



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

BOARD OF DIRECTORS  
MEETING  
March 2, 2022

**THIS MEETING WILL BE CONDUCTED UNDER PROCEDURES AUTHORIZED BY  
ASSEMBLY BILL 361**

- **THE PUBLIC MAY OBSERVE THIS MEETING THROUGH THE WEBCAST BY  
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# BOARD OF DIRECTORS MEETING AGENDA

WEDNESDAY, MARCH 2, 2022

9:00 AM

Chairperson, Karen Mitchoff

1. **Call to Order - Roll Call**
2. **Pledge of Allegiance**
3. **Public Meeting Procedure**

*The Board Chair shall call the meeting to order and the Clerk of the Boards shall take roll of the Board members.*

*This meeting will be webcast. To see the webcast, please visit [www.baaqmd.gov/bodagendas](http://www.baaqmd.gov/bodagendas) at the time of the meeting. Closed captioning may contain errors and omissions and are not certified for their content or form.*

***Public Comment on Agenda Items:** The public may comment on each item on the agenda as the item is taken up. Members of the public who wish to speak on matters on the agenda for the meeting, will have two minutes each to address the Board. No speaker who has already spoken on that item will be entitled to speak to that item again.*

## CONSENT CALENDAR (Items 4 - 15)

4. Continuation of Remote Teleconferencing per Assembly Bill (AB) 361 (Rivas)

*The Board of Directors will consider approving a resolution reauthorizing Air District Board and Committee meetings remote teleconferencing through April 6, 2022.*

5. Approval of the Minutes of February 16, 2022

*The Board of Directors will consider approving the draft minutes of the Board of Directors Regular Meeting of February 16, 2022.*

6. Board Communications Received from February 2, 2022 through March 1, 2022

*A copy of communications directed to the Board of Directors received by the Air District from February 2, 2022 through March 1, 2022 if any, will be distributed to the Board Members by way of email.*

7. Air District Personnel on Out-of-State Business Travel

*In accordance with Section (b) of the Air District Administrative Code, Fiscal Policies and Procedures Section, the Board is hereby notified that the attached memorandum lists Air District personnel who have traveled on out-of-state business in the preceding months.*

8. Projects and Contracts with Proposed Grant Awards Over \$100,000

*The Board of Directors will consider approving the award of the Carl Moyer Program and TFCA funding to projects with proposed grant awards in excess of \$100,000, and authorize the Executive Officer/APCO to execute grant agreements for the recommended projects.*

9. Referral of Proposed Budget for Fiscal Year Ending (FYE) 2023 to the Budget and Finance Committee

*The Board of Directors will consider referring the proposed budget for Fiscal Year Ending (FYE) 2023 to the Budget and Finance Committee for review and consideration.*

10. Authorization for Four Contracts for the Bay Area Healthy Homes Initiative, Funded by \$2 Million from California Attorney General's Office Automobile Emissions Research and Technology Fund Grant

*The Board of Directors will consider approving four contracts to implement the Bay Area Healthy Homes Initiative and authorizing the Executive Officer/APCO to enter into all contracts necessary to implement this project.*

11. Set a Public Hearing for April 6, 2022, to Consider Adoption of Proposed New Regulation 13: Climate Pollutants, Rule 5: Industrial Hydrogen Plants (Rule 13-5) and amendments to Regulation 8: Organic Compounds, Rule 2: Miscellaneous Operations (Rule 8-2), and Certification of an Environmental Impact Report for Rule 13-5 and Approval to File a Notice of Exemption for Rule 8-2 Pursuant to the California Environmental Quality Act (CEQA)

*At the April 6, 2022, meeting, the Board of Directors will consider adoption of Proposed New Regulation 13: Climate Pollutants, Rule 5: Industrial Hydrogen Plants (Rule 13-5) and amendments to Regulation 8: Organic Compounds, Rule 2: Miscellaneous Operations (Rule 8-2), and Certification of an Environmental Impact Report for Rule 13-5 and Approval to File a Notice of Exemption for Rule 8-2 Pursuant to the California Environmental Quality Act (CEQA).*

12. Report of the Advisory Council Meeting of February 14, 2022

*The Board will receive a report of the Advisory Council meeting of February 14, 2022.*

13. Report of the Legislative Committee Meeting of February 14, 2022

*The Board of Directors will receive a report of the Legislative Committee meeting of February 14, 2022.*

14. Report of the Administration Committee Meeting of February 16, 2022

*The Board of Directors will receive a report of the Administration Committee meeting of February 16, 2022.*

15. Report of the Budget and Finance Committee Meeting of February 23, 2022

*The Board of Directors will receive a report of the Budget and Finance Committee meeting of February 23, 2022.*

### **PRESENTATION**

16. Current Legislation on Potential Amendments to the Brown Act

*This is an informational item only and will be presented by Alan Abbs, Legislative Officer.*

### **OTHER BUSINESS**

17. Public Comment on Non-Agenda Matters

*Pursuant to Government Code Section 54954.3*

*Members of the public who wish to speak on matters not on the agenda for the meeting, will have two minutes each to address the Board.*

18. Board Member Comments

*Any member of the Board, or its staff, on his or her own initiative or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on his or her own activities, provide a reference to staff regarding factual information, request staff to report back at a subsequent meeting concerning any matter or take action to direct staff to place a matter of business on a future agenda. (Gov't Code § 54954.2)*

19. Report of the Executive Officer/APCO

20. Chairperson's Report

21. Time and Place of Next Meeting

*Wednesday, March 16, 2022 at 9:00 a.m., via webcast, pursuant to procedures authorized by Assembly Bill 361.*

22. Adjournment

*The Board meeting shall be adjourned by the Board Chair.*

**CONTACT:**

**MANAGER, EXECUTIVE OPERATIONS**  
**375 BEALE STREET, SAN FRANCISCO, CA 94105**  
[vjohnson@baaqmd.gov](mailto:vjohnson@baaqmd.gov)

**(415) 749-4941**  
**FAX: (415) 928-8560**  
**BAAQMD homepage:**  
[www.baaqmd.gov](http://www.baaqmd.gov)

- Any writing relating to an open session item on this Agenda that is distributed to all, or a majority of all, members of the body to which this Agenda relates shall be made available at the Air District's offices at 375 Beale Street, Suite 600, San Francisco, CA 94105, at the time such writing is made available to all, or a majority of all, members of that body.

**Accessibility and Non-Discrimination Policy**

The Bay Area Air Quality Management District (Air District) does not discriminate on the basis of race, national origin, ethnic group identification, ancestry, religion, age, sex, sexual orientation, gender identity, gender expression, color, genetic information, medical condition, or mental or physical disability, or any other attribute or belief protected by law.

It is the Air District's policy to provide fair and equal access to the benefits of a program or activity administered by Air District. The Air District will not tolerate discrimination against any person(s) seeking to participate in, or receive the benefits of, any program or activity offered or conducted by the Air District. Members of the public who believe they or others were unlawfully denied full and equal access to an Air District program or activity may file a discrimination complaint under this policy. This non-discrimination policy also applies to other people or entities affiliated with Air District, including contractors or grantees that the Air District utilizes to provide benefits and services to members of the public.

Auxiliary aids and services including, for example, qualified interpreters and/or listening devices, to individuals who are deaf or hard of hearing, and to other individuals as necessary to ensure effective communication or an equal opportunity to participate fully in the benefits, activities, programs, and services will be provided by the Air District in a timely manner and in such a way as to protect the privacy and independence of the individual. Please contact the Non-Discrimination Coordinator identified below at least three days in advance of a meeting so that arrangements can be made accordingly.

If you believe discrimination has occurred with respect to an Air District program or activity, you may contact the Non-Discrimination Coordinator identified below or visit our website at [www.baaqmd.gov/accessibility](http://www.baaqmd.gov/accessibility) to learn how and where to file a complaint of discrimination.

Questions regarding this Policy should be directed to the Air District's Non-Discrimination Coordinator, Suma Peesapati, at (415) 749-4967 or by email at [spesapati@baaqmd.gov](mailto:spesapati@baaqmd.gov).

# BAY AREA AIR QUALITY MANAGEMENT DISTRICT

375 BEALE STREET, SAN FRANCISCO, CA 94105

FOR QUESTIONS PLEASE CALL (415) 749-4941

## EXECUTIVE OFFICE: MONTHLY CALENDAR OF AIR DISTRICT MEETINGS

### FEBRUARY 2022

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Mobile Source and Climate Impacts Committee - Cancelled	Thursday	24	9:30 a.m.	Webcast only pursuant to Assembly Bill 361
Board of Directors Stationary Source and Climate Impacts Committee	Monday	28	9:00 a.m.	Webcast only pursuant to Assembly Bill 361
Path to Clean Air Community Emissions Reduction Plan Steering Committee	Monday	28	5:30 p.m.	Webcast only pursuant to Assembly Bill 361

### MARCH 2022

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Meeting	Wednesday	2	9:00 a.m.	Webcast only pursuant to Assembly Bill 361
Board of Directors Community Equity, Health and Justice Committee	Thursday	3	9:30 a.m.	Webcast only pursuant to Assembly Bill 361
Board of Directors Legislative Committee	Monday	14	1:00 p.m.	Webcast only pursuant to Assembly Bill 361
Board of Directors Special Meeting as the Sole Member of the Bay Area Clean Air Foundation	Wednesday	16	8:30 a.m.	Webcast only pursuant to Assembly Bill 361
Board of Directors Meeting	Wednesday	16	9:00 a.m.	Webcast only pursuant to Assembly Bill 361
Board of Directors Administration Committee	Wednesday	16	1:00 p.m.	Webcast only pursuant to Assembly Bill 361
Board of Directors Stationary Source and Climate Impacts Committee	Monday	21	9:00 a.m.	Webcast only pursuant to Assembly Bill 361
Path to Clean Air Community Emissions Reduction Plan Steering Committee	Monday	21	6:00 p.m.	Webcast only pursuant to Assembly Bill 361
Board of Directors Budget and Finance Committee	Wednesday	23	9:30 a.m.	Webcast only pursuant to Assembly Bill 361
Board of Directors Mobile Source and Climate Impacts Committee	Thursday	24	9:30 a.m.	Webcast only pursuant to Assembly Bill 361

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Continuation of Remote Teleconferencing per Assembly Bill (AB) 361 (Rivas)

RECOMMENDED ACTION

The Board of Directors will consider approving a resolution reauthorizing Air District Board and Committee meetings remote teleconferencing through April 6, 2022.

BACKGROUND

AB 361 (R. Rivas) – Open meetings: state and local agencies: teleconferences.

Allows until January 1, 2024, a local agency to use teleconferencing without complying with the teleconferencing requirements imposed by the Ralph M. Brown Act, when a legislative body of a local agency holds a meeting during a declared state of emergency, as that term is defined, when state or local health officials have imposed or recommended measures to promote social distancing, during a proclaimed state of emergency held for the purpose of determining, by majority vote, whether meeting in person would present imminent risks to the health or safety of attendees, and during a proclaimed state of emergency when the legislative body has determined that meeting in person would present imminent risks to the health or safety of attendees, as provided. The law requires a resolution every 30 days to provide this flexibility.

DISCUSSION

When the COVID-19 pandemic started, local agency boards struggled to conduct their meetings in compliance with the Brown Act's public accessibility requirements while still abiding by stay-at-home orders. As a result, Governor Newsom signed several executive orders to grant local agencies the flexibility to meet remotely during the COVID-19 pandemic. The Governor's executive orders allowed public agencies to meet remotely and did not require physical public access to those meeting locations. Those executive orders expired on September 30, 2021. The State of Emergency Declaration of March 4, 2020, continues to remain in effect.



