement used to specify the concentration of a pollutant. Concentrations of particulate matter (PM) are typically reported in $\mu g/m^3$, and $\mu g/m^3$ is the unit of measure for the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ and PM_{10}. See also PM and NAAQS.

Mixed-use Land Use – Mixed-used land use is land designated by the local governing body for two or more land uses, such as residential, commercial, cultural, institutional, and/or industrial uses. For example, mixing housing with office and retail uses (both considered commercial land use). Often designed to be a pedestrian-friendly development. See also transit-oriented development and complete streets.

Mobile Sources of Air Pollution – Mobile sources of air pollution are sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, trains, and airplanes.

National Ambient Air Quality Standards (NAAQS) – National Ambient Air Quality Standards are standards for the allowable ambient air concentrations of harmful pollutants, established by the U.S. EPA under authority of the Clean Air Act. See also criteria air pollutants. See also ppm and ppb.

Nitrogen Dioxide (NO_X) – Nitrogen Dioxide (NO_2) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NO_x). Other nitrogen oxides include nitrous acid and nitric acid. NO_2 is used as the indicator for the larger group of nitrogen oxides.

Off-road Vehicles – Off-road vehicles are vehicles designed for use on steep or uneven ground or roads, for example, in construction, freight, and agricultural uses. Types include scrapers, backhoes, loaders, and forklifts. Quad bikes and ATVs (all-terrain vehicles) are also off-road vehicles.

On-road Vehicles – On-road vehicles are vehicles designed for use on paved roads, for example passenger cars, buses, motor homes, vans, motorcycles, and various sizes of trucks.

Particulate Matter (PM) – Particulate matter includes a wide range of disparate particles that vary greatly in terms of their size and mass, physical state (solid or liquid), chemical composition, toxicity, and how they behave and transform in the atmosphere. PM is commonly characterized based on particle size. Ultrafine PM, or ultrafine particles (UFPs), includes the very smallest particles less than 0.1 micron in diameter (one micron equals one-millionth of a meter). Fine PM or $PM_{2.5}$ consists of particles 2.5 microns or less in diameter (includes ultrafine PM). Coarse PM refers to particles between 2.5 microns and 10 microns in diameter. The term “coarse” particles may be misleading; it should be emphasized that even “coarse” particles are still very tiny, many times smaller than the diameter of a human hair. PM_{10} consists of particles 10 microns or less in diameter (includes ultrafine, fine and coarse PM).

Parts Per Billion (ppb) – Parts per billion is a unit of measurement used to specify the concentration of a pollutant. For reference, ppb is the equivalent of one drop in one billion drops of water or about one drop of water in a swimming pool. The NAAQS for sulfur dioxide (SO_2) and primary NAAQS for nitrogen dioxide (NO_2) are expressed in ppb. See also ppm and NAAQS.

Parts Per Million (ppm) – Parts per million is a unit of measurement used to specify the concentration of a pollutant. For reference, one ppm is the equivalent of about one cup of water in a swimming pool, and one ppm is equivalent to 1,000 ppb. The NAAQS for carbon monoxide (CO) and Ozone (O_3) and secondary NAAQS for nitrogen dioxide (NO_2) are expressed in ppm. See also ppb and NAAQS.

Particulate Matter (PM) – A mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye.

Regional-scale Modeling – Regional-scale modeling is air quality modeling at a regional level, to determine air pollution concentrations within the region. See also community-scale modeling.

Residential Land Use – Residential land use is land designated by the local governing body for dwelling units. Can include single-family and/or multi-family housing, often specifies the number of dwelling units allowed per lot or acre; for example, R-1 means the parcel is zoned for a single-family residence.

Rule Development – Rule Development is the process the Air District uses to write regulations that govern stationary sources of air pollution in the Bay Area, including technical research, engagement with affected stakeholders, public meetings to allow input by affected parties such as industries and communities, and the preparation of CEQA and socio economic analyses (for a list of current rules and regulations see: https://www.baaqmd.gov/rules-and-compliance/current-rules.

Safe Routes to School (SRTS) – Safe Routes to School is an international movement and a federal program to make it safe, convenient, and fun for children, including those with disabilities, to bicycle and walk to school.

Sensitive Land Uses – Sensitive land uses are places where sensitive populations are most likely to spend their time, such as schools, playgrounds, daycare centers, nursing homes, medical facilities, and residential communities. See also sensitive populations or sensitive receptors.

Sensitive Populations or Sensitive Receptors – Sensitive populations or sensitive receptors are people, including infants, children, the elderly, those with pre-existing conditions (such as asthma), pregnant women, and athletes (due to higher breathing rates) that are at greater risk than the general population to the adverse health effects of air pollutants. See also sensitive land uses.

Stationary Sources of Air Pollution – Stationary sources of air pollution are non-mobile sources of air pollution such as boilers, gas turbines, petroleum refining and processing units, and manufacturing equipment that emit air pollutants. A facility, such as a power plant or refinery, houses multiple sources within its property.