AB 361 provides additional flexibility for local agencies looking to meet remotely during a proclaimed state of emergency, however, the legislative body is required to consider and vote on this flexibility on a monthly basis. Excerpts of the bill amending Section 54593 of the Government Code provide the following guidance:

*(e) (1) A local agency may use teleconferencing without complying with the requirements of paragraph (3) of subdivision (b) if the legislative body complies with the requirements of paragraph (2) of this subdivision in any of the following circumstances:*

*(A) The legislative body holds a meeting during a proclaimed state of emergency, and state or local officials have imposed or recommended measures to promote social distancing.*

*(B) The legislative body holds a meeting during a proclaimed state of emergency for the purpose of determining, by majority vote, whether as a result of the emergency, meeting in person would present imminent risks to the health or safety of attendees.*

*(C) The legislative body holds a meeting during a proclaimed state of emergency and has determined, by majority vote, pursuant to subparagraph (B), that, as a result of the emergency, meeting in person would present imminent risks to the health or safety of attendees.*

The following guidance on exercising this flexibility is also contained in the amended Section 54593 of the Government Code:

*(3) If a state of emergency remains active, or state or local officials have imposed or recommended measures to promote social distancing, in order to continue to teleconference without compliance with paragraph (3) of subdivision (b), the legislative body shall, not later than 30 days after teleconferencing for the first time pursuant to subparagraph (A), (B), or (C) of paragraph (1), and every 30 days thereafter, make the following findings by majority vote:*

*(A) The legislative body has reconsidered the circumstances of the state of emergency.*

*(B) Any of the following circumstances exist:*

*(i) The state of emergency continues to directly impact the ability of the members to meet safely in person.*

*(ii) State or local officials continue to impose or recommend measures to promote social distancing.*

*(4) For the purposes of this subdivision, “state of emergency” means a state of emergency proclaimed pursuant to Section 8625 of the California Emergency Services Act (Article 1 (commencing with Section 8550) of Chapter 7 of Division 1 of Title 2).*

*(f) This section shall remain in effect only until January 1, 2024, and as of that date is repealed.*

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Alan Abbs  
Reviewed by: Jack P. Broadbent

ATTACHMENTS:

1. Draft AB 361 Subsequent Resolution

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

**RESOLUTION NO. 2022-**

**A Resolution of The Board of Directors of the Bay Area Air Quality Management District Proclaiming a Local Emergency Persists, Re-Ratifying the Proclamation of a State of Emergency by Governor Newsom on March 4, 2020, and Re-Authorizing Remote Teleconference Meetings of the Legislative Bodies of the Air District for the Period March 6, 2022 to April 6, 2022 Pursuant to Brown Act Provisions.**

WHEREAS, the Bay Area Air Quality Management District (District) is committed to preserving and nurturing public access and participation in meetings of the Board of Directors; and

WHEREAS, all meetings of District's legislative bodies are open and public, as required by the Ralph M. Brown Act (Cal. Gov. Code 54950 – 54963), so that any member of the public may attend, participate, and watch the District's legislative bodies conduct their business; and

WHEREAS, the Brown Act, Government Code section 54953(e), makes provision for remote teleconferencing participation in meetings by members of a legislative body, without compliance with the requirements of Government Code section 54953(b)(3), subject to the existence of certain conditions; and

WHEREAS, a required condition is that a state of emergency is declared by the Governor pursuant to Government Code section 8625, proclaiming the existence of conditions of disaster or of extreme peril to the safety of persons and property within the state caused by conditions as described in Government Code section 8558; and

WHEREAS, a proclamation is made when there is an actual incident, threat of disaster, or extreme peril to the safety of persons and property within the jurisdictions that are within the District's boundaries, caused by natural, technological, or human-caused disasters; and

WHEREAS, it is further required that state or local officials have imposed or recommended measures to promote social distancing, or, the legislative body meeting in person would present imminent risks to the health and safety of attendees; and

WHEREAS, the Board of Directors previously adopted a Resolution on October 6, 2021, finding that the requisite conditions exist for the legislative bodies of District to conduct remote teleconference meetings without compliance with paragraph (3) of subdivision (b) of section 54953; and

WHEREAS, as a condition of extending the use of the provisions found in section 54953(e), the Board of Directors must reconsider the circumstances of the state of emergency that exists in the District, and the Board of Directors has done so; and

WHEREAS, emergency conditions persist in the District, specifically, the Covid-19 state of emergency remains active and the Governor's Covid-19 Emergency Proclamation of March 4, 2020 remains in effect; and

WHEREAS, social distancing has been ordered by state and local public health authorities due to the imminent health and safety risks of in person contacts and meetings during the COVID-19 emergency; and

WHEREAS, the Board of Directors recognizes the social distancing orders of state and local public health authorities, and hereby finds that the state of emergency related to Covid-19, and the risk of contagion of Covid-19 for attendees at in-person meetings has caused, and will continue to cause, conditions of peril to the safety of persons within the District that are likely to be beyond the control of services, personnel, equipment, and facilities of the District; and

WHEREAS, the Board of Directors desires to affirm a local emergency exists, re-ratify the proclamation of state of emergency by the Governor of March 4, 2020, and re-ratify the state and local orders of public health authorities for social distancing; and

WHEREAS, as a consequence of the local emergency persisting, the Board of Directors does hereby find that the legislative bodies of District shall continue to conduct their meetings without compliance with paragraph (3) of subdivision (b) of Government Code section 54953, as authorized by subdivision (e) of section 54953, and that such legislative bodies shall continue to comply with the requirements to provide the public with access to the meetings as prescribed in paragraph (2) of subdivision (e) of section 54953; and

WHEREAS, the District is publicizing in its meeting agendas zoom links for members of the public to participate remotely in meetings of the District's legislative bodies.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF DISTRICT DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. Recitals. The Recitals set forth above are true and correct and are incorporated into this Resolution by this reference.

Section 2. Affirmation that Local Emergency Persists. The Board of Directors hereby considers the conditions of the state of emergency related to Covid-19 in the District, proclaims that a local emergency persists throughout the District, recognizes that social distancing orders have been issued by state and local public health authorities, and finds that in person meetings would present imminent risks to the health and safety of attendees.

Section 3. Re-ratification of Governor's Proclamation of a State of Emergency. The Board hereby ratifies the Governor of the State of California's Proclamation of State of Emergency, effective as of its issuance date of March 4, 2020.

Section 4. Remote Teleconference Meetings. The Staff and legislative bodies of District are hereby authorized and directed to take all actions necessary to carry out the intent and purpose of this Resolution including, continuing to conduct open and public meetings in accordance with Government Code section 54953(e) and other applicable provisions of the Brown Act.

Section 5. Effective Date of Resolution. This Resolution shall take effect immediately upon its adoption and shall be effective until the earlier of (i) March 6, 2022, or such time the Board of Directors adopts a subsequent resolution in accordance with Government Code section 54953(e)(3) to extend the time during which the legislative bodies of District may continue to teleconference without compliance with paragraph (3) of subdivision (b) of section 54953.

The foregoing resolution was duly regularly introduced, passed, and adopted at a regular meeting of the Board of Directors of the Bay Area Air Quality Management District on the motion of \_\_\_\_\_, seconded by \_\_\_\_\_, on the 2<sup>nd</sup> day of MARCH 2022, by the following vote of the Board:

AYES:

NOES:

ABSENT:

ABSTAIN:

\_\_\_\_\_  
Karen Mitchoff  
Chair of the Board of Directors

ATTEST:

\_\_\_\_\_  
Davina Hurt  
Secretary of the Board of Directors

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Approval of the Minutes of February 16, 2022

RECOMMENDED ACTION

Approve the draft minutes of the Board of Directors Regular Meeting of February 16, 2022.

BACKGROUND

None.

DISCUSSION

Attached for your review and approval are the draft minutes of the Board of Directors Regular Meeting of February 16, 2022.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Marcy Hiratzka  
Reviewed by: Vanessa Johnson

ATTACHMENTS:

1. Draft Minutes of the Board of Directors Regular Meeting of February 16, 2022

Bay Area Air Quality Management District  
375 Beale Street, Suite 600  
San Francisco, CA 94105  
(415) 749-5073

Board of Directors Regular Meeting  
Wednesday, February 16, 2022

## **DRAFT MINUTES**

*Note: Audio recordings of the meeting are available on the website of the Bay Area Air Quality Management District at [www.baaqmd.gov/bodagendas](http://www.baaqmd.gov/bodagendas)*

**This meeting was conducted under procedures in accordance with Assembly Bill 361. Members of the Board of Directors participated by teleconference.**

### **CALL TO ORDER**

1. **Opening Comments:** Board of Directors (Board) Chairperson, Karen Mitchoff, called the meeting to order at 9:00 a.m.

#### **Roll Call:**

Present: Chairperson Karen Mitchoff; Vice Chairperson John Bauters; Secretary Davin Hurt; and Directors Margaret Abe-Koga, Teresa Barrett, Cindy Chavez, Rich Constantine, Pauline Russo Cutter, John Gioia, Carole Groom, David Haubert, Lynda Hopkins, David Hudson, Tyrone Jue, Myrna Melgar, Nate Miley, Rob Rennie, Katie Rice, Mark Ross, Brad Wagenknecht, and Shamann Walton.

Absent: Directors David Canepa, Erin Hannigan, and Lori Wilson.

2. **Pledge of Allegiance**

3. **Public Meeting Procedure**

### **CONSENT CALENDAR (ITEMS 4 – 13)**

4. Approval of the Minutes of the Board of Directors Special Meeting/Retreat of January 19, 2022 and the Board of Directors Meeting of February 2, 2022
5. Board Communications Received from January 19, 2022 through February 1, 2022
6. Notices of Violations Issued and Settlements in Excess of \$10,000 in the Month of December 2021
7. Authorization to Amend Contract with Allison+Partners
8. Authorization to Amend a Contract with Commercial Interior Builders
9. Authorization to Approve Fiscal Year (FY) 2021/2022 James Cary Smith Community Grant Award to South of Market Community Action Network (SOMCAN)
10. Consider Adopting Proposed Amendments to the Air District's Administrative Code, Division I: Operating Policies and Procedures, Section 6: Board of Directors, Committees



11. Authorization to Amend Environmental Consultant Contract
12. Report of the Community Advisory Council Meeting of January 13, 2022
13. Report of the Path to Clean Air Community Emissions Reduction Plan Steering Committee Meeting of January 24, 2022

Public Comments

No requests received.

Board Comments

None.

Board Action

Director Groom made a motion, seconded by Vice Chair Bauters, to **approve** Consent Calendar Items 4 through 13, inclusive; and the motion **carried** by the following vote of the Board:

AYES: Abe-Koga, Bauters, Barrett, Constantine, Cutter, Gioia, Groom, Haubert, Hopkins, Hurt, Jue, Melgar, Mitchoff, Rennie, Rice, Ross, Wagenknecht, Walton.

NOES: None.

ABSTAIN: None.

ABSENT: Canepa, Chavez, Hannigan, Hudson, Miley, Wilson.

**PRESENTATION**

14. **Agenda Management System (AMS) Launch**

Jack P. Broadbent, Executive Officer/Air Pollution Control Officer, introduced Vanessa Johnson, Manager of Executive Operations, who gave the staff presentation *Agenda Management System Launch*, including: outline; AMS overview; benefits; homepage access; table access; web version; Portable Document Format version; CivicClerk – agenda template, content editor, approval status/dialog, and minutes module; and AMS project team.

Public Comments

No requests received.

Board Comments

None.

Board Action

None; receive and file.

## **OTHER BUSINESS**

### **15. Public Comment on Non-Agenda Matters**

No requests received.

### **16. Board Members' Comments**

None.

### **17. Report of the Executive Officer/APCO**

Mr. Broadbent reported that Board members have been asking when the Air District's Board and Committee meetings will resume in person, and if so, whether a remote participation provision will be provided. Mr. Broadbent announced that the Air District is in the process of developing a schedule with the other regional government agencies located at the Bay Area Metro Center. He added that the Air District's Board meeting on April 6 may be in person with a remote participation provision.

#### **Board Comments**

The Board and staff discussed the provisions of Assembly Bill 1944 (Lee), and the request that Air District staff seeks legislation that would allow members of a legislative body to teleconference from a location that is not public without having to identify that address in the notice and agenda or make that location accessible to the public when the legislative body has elected to allow members to participate via teleconferencing; whether the Board members' current access badges and parking passes to the Bay Area Metro Center are still active; how the Air District plans to address concerns that a hybrid (in-person and remote participation) meeting format will violate the existing Ralph M. Brown Act; the request for the Air District's best practices regarding remote meeting participation for hybrid format meetings, and potential complications; the request that Board members receive as much advanced notice for Air District meetings as possible; the request that the two March Air District Board meetings agendaize the current status of the Brown Act and the Air District's plans to change the meeting format; and whether the Air District plans to reestablish the public meeting locations that were available prior to the pandemic, the suggestion that Board members meet for Air District meetings in person in small groups, based on their geographic location, and that the Air District creates public meeting locations in areas where no Board members live or work.

### **18. Chairperson's Report**

Chair Mitchoff announced that she had received requests from Board members for less emails from Air District staff, asking them to confirm their upcoming meeting attendance. She requested that staff reduces their correspondence (regarding that issue) to the Board members.

### **19. Time and Place of Next Meeting**

Wednesday, March 2, 2022, at 9:00 a.m., via webcast, pursuant to procedures in accordance with Assembly Bill 361.

20. **Adjournment**

The meeting adjourned at 9:37a.m.

Marcy Hiratzka  
Clerk of the Boards

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Board Communications Received from February 2, 2022 through March 1, 2022

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

None.

DISCUSSION

A copy of communications directed to the Board of Directors received by the Air District from February 2, 2022 through March 1, 2022 if any, will be distributed to the Board Members by way of email.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Marjorie Villanueva  
Reviewed by: Vanessa Johnson

ATTACHMENTS:

None

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Air District Personnel on Out-of-State Business Travel

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

In accordance with Section 5.4 (b) of the District's Administrative Code, Fiscal Policies and Procedures Section, the Board is hereby notified of District personnel who have traveled on out-of-state business.

The report covers out-of-state business travel for the month of January 2022. The monthly out-of-state business travel report is presented in the month following travel completion.

DISCUSSION

The following out-of-state business travel activities occurred in the month of January 2022:

- Lily MacIver, Environmental Planner, Attended Transportation Research Board Conference, Washington D.C, from January 9, 2022 to January 13, 2022
- Jack P. Broadbent, Executive Officer/APCO, attended NACAA Winter Board Retreat, Alexandria, VA, from January 25, 2022 to January 26, 2022

BUDGET CONSIDERATION/FINANCIAL IMPACT

Travel-related expenses are included in the respective division's budgets for Fiscal Year Ending 2022.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Stephanie Osaze  
Reviewed by: Jeff McKay

ATTACHMENTS:

None

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Projects and Contracts with Proposed Grant Awards Over \$100,000

RECOMMENDED ACTION

Recommend the Board of Directors:

1. Approve recommended projects with proposed grant awards over \$100,000 as shown in Attachment 1; and
2. Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects.

BACKGROUND

The Bay Area Air Quality Management District (Air District) has participated in the Carl Moyer Program (CMP), in cooperation with the California Air Resources Board (CARB), since the program began in fiscal year 1998-1999. The CMP provides grants to public and private entities to reduce emissions of nitrogen oxides (NOx), reactive organic gases (ROG), and particulate matter (PM) from existing heavy-duty engines by either replacing or retrofitting them. Eligible heavy-duty diesel engine applications include on-road trucks and buses, off-road industrial, construction, and agricultural equipment, marine vessels, locomotives, and stationary agricultural pump engines. Since 2018, this funding may also be awarded to offset a portion of the cost of installing new refueling or recharging infrastructure that supports the deployment of new zero-emissions vehicles and equipment.

Assembly Bill (AB) 923 (Firebaugh), enacted in 2004 (codified as Health and Safety Code (HSC) Section 44225), authorized local air districts to increase motor vehicle registration surcharges by up to \$2 additional per vehicle and use the revenue to fund projects eligible under the CMP guidelines. AB 923 revenue is deposited in the Air District's Mobile Source Incentive Fund (MSIF).



On January 20, 2021, the Board of Directors (Board) authorized the Air District's participation in Year 23 of the CMP and authorized the Executive Officer/APCO to execute grant agreements and amendments for projects funded with CMP funds or MSIF revenues with individual grant award amounts up to \$100,000.

In 2017, AB 617 directed the CARB, in conjunction with local air districts to establish a new community-focused action framework to improve air quality and reduce exposure to criteria air pollutants and toxic air contaminants in communities most impacted by air pollution. The AB 617 initiative calls for strategies to address air quality issues in impacted communities, including community-level monitoring, uniform emission reporting across the State, stronger regulation of pollution sources, and incentives for reducing air pollution and public health impacts from mobile and stationary sources. Beginning in fiscal year ending (FYE) 2018, the California Legislature approved funding from the State's Greenhouse Gas Reduction Fund (GGRF), which is used to reduce criteria pollutants, toxic air contaminants, and greenhouse gases, for the Community Air Protection Program (CAPP). CAPP funds may be used to fund projects eligible under the CMP and on-road truck replacements under the Proposition 1B Goods Movement Emission Reduction Program. Following additional approvals from CARB, CAPP funds may also potentially be used to fund stationary source and mobile source projects that have been identified and prioritized by communities with a Community Emissions Reduction Program, pursuant to HSC Section 44391.2. In May 2020, the Governor's revised budget authorized up to \$200 million for a third cycle of CAPP incentive funding. On June 17, 2020, the Board authorized the Air District to accept, obligate, and expend up to \$40 million in CAPP funds.

In February 2018, CARB developed the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program Guidelines that outline requirements for eligible equipment, i.e., agricultural harvesting equipment, heavy-duty trucks, agricultural pump engines, tractors, and other equipment used in agricultural operations. On October 21, 2019, CARB's Executive Officer approved an update to the FARMER Program Guidelines to include eligibility criteria for demonstration projects. The 2020 California State Budget appropriated \$65 million in Fiscal Year 2019-20 GGRF funds to the CARB for the continued reduction of criteria, toxic, and greenhouse gas emissions from the agricultural sector through the FARMER Program. On November 20, 2019, the Board authorized the Air District's participation in the current cycle of the FARMER program.

In 1991, the California State Legislature authorized the Air District to impose a \$4 surcharge on motor vehicles registered within the nine-county Bay Area to fund projects that reduce on-road motor vehicle emissions within the Air District's jurisdiction. The statutory authority and requirements for the Transportation Fund for Clean Air (TFCA) are set forth in the HSC Sections 44241 and 44242. Sixty percent of TFCA funds are awarded by the Air District to eligible projects and programs implemented directly by the Air District (e.g., Spare the Air program) and to a program referred to as the Regional Fund. Each year, the Board allocates funding and adopts policies and evaluation criteria that govern the expenditure of TFCA monies. The remaining forty percent of the funds are passed through to the designated Bay Area County Program Manager who in turn award TFCA funds to eligible projects within their county.

On April 7, 2021, the Board authorized funding allocations for use of the sixty percent of the TFCA revenue in FYE 2022, cost-effectiveness limits for Air District-sponsored FYE 2022 programs, and the Executive Officer/APCO to execute grant agreements and amendments for projects with individual grant award amounts up to \$100,000. On June 16, 2021, the Board adopted policies and evaluation criteria for the FYE 2022 Regional Fund program.

Applications for grant funding received by the Air District are reviewed and evaluated for eligibility under the respective governing policies and guidelines established by CARB, the Board, and other funding sources. At least quarterly, staff provides updates to the Mobile Source and Climate Impacts Committee on the status of incentive funding for the current fiscal year, including total funding awarded, incentive fund balance available for award, funds allocated by county and by equipment category type, and percentage of funding benefitting impacted communities and low-income residents. The reported award allocations and emissions reductions benefits to counties and impacted communities, which are based on information provided by each applicant, may not include “regional” projects, where all communities receive benefits, or projects where the location of the benefit has not yet been determined.

## DISCUSSION

### **Carl Moyer Program and Community Air Protection Program:**

For the FYE 2022, the Air District had approximately \$46.3 million available in CMP, MSIF, CAPP, and FARMER funds for eligible projects, including prior year funds. This total may change as additional revenues are awarded to the Air District. The Air District accepts project applications on a rolling basis and evaluates them on a first-come, first-served basis.

As of February 2, 2022, the Air District has awarded or evaluated 68 project applications. Of the new applications that were evaluated between December 16, 2021 and February 2, 2022, five eligible projects have proposed grant awards over \$100,000. One marine project will replace two diesel engines with cleaner diesel engines on a workboat. Three off-road projects will replace seven pieces of Tier 0 or Tier 1 diesel agricultural equipment with Tier 4 diesel equipment. One project will replace 12 diesel school buses with zero emission electric school buses, install supporting charging infrastructure, and be co-funded by TFCA. These projects will reduce over 4.2 tons of NOx, ROG, and PM per year. Staff recommends the allocation of \$5,404,383 for these projects from a combination of CMP, FARMER, CAPP, MSIF, and TFCA revenues. Attachment 1, Table 1, provides additional information on these projects.

Attachment 2 lists all of the eligible projects that have been awarded by the Air District since July 1, 2021, including information about project equipment, award amounts, estimated emissions reductions, and community benefits & project locations. To date, approximately 82% of the funds have been awarded or allocated to low-income residents or to projects that reduce emissions in CARE, disadvantaged SB 535 communities, and/or low-income AB 1550 communities. The percentage of projects in these communities will change over time as the remaining funds are awarded later in the fiscal year and as more complete information about the location of projects and program participants becomes available.

## **Transportation Fund for Clean Air Program:**

For the FYE 2022, the Air District had approximately \$29.4 million in TFCA monies available for eligible projects and programs consisting of new and prior-year revenues. The Air District accepts project applications for certain project categories on a rolling basis and evaluates them on a first-come, first-served basis. Between December 16, 2021, and February 2, 2022, one project was evaluated with a proposed grant award of over \$100,000 in TFCA funds. The school bus project that is discussed in the CMP section above proposes to provide co-funding and emissions reductions would be credited to the CMP program.

Attachment 3, Table 1, lists all eligible TFCA projects that have been evaluated and awarded as of July 1, 2021, including information about project equipment, award amount, estimated emissions reduction, and community benefits & project locations. To date, approximately 87% of the funds have been awarded or allocated to low-income residents or to projects that reduce emissions in CARE, disadvantaged SB 535 communities, and/or low-income AB 1550 communities. The percentage of projects in these communities will change over time as the remaining funds are awarded later in the fiscal year and as more complete information about the location of projects and program participants becomes available.

## BUDGET CONSIDERATION/FINANCIAL IMPACT

None. The Air District distributes the CMP, MSIF, CAPP Program, FARMER, and TFCA funding to project sponsors on a reimbursement basis. Funding for administrative costs is provided by each funding source.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Linda Hui, Chad White, and Alona Davis

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## ATTACHMENTS:

1. Projects with grant awards greater than \$100,000 (evaluated 12/16/21 to 2/2/22)
2. CMP/MSIF, FARMER and CAPP projects (awarded and allocated 7/1/21 to 2/2/22)
3. TFCA projects (awarded and allocated projects between 7/1/21 and 2/2/22)
4. Summary of funding (awarded and allocated between 7/1/21 and 2/2/22)

## ATTACHMENT 1

Table 1 - Carl Moyer Program, Mobile Source Incentive Fund, FARMER, Community Air Protection Program, and Transportation Fund for Clean Air projects with grant awards greater than \$100k (Evaluated between 12/16/21 and 2/2/22)

Project #	Applicant Name	Project Category	Project Description	Proposed Contract Award	Total Project Cost	Emission Reductions (tons per year)			County
						NO <sub>x</sub>	ROG	PM	
22MOY258	Foley Family Farms, LLC	Off-Road/Ag	Replace two Tier 0 diesel-powered tractors with two Tier 4 diesel-powered tractors	\$ 119,400	\$ 149,268	0.376	0.049	0.033	Sonoma
22MOY227	M. German & Son Partnership	Off-Road/Ag	Replace one Tier 1 diesel-powered tractor with a Tier 4 diesel-powered tractor and replace one Tier 0 diesel-powered tractor with a Tier 4 diesel-powered tractor	\$ 104,400	\$ 138,643	0.379	0.060	0.041	Solano
22MOY250	George Bianchi INC	Off-Road/Ag	Replace one Tier 0 diesel-powered skid steer loader with a Tier 4 diesel-powered skid steer loader, one Tier 0 diesel-powered excavator with a Tier 4 diesel-powered excavator, and one Tier 0 diesel-powered loader with a Tier 4 diesel-powered loader	\$ 447,500	\$ 559,572	1.361	0.139	0.080	Sonoma
22SBP203	Oak Grove School District	School Bus	Replace 12 diesel school buses with 12 electric school buses and install supporting charging infrastructure.	\$ 4,593,083	\$ 5,170,367	1.000	0.120	0.010	Sonoma
22MOY261	Bay Marine Services, LLC	Marine	Replace two Tier 0 marine engines with two Tier 3 marine engines on a work boat.	\$ 140,000	\$ 175,397	0.594	0.003	0.022	Solano, Contra Costa
<b>5 Projects</b>				<b>\$ 5,404,383</b>	<b>\$ 6,193,247</b>	<b>3.711</b>	<b>0.371</b>	<b>0.186</b>	

**ATTACHMENT 2**

*CMP/MSIF, FARMER and Community Air Protection Program projects  
(awarded and allocated between 7/1/21 and 2/2/22)*