Solvent Cleaning Operations – A process using solvents or solvent vapor to remove water insoluble contaminants such as grease, oils, waxes, carbon deposits, fluxes, and tars from metal, plastic, glass, and other surfaces.

Sulfur Dioxide (SO_2) – U.S. EPA's national ambient air quality standards for SO_2 are designed to protect against exposure to the entire group of sulfur oxides (SO_x). SO_2 is the component of greatest concern and is used as the indicator for the larger group of gaseous sulfur oxides (SO_x).

Transloading – The operation of transferring cargo from one transportation mode to another. May also refer to the operation of transferring cargo from one container to another for any of several reasons, such as for consolidation, weight restrictions, palletizing, leasing contract requirements, or supply chain management (e.g., to synchronize delivery of goods to meet real time demands).

Transit-oriented Development (TOD) – A type of land use that includes a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half mile of quality public transportation. See also mixed-use land use and complete streets.

Toxic Air Contaminants (TACs) – Toxic air contaminants (also toxic air pollutants or air toxics) are those pollutants that cause, or may cause, cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects. Includes

formaldehyde, methanol, ammonia, diesel particulate matter, and many others. See also diesel particulate matter.

Toxic Air Contaminants

According to section 39655 of the California Health and Safety Code, a TAC is "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." Below are the 10 important toxic air contaminants in the East Oakland emissions inventory. These compounds were identified by weighting emissions of individual TACs by health values compiled by the Office of Environmental Health Hazard Assessment (OEHHA): cancer potency factors and chronic and acute reference exposure levels (RELs). These 10 TACs account for at least 91% of the cancer, chronic, and acute toxicity-weighted emissions (TWE) in the East Oakland emissions inventory.

1,3-butadiene Produced through the processing of petroleum and is mainly used in the production of synthetic rubber but is also found in smaller amounts in plastics and fuel.

Acrolein Primarily used as an intermediate in the synthesis of acrylic acid and as a biocide. It may be formed from the breakdown of certain pollutants in outdoor air or from the burning of organic matter including tobacco, or fuels such as gasoline or oil. It is toxic to humans following inhalation, oral or dermal exposures.

Ammonia (NH_3) is a common toxicant derived from wastes, fertilizers and natural processes. Ammonia nitrogen includes both the ionized form (ammonium, NH_4^+) and the unionized form (ammonia, NH_3). Ammonia occurs naturally in air, soil, and water. Ammonia is used as an agricultural fertilizer and in many cleaning products.

Benzene Also known as benzol, a colorless liquid with a sweet odor. Benzene is used as a constituent in motor fuels; as a solvent for fats, waxes, resins, oils, inks, paints, plastics, and rubber; in the extraction of oils from seeds and nuts; and in photogravure printing. It is also used as a chemical intermediate. Benzene is also used in the manufacturing of detergents, explosives, pharmaceuticals, and dyestuffs.

Cobalt (chemical symbol Co) is a hard, gray-blue metal that is solid under normal conditions. Cobalt is like iron and nickel in its properties and can be magnetized like iron. The most common radioactive isotope of cobalt is cobalt-60 (Co-60). Cobalt-60 is a byproduct of nuclear reactor operations. It is formed when metal structures, such as steel rods, are exposed to neutron radiation.

Diesel Particulate Matter (DPM) A component of diesel exhaust that includes soot particles made up primarily of carbon, ash, metallic abrasion particles, sulfates, and silicates. Diesel soot particles have a solid core consisting of elemental carbon, with other substances attached to the surface, including organic carbon compounds known as aromatic hydrocarbons.

Formaldehyde A colorless flammable gas with a pungent odor that is highly reactive with many substances.

Manganese Metallic manganese is used primarily in steel production to improve hardness, stiffness, and strength. It is also used in carbon steel, stainless steel, and high-temperature steel, along with cast iron and superalloys.

Nickel Occurs naturally in the environment at low levels. Nickel is an essential element in some animal species, and it has been suggested it may be essential for human nutrition.

Styrene A colorless oily liquid that is used in the production of plastics, synthetic rubber, resins, and solvents.

Vehicle Miles Traveled (VMT) – Vehicle miles traveled is the number of miles a vehicle is driven and can be used to measure the number of miles traveled for all vehicles in a geographic region over a given time period. Annual VMT denotes the miles driven over a one-year period.

Vulnerable Populations—including infants, children, the elderly, individuals with pre-existing conditions (e.g., asthma), pregnant women, and athletes (due to higher breathing rates)—are especially at risk for adverse health effects from air pollution.

Zero-emission Vehicle (ZEV) – A zero-emission vehicle is a battery electric, hydrogen fuel cell electric, or other alternatively fueled vehicle that has no direct emissions (evaporative or tailpipe) of pollution. See also PZEV.