Project #	Project Category	Project Type	Number of Engines	Proposed Contract Award	Applicant Name	Emission Reductions (tons per year)			Board Approval Date	CARE Area	AB1550/SB535 Area	County
						NOx	ROG	PM				
22SBP71***	School Bus	Equipment replacement + Infrastructure	12	\$ 3,775,186	Petaluma City Schools	0.932	0.071	0.005	7/7/21	No	Yes	Sonoma
22MOY138	Ag/ off-road	Equipment replacement	3	\$ 525,300	Dave Soland	2.035	0.165	0.097	7/7/21	No	No	Sonoma
22SBP84***	School Bus	Equipment replacement + Infrastructure	4	\$ 803,786	Rincon Valley Union School District	0.228	0.015	0.003	7/7/21	No	Yes	Sonoma
22MOY149	Ag/ off-road	Equipment replacement	1	\$ 170,500	Renati Dairy	0.522	0.068	0.048	7/7/21	No	No	Sonoma
22MOY127	Ag/ off-road	Equipment replacement	2	\$ 107,100	Napa Select Vineyard Services, Inc.	0.187	0.012	0.011	7/7/21	No	No	Napa
22MOY142	Ag/ off-road	Equipment replacement	2	\$ 51,750	Cobb Creek Holdings, LLC DBA CCH Ag Services	0.205	0.034	0.021	7/7/21	No	No	Napa
22MOY135	Marine	Engine replacement	1	\$ 154,000	William E. Smith	1.831	0.018	0.069	7/7/21	No	No	San Mateo
22SBP105	School Bus	Equipment replacement + Infrastructure	4	\$ 1,731,969	Fremont Unified School District	0.414	0.036	0.018	7/7/21	No	Yes	Alameda
22MOY169	Ag/ off-road	Equipment replacement	2	\$ 132,260	Kenzo Estate, Inc.	0.223	0.020	0.015	7/7/21	No	No	Napa
22SBP40***	School Bus	Equipment replacement + Infrastructure	5	\$ 889,832	Franklin-McKinley School District	0.250	0.015	0.003	7/7/21	Yes	Yes	Santa Clara
22MOY158	Marine	Engine replacement	1	\$ 174,000	Laurence J Collins	0.790	0.018	0.028	7/7/21	No	No	San Francisco
2102-16395	LD Infrastructure	Charge!	--	\$ 21,000	The Millennium Tower Association	0.007	0.004	0.000	7/7/21	Yes	No	San Francisco
2103-17230	LD Infrastructure	Charge!	--	\$ 64,000	REEF Energy CA Operations LLC	0.098	0.058	0.002	7/7/21	Yes	Yes	San Francisco
2103-17359	LD Infrastructure	Charge!	--	\$ 48,000	The Shores at Marina Bay Community Association	0.005	0.003	0.000	7/7/21	Yes	Yes	Contra Costa
2103-17527	LD Infrastructure	Charge!	--	\$ 24,000	EVmatch, Inc.	0.003	0.002	0.000	7/7/21	Yes	Yes	Alameda
2103-17603	LD Infrastructure	Charge!	--	\$ 32,000	Bollinger Crest Apartment Investors, LP	0.011	0.006	0.000	7/7/21	No	No	Alameda
2103-17638	LD Infrastructure	Charge!	--	\$ 48,000	Intertie, Incorporated	0.017	0.010	0.000	7/7/21	Yes	Yes	San Francisco
22MOY130	On-road	Equipment replacement	1	\$ 25,000	Min Jian Huang (jianhuang)	0.841	0.070	0.000	APCO	Yes	Yes	Alameda
22MOY151	Ag/ off-road	Equipment replacement	2	\$ 86,000	Hardin Vineyard Management LLC	0.257	0.055	0.023	APCO	No	No	Napa
22MOY124	On-road	Equipment replacement	1	\$ 25,000	Kulwant Khara (kskhara)	0.773	0.065	0.000	APCO	Yes	Yes	Alameda
22MOY78	Ag/ off-road	Equipment replacement	1	\$ 31,642	Cortina Vineyard Management	0.047	0.011	0.008	APCO	Yes	Yes	Napa
22MOY131	On-road	Equipment replacement	1	\$ 25,000	Karanbir Singh (karanbirsg)	0.820	0.690	0.000	APCO	No	No	Contra Costa
22MOY166	Ag/ off-road	Equipment replacement	2	\$ 96,400	Stone Bridge Cellars Inc.	0.166	0.009	0.009	APCO	No	No	Napa
22MOY174	On-road	Equipment replacement	1	\$ 25,000	Can Yuan Chen (canchen)	1.008	0.085	0.000	APCO	Yes	Yes	Alameda

**ATTACHMENT 2**

*CMP/MSIF, FARMER and Community Air Protection Program projects  
(awarded and allocated between 7/1/21 and 2/2/22)*

Project #	Project Category	Project Type	Number of Engines	Proposed Contract Award	Applicant Name	Emission Reductions (tons per year)			Board Approval Date	CARE Area	AB1550/SB535 Area	County
						NOx	ROG	PM				
22MOY92	Ag/ off-road	Equipment replacement	1	\$ 29,550	Paul P. Bianchi, Inc	0.025	0.023	0.007	APCO	No	No	Sonoma
22SBP52	School Bus	Equipment replacement	3	\$ 435,306	Pittsburg Unified School District	0.290	0.022	0.000	10/6/21	Yes	Yes	Contra Costa
22MOY185	Ag/ off-road	Equipment replacement	1	\$ 67,100	Domenico J. Carinalli, Jr.	0.156	0.010	0.009	APCO	No	No	Sonoma
22MOY99	Ag/ off-road	Equipment replacement	1	\$ 41,100	Daylight Vineyard Management, Inc.	0.062	0.005	0.007	APCO	No	No	Sonoma
22MOY179	Marine	Engine replacement	1	\$ 72,000	Kyle Dyer dba Diamond Sportfishing	0.705	0.009	0.028	APCO	Yes	No	Alameda/Contra Costa/San Francisco
22MOY183	Marine	Engine Replacement	2	\$ 172,500	Joseph Mantua	0.661	0.028	0.028	10/6/21	No	No	Marin/San Maeto/San Francisco/Sonoma
22MOY140	Marine	Engine Replacement	1	\$ 72,000	Mike Carpenter	0.249	0.008	0.010	APCO	No	No	Marin/San Francisco/Sonoma
22MOY22	Ag/ off-road	Equipment replacement	2	\$ 57,100	Joseph Pinheiro	0.047	0.018	0.010	APCO	No	No	Sonoma
22MOY160	Marine	Engine replacement	4	\$ 3,529,000	Baydelta Navigation LTD	30.665	2.726	1.021	10/6/21	Yes	Yes	San Francisco, Alameda, Contra Costa, Marin, Solano
21SBP98*	School Bus	Equipment replacement + Infrastructure	--	\$ 242,828	Palo Alto Unified School District	--	--	--	10/6/21	Yes	Yes	Santa Clara
22SBP14**	School Bus	Equipment replacement + Infrastructure	--	\$ 95,327	Milpitas Unified School District	--	--	--	10/6/21	Yes	Yes	Santa Clara
22MOY128	On-road	Equipment replacement	1	\$ 15,000	Aman Khan	0.420	0.035	0.000	APCO	Yes	Yes	Alameda
22MOY187	Ag/ off-road	Equipment replacement	1	\$ 30,100	Dierke's Enterprises	0.017	0.015	0.004	APCO	No	No	Sonoma
22MOY190	Ag/ off-road	Equipment replacement	2	\$ 91,170	Anderson's Conn Valley Winery, Inc.	0.108	0.034	0.015	APCO	No	No	Napa
22MOY170	Off-road	Equipment replacement	1	\$ 106,000	Argent Materials INC	0.814	0.041	0.021	11/17/21	Yes	Yes	Alameda
22MOY209	Ag/ off-road	Equipment replacement	1	\$ 192,600	Global Mushrooms LLC.	0.362	0.049	0.030	11/17/21	No	Yes	Santa Clara
22MOY167	Ag/ off-road	Equipment replacement	2	\$ 285,700	Ielmorini Moody Dairy	0.871	0.107	0.052	11/17/21	No	Yes	Sonoma
22MOY196	Marine	Engine replacement	2	\$ 256,000	A.C. Fishing Charters Inc., dba Tigerfish Sportfishing	0.576	0.000	0.031	11/17/21	Yes	No	Alameda/Contra Costa/Marin/San Francisco
TBD	LD Infrastructure	Charge!s	--	\$ 2,000,000	BAAQMD	TBD*	TBD*	TBD*	11/17/21	TBD*	TBD*	Regional
22MOY211	Ag/ off-road	Equipment Replacement	1	\$ 88,900	Pomponio Farms LLC	0.412	0.054	0.031	APCO	No	Yes	San Mateo
22SBP216***	School Bus	Equipment replacement + Infrastructure	3	\$ 887,025	Campbell Union High School District	0.192	0.011	0.001	12/15/21	Yes	Yes	Santa Clara County
22MOY217	Marine	Engine replacement	2	\$ 380,000	Happy Hooker Sportfishing, LLC	1.340	-0.036	0.056	12/15/21	Yes	Yes	Alameda, San Francisco, Contra Costa
22MOY206	Ag/ off-road	Equipment Replacement	1	\$ 64,000	Wente Bros. dba. Wente Vineyards	0.214	0.035	0.026	APCO	Yes	No	Alameda
22MOY157	Ag/ off-road	Equipment replacement	3	\$ 133,400	Walsh Vineyards Management Inc.	0.657	0.105	0.067	1/19/22	No	No	Napa
22MOY220	Ag/ off-road	Equipment replacement	3	\$ 160,300	Atlas Vineyard Management, Inc.	0.301	0.046	0.036	1/19/22	No	No	Napa/Sonoma
22MOY208	Ag/ off-road	Equipment replacement	1	\$ 146,475	Jack Neal and Son Inc	0.210	0.028	0.019	1/19/22	No	No	Napa
22MOY215	Marine	Engine Replacement	2	\$ 187,000	Reel Screamer Charters LLC	0.371	0.003	0.019	1/19/22	No	No	San Mateo, San Francisco, Marin

## ATTACHMENT 2

*CMP/MSIF, FARMER and Community Air Protection Program projects  
(awarded and allocated between 7/1/21 and 2/2/22)*

Project #	Project Category	Project Type	Number of Engines	Proposed Contract Award	Applicant Name	Emission Reductions (tons per year)			Board Approval Date	CARE Area	AB1550/SB535 Area	County
						NOx	ROG	PM				
22MOY241	Marine	Engine replacement	2	\$ 258,000	C-Gull II Sportfishing Inc.	0.934	0.000	0.050	1/19/22	Yes	No	Alameda, San Francisco, Contra Costa, Marin
22MOY245	Marine	Engine replacement	2	\$ 301,400	C-Gull II Sportfishing Inc.	0.550	0.002	0.029	1/19/22	Yes	No	Alameda, San Francisco, Contra Costa, Marin
22MOY224	Marine	Engine Replacement	2	\$ 133,000	Duane Winter	0.349	0.002	0.018	1/19/22	No	No	San Mateo, San Francisco
22MOY195	Ag/ off-road	Equipment replacement	1	\$ 59,500	Isley Brothers Farming, LLC	0.099	0.006	0.006	APCO	No	No	Napa
22MOY180	Ag/ off-road	Equipment replacement	1	\$ 32,400	Frog's Leap Winery	0.041	0.003	0.004	APCO	No	No	Napa
22MOY235	Ag/ off-road	Equipment replacement	1	\$ 50,300	Comerstone Certified Vineyard	0.074	0.007	0.008	APCO	No	No	Sonoma
22MOY228	Marine	Engine replacement	1	\$ 85,300	Wooden Boats for Vetrans Foundation	0.216	0.009	0.009	APCO	Yes	No	Solano/Contra Costa/San Francisco/Marin
22MOY223	Ag/ off-road	Equipment replacement	1	\$ 24,700	Ingenious Solutions Incorporated	0.013	0.011	0.003	APCO	No	No	Napa
22MOY195	Ag/ off-road	Equipment replacement	1	\$ 54,000	Isley Brothers Farming, LLC	0.090	0.005	0.005	APCO	No	No	Napa
22MOY227	Ag/ off-road	Equipment replacement	2	\$ 104,400	M. German & Son Partnership	0.379	0.060	0.041	TBD	No	No	Solano
22MOY258	Ag/ off-road	Equipment replacement	2	\$ 119,400	Foley Family Farms, LLC	0.376	0.049	0.033	TBD	No	No	Sonoma
22MOY250	Ag/ off-road	Equipment replacement	3	\$ 447,500	George Bianchi Inc	1.361	0.139	0.080	TBD	No	No	Sonoma
22MOY253	Ag/ off-road	Equipment replacement	1	\$ 60,800	Alan Willey	0.099	0.015	0.009	APCO	No	No	Solano
22MOY259	Ag/ off-road	Equipment replacement	1	\$ 70,200	Morison Ranch	0.150	0.023	0.017	APCO	No	No	Solano
22MOY270	Ag/ off-road	Equipment replacement	2	\$ 90,400	Dirt Farmer & Company, A California Corporation	0.188	0.012	0.011	APCO	No	No	Sonoma
22SBP203***	School Bus	Equipment replacement	12	\$ 3,164,239	Oak Grove School District	1.000	0.120	0.010	TBD	Yes	Yes	Santa Clara
22MOY261	Marine	Engine replacement	2	\$ 140,000	Bay Marine Services, LLC	0.594	0.003	0.022	TBD	Yes	Yes	Solano, Contra Costa

**68 Projects                      125                      \$                      24,099,745                      57.9                      5.4                      2.2**

\*This project award reflects an approved increase of \$242,828 in CMP/MSIF/CAPP funds to allow for DC fast-charging infrastructure to be included as part of this project. This project was previously awarded \$513,500.00 of TFCA funds and \$323,778.00 of CMP/MSIF/CAPP funds on 3/4/20.

\*\*The project award reflects an approved increase of \$95,327 in CMP/MSIF/CAPP funds to allow for DC fast-charging infrastructure to be included as part of this project. This project was previously awarded \$204,598.00 of TFCA funds and \$622,556.00 of CMP/MSIF/CAPP funds on 4/7/21.

\*\*\* This project is co-funded with TFCA funds as shown on Attachment 3.

§ Award Amount may come from either the Mobile Source Incentive Fund (MSIF) or the Transportation Fund for Clean Air (TFCA).

¶ Funds have been allocated to these programs and project results will be determined at the end of project period.

### ATTACHMENT 3

Table 1 - TFCA projects awarded and allocated (between 7/1/21 and 2/2/22)

Project #	Project Category	Project Description	Award Amount	Applicant Name	Emission Reductions (tons per year)			Board/ APCO Approval Date	CARE Area	AB1550/ SB535 Area	County
					NO <sub>x</sub>	ROG	PM				
2101-15735	LD Infrastructure	Install and operate 38 DC Fast chargers at 6 transportation corridor facilities in San Francisco, South San Francisco, Millbrae, Menlo Park, and San Jose.	\$ 950,000	EVgo Services LLC	0.350	0.207	0.008	7/7/21	Yes	No	Multi-County
2103-17065	LD Infrastructure	Install and operate 5 Level 2 (high) dual port chargers at 1 transit parking facility in Napa.	\$ 20,000	Napa Valley Transportation Authority	0.014	0.008	0.000	7/7/21	No	No	Napa
2103-17315	LD Infrastructure	Install and operate 135 Level 2 (high) single port chargers and 123 DC fast chargers at 40 destination, transportation corridor, and transit parking facilities in Vallejo, San Jose, Kenwood, Fairfield, Vacaville, Mountain View, and Santa Clara.	\$ 2,999,000	EV Charging Solutions, Inc.	1.446	0.853	0.035	7/7/21	Yes	Yes	Multi-County
2103-17345	LD Infrastructure	Install and operate 2 DC Fast and 2 dual port Level 2 (high) chargers at 2 destination facilities in San Ramon.	\$ 44,000	City of San Ramon	0.024	0.014	0.001	7/7/21	Yes	No	Alameda
2103-17497	LD Infrastructure	Install and operate 17 DC Fast chargers at 1 transportation corridor facility in Oakland.	\$ 425,000	East Bay Community Energy Authority	0.157	0.093	0.004	7/7/21	Yes	Yes	Alameda
2103-17499	LD Infrastructure	Install and operate 8 Level 2 (high) dual port chargers at 1 multi-unit dwelling facility in Alameda.	\$ 64,000	Alameda Multifamily Owner LLC	0.023	0.013	0.001	7/7/21	Yes	No	Alameda
2103-17520	LD Infrastructure	Install and operate 5 Level 2 (high) dual port and 2 Level 2 (high) single port chargers at 2 destination facilities in Dublin.	\$ 26,000	City of Dublin	0.019	0.011	0.000	7/7/21	No	No	Alameda
2103-17524	LD Infrastructure	Install and operate 110 Level 2 (high) single port chargers with solar and 24 Level 2 (high) single port chargers at 3 workplace and 1 destination facilities in Solano.	\$ 406,000	County of Solano	0.309	0.182	0.007	7/7/21	Yes	Yes	Solano
2103-17554	LD Infrastructure	Install and operate 2 Level 2 (high) dual port chargers with solar at 1 workplace facility in Richmond.	\$ 12,000	West County Wastewater District	0.006	0.003	0.000	7/7/21	Yes	Yes	Contra Costa
2103-17625	LD Infrastructure	Install and operate 11 Level 2 (high) dual port chargers at 1 multi-unit dwelling facility in Brentwood.	\$ 44,000	Silvergate Brentwood, LLC	0.037	0.022	0.001	7/7/21	No	No	Contra Costa
21R05	LD Infrastructure	FYE 21 Charge! Program	\$ 10,000	BAAQMD	TBD*	TBD*	TBD*	7/7/21	TBD*	TBD*	Regional
22R02	LD Vehicles	Vehicle Buy Back Program	\$ 200,000	BAAQMD	N/A**	N/A**	N/A**	6/16/21	N/A	N/A	Regional
21RSB03	School Bus	Match funding for Project #22SBP71 for the replacement of 12 diesel school buses with 12 electric school buses	\$ 1,153,346	BAAQMD	N/A**	N/A**	N/A**	7/7/21	No	Yes	Sonoma
21RSB04	School Bus	Match funding for Project #22SBP84 for the replacement of 3 diesel school buses & 1 CNG school bus with 4 electric school buses	\$ 892,045	BAAQMD	N/A**	N/A**	N/A**	7/7/21	No	Yes	Sonoma
21RSB05	School Bus	Match funding for Project #22SBP40 for the replacement of 5 diesel special needs school buses with 5 electric special needs school buses	\$ 1,232,175	BAAQMD	N/A**	N/A**	N/A**	7/7/21	Yes	Yes	Santa Clara
22SBP203	School Bus	Match funding for the replacement of 8 diesel school buses with 8 electric school buses	\$ 1,428,844	Oak Grove School District	N/A**	N/A**	N/A**	Pending	Yes	Yes	Sonoma
22SBP216	School Bus	Match funding for the replacement of 3 diesel school buses with 3 electric school buses	\$ 623,591	Campbell Union High School District	N/A**	N/A**	N/A**	12/15/21	Yes	Yes	Santa Clara
21R12	Trip Reduction	Pleasanton Connector Shuttles	\$ 80,000	San Joaquin Regional Rail Commission	N/A ‡	N/A ‡	N/A ‡	6/22/21	No	No	Alameda
22R01	Trip Reduction	Enhanced Mobile Source & Commuter Benefits Enforcement	\$ 150,000	BAAQMD	TBD*	TBD*	TBD*	6/16/21	N/A	N/A	Regional
22R03	Trip Reduction	Spare The Air/Intermittent Control/Flex Your Commute Programs	\$ 2,290,000	BAAQMD	TBD*	TBD*	TBD*	6/16/21	N/A	N/A	Regional
<b>Total</b>			<b>\$13,050,001</b>		<b>2.384</b>	<b>1.408</b>	<b>0.057</b>				

\* Funds have been allocated to these programs and projects and results will be determined at the end of project period.

\*\* Emission reductions are fully reported under the Carl Moyer Program to prevent double counting.

‡ Emission reductions will be reported as part of the Spare the Air program (Project #21R03).



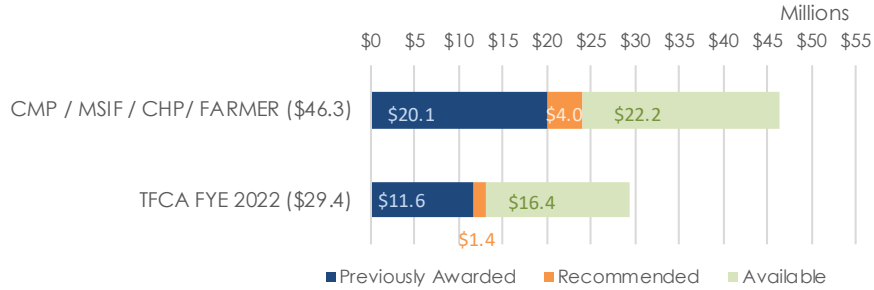
# ATTACHMENT 4

## Summary of funding awarded and allocated from the following revenue sources between 7/1/21 and 2/2/22

- Carl Moyer Program (CMP)
- Community Air Protection Program (CAPP)
- Mobile Source Incentive Fund (MSIF)
- Transportation Fund for Clean Air (TFCA)
- Funding Agricultural Replacement Measures for Emission Reductions (FARMER)

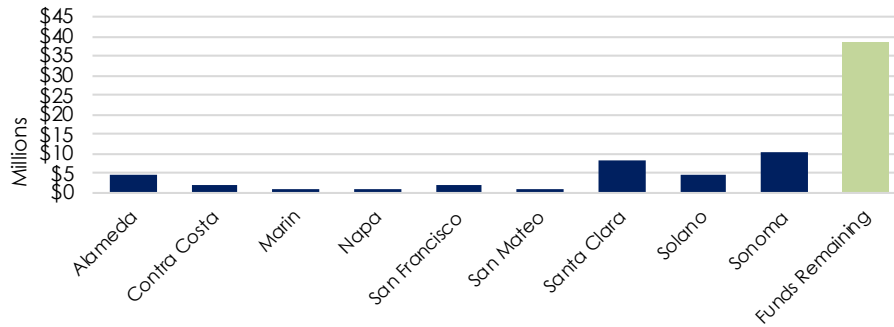
**Figure 1. Status of FYE 2022 funding by source**

includes funds awarded, recommended for award, and available



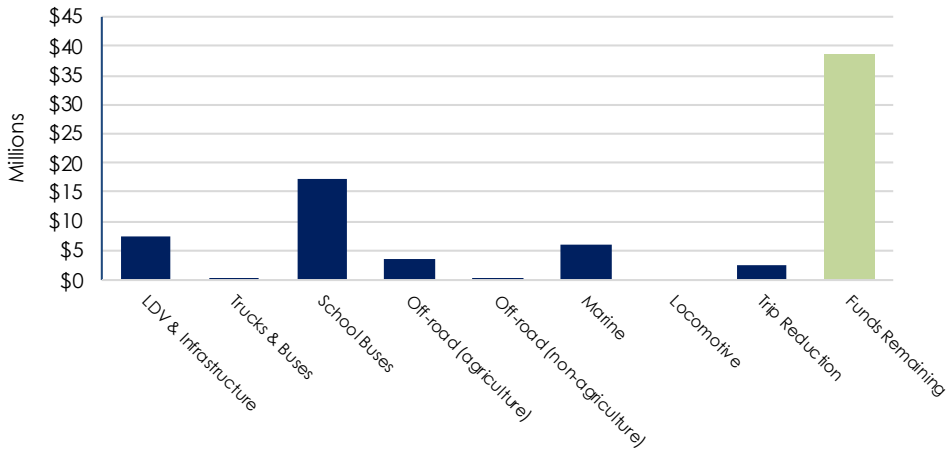
**Figure 2. Funding awarded and allocated in FYE 2022 by county**

includes funds awarded & recommended for award



**Figure 3. Funding awarded and allocated in FYE 2022 by project category**

includes funds awarded & recommended for award



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Referral of Proposed Budget for Fiscal Year Ending (FYE) 2023 to the Budget and  
Finance Committee

RECOMMENDED ACTION

Refer the proposed Air District Budget for FYE 2023 to the Budget and Finance Committee for review and consideration.

BACKGROUND

None.

DISCUSSION

Pursuant to Administrative Code Division II, Section 3.2 Fiscal Policies and Procedures and in compliance with Health and Safety Code Section 40276, the Executive Officer/APCO requests that the Board of Directors refer the proposed budget for FYE 2023 to the Budget and Finance Committee for review and consideration.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Stephanie Osaze  
Reviewed by: Jeff McKay

ATTACHMENTS:

None

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Authorization for Four Contracts for the Bay Area Healthy Homes Initiative, Funded by \$2 Million from California Attorney General's Office Automobile Emissions Research and Technology Fund Grant

RECOMMENDED ACTION

Recommend the Board of Directors approve contracts with Contra Costa County Health Services, Association for Energy Affordability, County of Alameda (Asthma Start), and Energy Council (StopWaste) to implement the Bay Area Healthy Homes Initiative (BAHHI) program; and authorize the Executive Officer/APCO to enter into all contracts necessary to implement this project.

BACKGROUND

On September 15, 2021, the Air District Board of Directors accepted a grant award of \$1,999,279 from the Automobile Emissions Research and Technology Fund, administered by the California Attorney General's Office, for the Air District's proposal entitled "Bay Area Healthy Homes Initiative: a program to reduce exposure to transportation emissions in communities overburdened with air pollution and asthma." The Bay Area Healthy Homes Initiative seeks to build on and expand the Asthma Mitigation Project pilot effort in Contra Costa County, led by Contra Costa Public Health since 2018 and funded by the Air District since August 2020. This pilot, which combines health and climate interventions to improve health outcomes of vulnerable groups, aims to conduct asthma education and in-home assessment visits and provide retrofits that address asthma triggers and improve energy efficiency for high-risk asthma patients. To date, the Contra Costa pilot program has completed 53 initial site visits and 40 virtual asthma and energy efficiency assessment visits, and initiated tracking of asthma status improvements among program participants. The pilot program has also distributed 35 portable air purifiers sourced from the District's Clean Air Filtration program.

## DISCUSSION

The Bay Area Healthy Homes Initiative seeks to improve health outcomes for Contra Costa and Alameda County residents living in communities disproportionately impacted by air pollution by integrating multiple interventions that address the cumulative air pollution burden. The awarded funds will allow this initiative to continue to build capacity and expand the pilot program significantly. Over the two-year grant term, this program will target up to 105 additional high-risk asthma patients (adults and children) and up to 965 residents from some of the areas most impacted by traffic air pollution in Contra Costa and Alameda County. For asthma patients, health interventions include home asthma education, environmental asthma trigger assessment, and patient's asthma condition evaluation before and after program completion. For both patients and residents, this initiative will support comprehensive and impactful home retrofits that address existing environmental (including asthma) triggers, energy efficiency, and exposure to outdoor pollution. Finally, this initiative includes a research component to quantify and document resulting improvements on a home's indoor air quality and on the patient's health outcomes.

There are two pathways through which households enter this program for home assessments and retrofits – one pathway is based on individual need (“patients”), the other on prevention (“residents”). For the patient selection pathway, which addresses the most critical need, participants must meet eligibility criteria of individual health programs in Alameda or Contra Costa County, reside within an overburdened community in those counties (as identified using CalEPA's CalEnviroScreen tool), and be located within 1,000 feet of significant transportation sources (major roads, railroads, ports). For the resident selection pathway, which focuses on prevention, participants must only meet the latter two criteria. Program recruitment will be ongoing for both participant selection pathways. At any given time, there will be a current pool of patient and resident participants. From this current pool, the program will prioritize conducting assessments and retrofits in homes of patients over residents.

Staff has drafted four grant contracts for the Air District to disburse the award funds to our program partners: Contra Costa Health Services, Association for Energy Affordability (AEA), Asthma Start, and StopWaste. These partners will collaborate to implement the initiative's program areas: 1) outreach and recruitment, 2) asthma education and evaluation, 3) assessments of participants' homes for asthma triggers and energy efficiency, 4) coordination and completion of home retrofits, 5) indoor air quality research, and 6) evaluation of factors relevant to program scaling. Consideration of program scaling is essential since this program is estimated to cover only a small portion of the total need in Contra Costa (70 out of approximately 5,000 eligible asthma patients) and Alameda counties (35 out of approximately 16,000 eligible asthmatic children). The disparity in counties' total need estimates is due to the different eligibility criteria of their health programs.

Each partner will contribute its expertise to one or more program area. Contra Costa Health Services and Asthma Start will recruit eligible patients, provide asthma education, and conduct patient evaluation and asthma trigger assessments in Contra Costa County and Alameda counties, respectively. These partners will send patient referrals and asthma trigger assessment results to AEA who will lead home energy efficiency assessments in both counties. AEA will

receive referrals for resident participants for energy efficiency and environmental trigger assessments from StopWaste. AEA will determine and coordinate home retrofits needed to address relevant asthma or environmental health triggers, to prevent occupants' exposure to outdoor air pollution, and to increase energy efficiency of homes in both counties. In addition, AEA will lead research on nitrogen oxides, carbon monoxide, particulate matter, and greenhouse gas emissions reductions resulting from home retrofits for selected program participants across Contra Costa and Alameda Counties. These data can help demonstrate the multiple benefits and cost-effectiveness associated with these interventions, paving the way for this program to serve as a model for future expansion to other Bay Area counties.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Idania Zamora  
Reviewed by: Henry Hilken

ATTACHMENTS:

1. Bay Area Healthy Homes Initiative Infographic
2. Proposed Draft Grant Agreement No. 2022.009 - Association for Energy Affordability
3. Proposed Draft Grant Agreement No. 2022.011 - Asthma Start Contract
4. Proposed Draft Grant Agreement No. 2022.012 - Contra Costa Health Services Contract
5. Proposed Draft Grant Agreement No. 2022.013 - StopWaste

# BAY AREA HEALTHY HOMES INITIATIVE

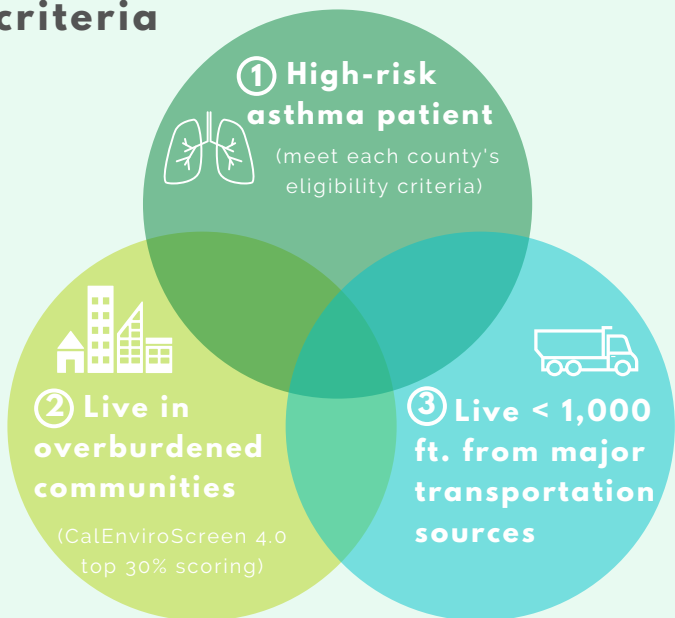


A \$2M program\* seeking to improve health for high-risk asthma patients and residents living in overburdened communities in Contra Costa and Alameda counties.

- Improve health outcomes for **vulnerable groups** by
  - providing in-home asthma education and mitigation
  - reducing cumulative air pollution exposure
- Integrate climate protection through energy efficiency retrofits
- Serve as a blueprint for similar programs across the SF Bay Area

GOALS

## Participant criteria



## PARTICIPANT SELECTION

### PATIENT PATHWAY

(meets all criteria)

Interventions focus on **improvement** of health outcomes for **patient participants**.

This program aims to recruit **70 patients** in Contra Costa and **35 patients** in Alameda.

### RESIDENT PATHWAY

(meets criteria 2 and 3)

Interventions focused on **prevention** of air pollution-related health effects.

This program will recruit up to **965 resident participants** over the next 2 years.

## PROGRAM SERVICES

### HEALTH ASSESSMENT & ASTHMA EDUCATION

(Patients only)



- ▶ **Home visits for asthma education** (e.g., inhaler use training)
- ▶ **Patient initial and final assessments** (to determine program's effectiveness)

### HOME ASSESSMENTS

(Patients and Residents)



- ▶ **Assess Asthma or Environmental Health Triggers** (e.g., moisture, allergens, irritants)

### HOME REMEDIATION & RETROFITS

(Patients and Residents)



- ▶ **Remediate Asthma Triggers** (e.g., mold removal)
- ▶ **Improve Energy Efficiency** (e.g., heat pumps, insulation)
- ▶ **Reduce Outdoor Pollution Exposure** (e.g., building envelope improvements)

105  
PATIENTS



965  
RESIDENTS



### HOME RETROFITS (1,070 participant homes)

70 single family residences



1,000 multi-family units

PROGRAM TARGETS

\* This program is funded by the Automobile Emissions Research and Technology Fund from the California Attorney General's Office. We thank our program implementation partners: Contra Costa Health Services, Association for Energy Affordability, and Alameda County's Asthma Start and StopWaste.

## BAY AREA AIR QUALITY MANAGEMENT DISTRICT

### GRANT AGREEMENT

#### GRANT NO. 2022.009

1. **PARTIES** - The parties to this Agreement (“Agreement”) are the Bay Area Air Quality Management District (“DISTRICT”) whose address is 375 Beale Street, Suite 600, San Francisco, CA 94105, and **Association for Energy Affordability** (“GRANTEE”) whose address is 5900 Hollis Street, Suite R2, Emeryville, CA 94608.
2. **RECITALS**
  - A. DISTRICT is the local agency with primary responsibility for regulating stationary source air pollution in the Bay Area Air Quality Management District in the State of California. DISTRICT is authorized to enter into this Agreement under California Health and Safety Code Section 40701.
  - B. DISTRICT desires to award GRANTEE a grant for the activities described in Attachment A, Work Plan.
  - C. All parties to this Agreement have had the opportunity to have the Agreement reviewed by their attorney.
3. **TERM** - The term of this Agreement is from April 1, 2022 until April 30, 2024, unless further extended by amendment of this Agreement in writing, or terminated earlier.
4. **TERMINATION**
  - A. DISTRICT shall have the right to terminate this Agreement at its sole discretion at any time upon thirty (30) days written notice to GRANTEE. The notice of termination shall specify the effective date of termination, which shall be no less than thirty (30) calendar days from the date of delivery of the notice of termination and shall be delivered in accordance with the provisions of section 10 below. Immediately upon receipt of the notice of termination, GRANTEE shall cease all activities under this Agreement, except such activities as are specified in the notice of termination. Within forty-five (45) days of receipt of written notice, GRANTEE is required to:
    - i) Submit a final written report describing all work performed by GRANTEE;
    - ii) Submit an accounting of all grant funds expended up to and including the date of termination; and,
    - iii) Reimburse DISTRICT for any unspent funds.
  - B. Either party may terminate this Agreement for breach by the other party.
    - i) Failure to perform any agreement or obligation contained in this Agreement or failure to perform the services in a satisfactory manner shall constitute a breach of the Agreement.
    - ii) The non-breaching party may terminate the Agreement by delivery of a written notice of breach. The notice of breach shall specify the date of termination, which shall be no earlier than ten (10) business days from delivery of the notice of breach. In the alternative, at its sole discretion, the non-breaching party may require the breaching party to cure the breach. The notice of breach shall specify the nature of the breach and the date by which such breach must be cured.
    - iii) If GRANTEE fails to perform any obligation under this Agreement, DISTRICT at its sole discretion, may perform, or cause the performance, of the obligation itself. In that event, DISTRICT shall deduct the costs to perform such obligation and any other costs to cure the



breach from the payment otherwise due to GRANTEE for work performed under this Agreement. DISTRICT's performance hereunder shall not be deemed a waiver or release of any obligation of, or default by, GRANTEE under this Agreement.

- iv) The notice of breach shall be provided in accordance with the notice requirements set forth in section 10.
  - v) The non-breaching party reserves all rights under law and equity to enforce this Agreement and recover any damages.
5. NO AGENCY RELATIONSHIP CREATED / INDEPENDENT CAPACITY - GRANTEE and the agents and employees of GRANTEE, in the performance of this Agreement, shall act in an independent capacity and not as officers or employees or agents of DISTRICT, and nothing herein shall be construed to be inconsistent with that relationship or status. DISTRICT shall not have the right to direct or control the activities of GRANTEE in performing the services provided herein.
6. CONTRACTORS / SUBCONTRACTORS / SUBGRANTEES
- A. GRANTEE will be entitled to make use of its own staff and such contractors, subcontractors, and subgrantees as are mutually acceptable to GRANTEE and DISTRICT. Any change in contractors, subcontractors, or subgrantees must be mutually acceptable to the parties. Immediately upon termination of any such contract, subcontract, or subgrant, GRANTEE shall notify DISTRICT.
  - B. Nothing contained in this Agreement or otherwise, shall create any contractual relation between DISTRICT and any contractors, subcontractors, or subgrantees of GRANTEE, and no agreement with contractors, subcontractors, or subgrantees shall relieve GRANTEE of its responsibilities and obligations hereunder. GRANTEE agrees to be as fully responsible to DISTRICT for the acts and omissions of its contractors, subcontractors, and subgrantees and of persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by GRANTEE. GRANTEE's obligation to pay its contractors, subcontractors, and subgrantees is an independent obligation from DISTRICT's obligation to make payments to GRANTEE. As a result, DISTRICT shall have no obligation to pay or to enforce the payment of any moneys to any contractor, subcontractor, or subgrantee.
7. INDEMNIFICATION - GRANTEE agrees to indemnify, defend, and hold harmless DISTRICT, its officers, employees, agents, representatives, and successors-in-interest against any and all liability, demands, claims, costs, losses, damages, recoveries, settlements, and expenses (including reasonable attorney fees) arising out of, caused by, or connected to performance of this Agreement by GRANTEE, its employees, subcontractors, subgrantees, or agents..
8. PAYMENT
- A. DISTRICT agrees to award GRANTEE a grant of \$1,638,832 for the activities described in Attachment A, Work Plan. DISTRICT will make payments of grant funds on a quarterly basis to reimburse GRANTEE for its costs incurred in the preceding quarter, as follows:
    - i) Seven (7) quarterly payments, payable upon DISTRICT's receipt and approval of GRANTEE's quarterly progress reports and invoices. The amount of each quarterly payment shall be in accordance with the Grant Payment Schedule identified in the Work Plan.
    - ii) One (1) final payment, upon completion of all tasks identified in the Work Plan, payable upon DISTRICT's receipt GRANTEE's invoice and approval of the final report.
  - B. GRANTEE shall carry out the work described on the Work Plan and shall obtain DISTRICT's written approval of any changes or modifications to the Work Plan prior to performing or incurring costs

for the changed work. If GRANTEE fails to obtain such prior written approval, DISTRICT, at its sole discretion, may refuse to provide funds to pay for such work or costs.

C. Payment will be made only to GRANTEE.

9. AUTHORIZED REPRESENTATIVE - GRANTEE shall continuously maintain a representative vested with signature authority authorized to work with DISTRICT on all grant-related issues. GRANTEE shall, at all times, keep DISTRICT informed as to the identity of the authorized representative.
10. NOTICES - All notices that are required under this Agreement shall be provided in the manner set forth herein, unless specified otherwise. Notice to a party shall be delivered to the attention of the person listed below, or to such other person or persons as may hereafter be designated by that party in writing. Notice shall be in writing sent by e-mail, facsimile, or regular first class mail. In the case of e-mail and facsimile communications, valid notice shall be deemed to have been delivered upon sending, provided the sender obtained an electronic confirmation of delivery. E-mail and facsimile communications shall be deemed to have been received on the date of such transmission, provided such date was a business day and delivered prior to 4:00 p.m. Pacific Time. Otherwise, receipt of e-mail and facsimile communications shall be deemed to have occurred on the following business day. In the case of regular mail notice, notice shall be deemed to have been delivered on the mailing date and received five (5) business days after the date of mailing.

DISTRICT: Bay Area Air Quality Management District  
375 Beale Street, Suite 600  
San Francisco, CA 94105  
Attn: Idania Zamora  
E-mail: izamora@baaqmd.gov

GRANTEE: Association for Energy Affordability  
5900 Hollis Street, Suite R2  
Emeryville, CA 94608  
Attn: Amy Dryden  
E-mail: adryden@aea.us.org

11. ADDITIONAL PROVISIONS - All attachment(s) to this Agreement are expressly incorporated herein by this reference and made a part hereof as though fully set forth.
12. ACKNOWLEDGEMENTS - GRANTEE shall acknowledge DISTRICT support each time the activities funded, in whole or in part, by this Agreement are publicized in any news media, brochures, or other type of promotional material. The acknowledgement of DISTRICT support must state "Funded by a Grant from the Bay Area Air Quality Management District." Initials or abbreviations for DISTRICT shall not be used.
13. ADVERTISING / PUBLIC EDUCATION - GRANTEE shall submit copies of all draft public education or advertising materials to DISTRICT for review and approval prior to GRANTEE's use of such materials.
14. FINANCIAL MANAGEMENT SYSTEM
- A. GRANTEE shall be responsible for maintaining an adequate financial management system and will immediately notify DISTRICT when GRANTEE cannot comply with the requirements in this section.
  - B. GRANTEE's financial management system shall provide for:

- i) Financial reporting: accurate, current, and complete disclosure of the financial results of each grant in conformity with generally accepted principles of accounting and reporting in a format that is in accordance with the financial reporting requirements of the grant.
  - ii) Accounting records: records that adequately identify the source and application of funds for DISTRICT-supported activities. These records must contain information pertaining to grant awards and authorizations, obligations, unobligated balances, assets, liabilities, outlays or expenditures and income.
  - iii) Internal control: effective internal and accounting controls over all funds, property and other assets. GRANTEE shall adequately safeguard all such assets and assure that they are used solely for authorized purposes.
  - iv) Budget control: comparison of actual expenditures or outlays with budgeted amounts for each grant.
  - v) Allowable cost: procedures for determining reasonableness, allowability, and allocability of costs generally consistent with the provisions of federal and state requirements.
  - vi) Source documentation: accounting records that are supported by source documentation.
  - vii) Cash management: procedures to minimize the time elapsing between the advance of funds from DISTRICT and the disbursement by GRANTEE, whenever funds are advanced by DISTRICT.
- C. DISTRICT may review the adequacy of the financial management system of GRANTEE at any time subsequent to the award of the grant. If DISTRICT determines that GRANTEE's accounting system does not meet the standards described in paragraph B above, additional information to monitor the grant may be required by DISTRICT upon written notice to GRANTEE, until such time as the system meets with DISTRICT approval.

15. AUDIT / RECORDS ACCESS - GRANTEE agrees that DISTRICT shall have the right to review and to copy any records and supporting documentation pertaining to the performance of this Agreement. GRANTEE agrees to maintain such records for possible audit for a minimum of five (5) years after final payment, unless a longer period of records retention is stipulated, or until completion of any action and resolution of all issues which may arise as a result of any litigation, dispute, or audit, whichever is later. GRANTEE agrees to allow the DISTRICT or its designated representative(s) access to such records during normal business hours and to allow interviews of any employees who might reasonably have information related to such records. Further, GRANTEE agrees to include a similar right of DISTRICT to audit records and interview staff in any contract, subcontract, or subgrant related to performance of this Agreement.

16. FORFEIT OF GRANT FUNDS / REPAYMENT OF FUNDS IMPROPERLY EXPENDED - If grant funds are not expended, or have not been expended, in accordance with this Agreement, or if real or personal property acquired with grant funds is not being used, or has not been used, for grant purposes in accordance with this Agreement, DISTRICT, at its sole discretion, may take appropriate action under this Agreement, at law or in equity, including requiring GRANTEE to forfeit the unexpended portion of the grant funds and/or to repay to DISTRICT any funds improperly expended.

17. COMPLIANCE - GRANTEE shall comply fully with all applicable federal, state, and local laws, ordinances, regulations, and permits. GRANTEE shall also register with the California Attorney General's Registry of Charitable Trusts pursuant to California Government Code section 12585, if applicable. GRANTEE shall provide evidence, upon request, that all local, state, and/or federal permits, licenses, registrations, and approvals have been secured for the purposes for which grant funds are to be expended. GRANTEE shall maintain compliance with such requirements throughout the grant period. GRANTEE shall ensure that the requirements of the California Environmental Quality Act are

met for any approvals or other requirements necessary to carry out the terms of this Agreement. Any deviation from the requirements of this section shall result in non-payment of grant funds.

18. CONFIDENTIALITY – In order to carry out the purposes of this Agreement, GRANTEE may require access to certain of DISTRICT’s confidential information (including trade secrets, inventions, confidential know-how, confidential business information, and other information that DISTRICT considers confidential) (collectively, “Confidential Information”). It is expressly understood and agreed that DISTRICT may designate in a conspicuous manner Confidential Information that GRANTEE obtains from DISTRICT, and GRANTEE agrees to:

- A. Observe complete confidentiality with respect to such information, including without limitation, agreeing not to disclose or otherwise permit access to such information by any other person or entity in any manner whatsoever, except that such disclosure or access shall be permitted to employees of GRANTEE requiring access in fulfillment of the services provided under this Agreement.
- B. Ensure that GRANTEE’s officers, employees, agents, representatives, subgrantees, and independent contractors are informed of the confidential nature of such information and to assure by agreement or otherwise that they are prohibited from copying or revealing, for any purpose whatsoever, the contents of such information or any part thereof, or from taking any action otherwise prohibited under this section.
- C. Not use such information or any part thereof in the performance of services to others or for the benefit of others in any form whatsoever whether gratuitously or for valuable consideration, except as permitted under this Agreement.
- D. Notify DISTRICT promptly and in writing of the circumstances surrounding any possession, use, or knowledge of such information or any part thereof by any person or entity other than those authorized by this section. Take at GRANTEE’s expense, but at DISTRICT’s option and in any event under DISTRICT’s control, any legal action necessary to prevent unauthorized use of such information by any third party or entity which has gained access to such information at least in part due to the fault of GRANTEE.
- E. Take any and all other actions necessary or desirable to assure such continued confidentiality and protection of such information during the term of this Agreement and following expiration or termination of the Agreement.
- F. Prevent access to such materials by a person or entity not authorized under this Agreement.
- G. Establish specific procedures in order to fulfill the obligations of this section.

19. INTELLECTUAL PROPERTY RIGHTS - Title and full ownership rights to all intellectual property developed under this Agreement shall at all times remain with DISTRICT, unless otherwise agreed to in writing.

20. PUBLICATION

- A. DISTRICT shall approve in writing any report or other document prepared by GRANTEE in connection with performance under this Agreement prior to dissemination or publication of such report or document to a third party. DISTRICT may waive in writing its requirement for prior approval.
- B. Until approved by DISTRICT, any report or other document prepared by GRANTEE shall include on each page a conspicuous header, footer, or watermark stating “DRAFT – Not Reviewed or Approved by BAAQMD,” unless DISTRICT has waived its requirement for prior approval pursuant to paragraph A of this section.

- C. Information, data, documents, or reports developed by GRANTEE for DISTRICT, pursuant to this Agreement, shall be part of DISTRICT's public record, unless otherwise indicated. GRANTEE may use or publish, at its own expense, such information, provided DISTRICT approves use of such information in advance. The following acknowledgment of support and disclaimer must appear in each publication of materials, whether copyrighted or not, based upon or developed under this Agreement.

"This report was prepared as a result of work sponsored, paid for, in whole or in part, by the Bay Area Air Quality Management District (District). The opinions, findings, conclusions, and recommendations are those of the author and do not necessarily represent the views of the District. The District, its officers, employees, contractors, and subcontractors make no warranty, expressed or implied, and assume no legal liability for the information in this report."

- D. GRANTEE shall inform its officers, employees, subgrantees, and subcontractors involved in the performance of this Agreement of the restrictions contained herein and shall require compliance with the above.
21. PROPERTY AND SECURITY - Without limiting GRANTEE's obligations with regard to security, GRANTEE shall comply with all the rules and regulations established by DISTRICT for access to and activity in and around DISTRICT's premises.
22. ASSIGNMENT - No party shall assign, sell, license, or otherwise transfer any rights or obligations under this Agreement to a third party without the prior written consent of the other party, and any attempt to do so shall be void upon inception.
23. WAIVER - No waiver of a breach, of failure of any condition, or of any right or remedy contained in or granted by the provisions of this Agreement shall be effective unless it is in writing and signed by the party waiving the breach, failure, right, or remedy. No waiver of any breach, failure, right, or remedy shall be deemed a waiver of any other breach, whether or not similar, nor shall any waiver constitute a continuing waiver unless the writing so specifies. Further, the failure of a party to enforce performance by the other party of any term, covenant, or condition of this Agreement, and the failure of a party to exercise any rights or remedies hereunder, shall not be deemed a waiver or relinquishment by that party to enforce future performance of any such terms, covenants, or conditions, or to exercise any future rights or remedies.
24. FORCE MAJEURE - Neither DISTRICT nor GRANTEE shall be liable for or deemed to be in default for any delay or failure in performance under this Agreement or interruption of services resulting, directly or indirectly, from acts of God, enemy or hostile governmental action, civil commotion, strikes, lockouts, labor disputes, fire or other casualty, judicial orders, governmental controls, regulations or restrictions, inability to obtain labor or materials or reasonable substitutes for labor or materials necessary for performance of the services, or other causes, except financial, that are beyond the reasonable control of DISTRICT or GRANTEE, for a period of time equal to the period of such force majeure event, provided that the party failing to perform notifies the other party within fifteen calendar days of discovery of the force majeure event, and provided further that that party takes all reasonable action to mitigate the damages resulting from the failure to perform. Notwithstanding the above, if the cause of the force majeure event is due to party's own action or inaction, then such cause shall not excuse that party from performance under this Agreement.

25. SEVERABILITY - If a court of competent jurisdiction holds any provision of this Agreement to be illegal, unenforceable or invalid in whole or in part for any reason, the validity and enforceability of the remaining provisions, or portions of them will not be affected.
26. HEADINGS - Headings on the sections and paragraphs of this Agreement are for convenience and reference only, and the words contained therein shall in no way be held to explain, modify, amplify, or aid in the interpretation, construction, or meaning of the provisions of this Agreement.
27. COUNTERPARTS/FACSIMILES/SCANS – This Contract may be executed and delivered in any number of counterparts, each of which, when executed and delivered, shall be deemed an original, and all of which together shall constitute the same contract. The parties may rely upon a facsimile copy or scanned copy of any party’s signature as an original for all purposes.
28. GOVERNING LAW - Any dispute that arises under or relates to this Agreement shall be governed by California law, excluding any laws that direct the application to another jurisdiction’s laws. Venue for resolution of any dispute that arises under or relates to this Agreement, including mediation, shall be San Francisco, California.
29. DISPUTE RESOLUTION – A party that disputes a notice of breach must first seek mediation to resolve the dispute in accordance with the provisions set forth below.
- A. Upon receipt of a notice of breach of Agreement, the party may submit a demand for mediation to resolve whether or not a breach occurred. The party must state the basis of the dispute and deliver the demand within ten (10) business days of the date of receipt of the notice of breach.
  - B. The mediation shall take place at DISTRICT’s office at 375 Beale Street, Suite 600, San Francisco, or at such other place as may be mutually agreed upon by the parties and the mediator.
  - C. The parties shall make good faith efforts to hold the mediation within thirty (30) days after receipt of the demand for mediation.
  - D. Each party shall bear its own mediation costs.
  - E. In the event the parties are unable to resolve the dispute, either party may file an action in a court of competent jurisdiction to enforce the Agreement.
  - F. Maximum recovery under this section shall be limited to \$1,638,832. The mediation costs shall not reduce the maximum amount recoverable under this section.
30. NON-DISCRIMINATION – In the performance of this Agreement, GRANTEE shall not discriminate in its recruitment, hiring, promotion, demotion, and termination practices on the basis of race, religious creed, color, national origin, ancestry, sex, age, marital status, sexual orientation, medical condition, or physical or mental disability and shall comply with the provisions of the California Fair Employment & Housing Act (Government Code Section 12900 et seq.), the Federal Civil Rights Act of 1964 (P.L. 88-352) and all amendments thereto, and all administrative rules and regulations issued pursuant to said Acts. GRANTEE shall also require each subcontractor performing work in connection with this Agreement to comply with this section and shall include in each contract with such subcontractor provisions to accomplish the requirements of this section.
31. INSURANCE
- A. GRANTEE shall maintain the following insurance:
    - i) Workers’ compensation and employers’ liability insurance as required by California law or

- other applicable statutory requirements.
  - ii) Occurrence-based commercial general liability insurance or equivalent form with a limit of not less than one million dollars (\$1,000,000) each occurrence. Such insurance shall include DISTRICT and its officers, agents, and employees as additional insureds and shall be primary with respect to any insurance maintained by DISTRICT.
  - iii) Business automobile liability insurance or equivalent form with a limit of not less than one million dollars (\$1,000,000) each accident. Such insurance shall include coverage for owned, hired, and non-owned vehicles. If GRANTEE is a sole proprietor, GRANTEE may meet this insurance requirement with personal automobile liability insurance carrying a business use endorsement or by demonstrating to the satisfaction of DISTRICT that business use is covered under the GRANTEE's personal automobile liability insurance. A GRANTEE using only rental vehicles in performing work under this Agreement may meet this insurance requirement by purchasing automobile liability insurance in the required coverage amount from the rental agency.
- B. All insurance shall be placed with insurers acceptable to DISTRICT.
  - C. Prior to commencement of work under this Agreement, GRANTEE shall furnish properly-executed certificates of insurance for all required insurance. Upon request by DISTRICT, GRANTEE shall provide a complete copy of any required insurance policy. GRANTEE shall notify DISTRICT in writing thirty (30) days prior to cancellation or modification of any required insurance policy. Any such modifications are subject to pre-approval by DISTRICT.
  - D. If GRANTEE fails to maintain the required insurance coverage set forth above, DISTRICT reserves the right either to purchase such additional insurance and to deduct the cost thereof from any payments owed to GRANTEE or to terminate this Agreement for breach.
32. ENTIRE AGREEMENT AND MODIFICATION - This Agreement represents the final, complete, and exclusive statement of the agreement between the parties and supersedes all prior and contemporaneous understandings and agreements of the parties. No party has been induced to enter into this Agreement by, nor is any party relying upon, any representation or warranty outside those expressly set forth herein. This Agreement may only be amended by mutual agreement of the parties in writing and signed by both parties.
33. SURVIVAL OF TERMS - The provisions of sections 7 (Indemnification), 15 (Audit / Records Access), 16 (Forfeit of Grant Funds / Repayment of Funds Improperly Expended), 18 (Confidentiality), 19 (Intellectual Property Rights), and 20 (Publication) shall survive the expiration or termination of this Agreement.

IN WITNESS WHEREOF, the parties to this Agreement have caused this Agreement to be duly executed on their behalf by their authorized representatives.

BAY AREA AIR QUALITY  
MANAGEMENT DISTRICT

ASSOCIATION FOR ENERGY AFFORDABILITY

By: \_\_\_\_\_  
Jack P. Broadbent

By: \_\_\_\_\_  
Andrew Brooks

Executive Officer/APCO

Senior Director of West Coast  
Operations

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Approved as to form:  
District Counsel

By: \_\_\_\_\_  
Adan Schwartz  
Acting District Counsel

DRAFT



## ATTACHMENT A

### WORK PLAN

#### Overview

The Bay Area Healthy Homes Initiative (“INITIATIVE” or “program”) seeks to build on and expand the Asthma Mitigation Project pilot effort in Contra Costa County, which is run by Contra Costa Public Health in partnership with GRANTEE. The INITIATIVE seeks to improve health outcomes for Contra Costa and Alameda County residents living in communities disproportionately impacted by air pollution by integrating multiple interventions that address cumulative air pollution burden. DISTRICT was awarded nearly \$2 million from the Automobile Emissions Research and Technology Fund by the California Attorney General’s Office for the INITIATIVE and will disburse these funds through grant agreements to GRANTEE, Contra Costa Health Services, Energy Council (“StopWaste”), and County of Alameda (“Asthma Start”) (collectively referred to as “program partners”) to implement the INITIATIVE. Program partners will collaborate in the implementation of core areas of the program including home asthma education and trigger assessments, energy efficiency assessments, home retrofits, and indoor air monitoring. Anticipated outcomes include improved indoor air quality, decreased energy usage, reduced greenhouse gas (GHG) emissions, and improved health outcomes in program participants’ households.

GRANTEE, as a program partner of the INITIATIVE, will lead home energy efficiency assessments for program participants in Contra Costa and Alameda Counties. GRANTEE will determine and coordinate home retrofits needed to address relevant asthma triggers, to prevent residents’ exposure to outdoor air pollution, and to increase energy efficiency of the home. GRANTEE will lead research on nitrogen oxides (NOx), carbon monoxide (CO), particulate matter (PM), and GHG emissions reductions resulting from home retrofits in the homes of selected program participants across Contra Costa and Alameda Counties.

#### **Task 1: Staffing and Energy Assessments**

GRANTEE will allocate staff for and conduct energy efficiency assessments in each program participant’s home. GRANTEE shall allocate and spend up to \$65,000 of funding from this grant for staff time related to these energy efficiency assessments.

##### *Task 1a: Build Capacity for Energy Efficiency Assessments*

GRANTEE will allocate staff time to carry out the following duties:

1. Conduct energy efficiency assessments for participating households;
2. Develop scopes of work for each participating household; and
3. Manage staff work for the INITIATIVE.

##### *Deliverable 1a:*

1. Staffing plan(s), including qualifications of the individuals that will deliver core program activities, due 3 months after execution of the agreement.

##### *Task 1b: Conduct Energy Efficiency and Asthma Environmental Trigger Assessments*

There are two pathways through which households enter this program for home assessments and retrofits. For the patient selection pathway, program participants (“patient participants”) must meet eligibility criteria of individual health programs in Alameda or Contra Costa Counties AND meet both criteria under the resident selection pathway as listed below. For the resident selection path, program participants (“resident participants”) must only meet the latter two criteria (under item two below).

1. Patient selection pathway – meet eligibility of individual health programs in Alameda or Contra Costa Counties AND meet both criteria under the resident selection pathway.
  - a. Alameda County Eligibility - have a referral from Asthma Start AND have either a referral from the California Advancing and Innovating Medi-Cal (CalAIM) and Asthma Mitigation Project (AMP) grant OR a referral from the Alameda Alliance for Health:
    - i. Referrals from Asthma Start include any patients 0-18 years old living in Alameda County and diagnosed with asthma.
    - ii. Referrals from CalAIM and AMP grants include patients with:
      1. Asthma Control Test scores of 19 or less; and
      2. Two visits to urgent care or hospitalized or the emergency department in the last 12 months.
    - iii. Referrals from Alameda Alliance for Health include patients who have had four (4) albuterol refills in a 12-month period.
  - b. Contra Costa County Eligibility – have a referral from Contra Costa Health Services:
    - i. Reside in a household that includes Contra Costa Health Plan Medi-Cal patients (children and adults) with uncontrolled moderate to severe asthma selected using information provided by the Contra Costa Health Plan or by a health provider referral.
2. Resident selection pathway – meet eligibility requirements below:
  - a. Reside in a household within a community overburdened with air pollution emissions (especially PM2.5 and diesel particulate matter) as defined by being within one of the census tracts in the top 30% identified by CalEnviroScreen 4.0 scoring; AND
  - b. Reside in a household within 1,000 feet of freeways, major transportation corridors, or large transportation sources – as indicated on a map provided by DISTRICT.

GRANTEE will receive referrals and asthma trigger assessment results from Contra Costa Health Services and Asthma Start to engage with program participants eligible through the patient pathway for home assessments. GRANTEE will lead home energy efficiency assessments and analyze the asthma environmental trigger assessment results received to determine energy efficiency and asthma mitigation retrofit measures needed for 105 program participants (there can be more than one participant in one household) in Contra Costa and Alameda Counties over the course of two years: 30 participants during the first year of this agreement (Contra Costa: 20; Alameda: 10) and 75 participants during the second year of this agreement (Contra Costa: 50; Alameda: 25).

GRANTEE will also receive referrals from StopWaste for program participants eligible through the resident selection pathway for energy efficiency and environmental trigger assessments. Environmental triggers are unsafe conditions that can increase a resident’s risk to develop or worsen negative health effects and can include asthma triggers. If the referred resident resides in a multi-family building, GRANTEE will complete an assessment for the referred resident as well as evaluate the entire building (based on a representative sample of building units) for energy efficiency and environmental upgrades.

For all program participants, GRANTEE will create scopes of work for the home retrofits needed to 1) address asthma environmental triggers (patient participants) or environmental triggers (resident participants) and 2) improve the energy efficiency of the homes.

Recruitment will be ongoing for both participant selection pathways. Within the current pool of enrolled program participants at any given time, GRANTEE will prioritize conducting these assessments in homes of patient participants over resident participants. GRANTEE will prioritize home retrofit measures that also address asthma triggers (if applicable) and reduce exposure to outdoor pollution, taking the total available funds from this grant and other sources into consideration.

GRANTEE will update the data collection spreadsheet (created by Contra Costa Health Services in collaboration with DISTRICT and program partners) with information on the energy efficiency and environmental trigger assessments visit dates and documentation (with participants anonymized pursuant to HIPAA requirements for patient privacy).

*Deliverable 1b:*

1. Comments on data collection spreadsheet template (from Contra Costa Health Services), reviewed with DISTRICT, due two months after execution of the agreement.
2. Updated data collection spreadsheet, due quarterly to DISTRICT as work progresses.
3. Energy efficiency assessment report and scope of work for each program participant, filed electronically and traceable to each program participant and home using the data collection spreadsheet, due quarterly to DISTRICT as work progresses.

**Task 2: Home Retrofits**

GRANTEE will determine, prepare scope of work for, and coordinate home retrofits for each program participant. Within the current pool of enrolled program participants at any given time, GRANTEE will prioritize conducting these home retrofits for patient participants over resident participants. Home retrofits include repairs or new installations made by qualified and licensed contractors and any associated material purchases to address relevant asthma triggers, to increase the energy efficiency of the home, and to prevent residents' exposure to outdoor air pollution. These home retrofits may include, but are not limited to, the following measures:

1. Asthma trigger mitigation – Address moisture issues (mold remediation, ventilation, plumbing leak repairs, roof repairs, dehumidification), allergens (carpet removal/cleaning), pests (pest management), combustion irritants (air filtration, HVAC (heating, ventilation, and air conditioning), combustion gases, and volatile organic compounds (VOCs)), and excess cold or heat (HVAC, insulation).
2. Energy-efficiency, weatherization, and electrification – Low-Income Home Energy Assistance Program (LIHEAP) weatherization (where possible), LED lighting, energy-efficient appliances, HVAC, insulation, air sealing, sealing cracks, and comprehensive contractor energy efficiency/electrification: electrification of multiple end-uses (water heating, space heating, and/or cooking, including electrical and home modifications as needed), advanced air sealing, and insulation.
3. Outdoor emissions exposure prevention – Window replacement, building envelope improvements, enhanced air filtration, and mechanical ventilation.

Home retrofits should align with the scope of work developed in Task 1b for each program participant's unit and/or building. Scopes of work may vary from the initial assessment due to budget, feasibility, accessibility, or landlord permission. Both moderate and deep home retrofits can involve any of the measures listed above, as needed. For single-family homes, moderate retrofits will be considered those costing up to \$5,000 per home, and deep retrofits costing \$5,000 - \$10,000 per home. For multi-family

buildings, moderate retrofits are those costing up to \$500 per unit and deep retrofits costing \$500 - \$1,000 per unit. GRANTEE shall allocate and spend \$1,448,832 of funding from this grant for home retrofits.

*Task 2a: Home Retrofits for Asthma Patients*

GRANTEE will develop a retrofit spreadsheet to list all home retrofits, including program participant address, building address, participant community (e.g., West Oakland), materials purchased, equipment replaced and/or installed, and costs with a breakdown of material and labor costs, where possible. The retrofit spreadsheet will also list all sources of funding used for the home retrofits including funding from this grant and any additional funds leveraged for these retrofits.

GRANTEE will receive patient referrals, their relevant asthma trigger assessment information, and other related information from Contra Costa Health Services and Asthma Start. GRANTEE will coordinate with and provide information about these home retrofits to Contra Costa Health Services and Asthma Start by completing and updating the retrofit spreadsheet, which will be linked to the data collection spreadsheet by program participant ID.

GRANTEE will determine and coordinate home retrofits to address asthma trigger mitigation, energy efficiency and weatherization, and outdoor emissions exposure prevention for patients selected through the patient selection pathway:

1. 70 asthma patients in homes in Contra Costa County:
  - a. At least 10 moderate home retrofits; and
  - b. At least 60 deep home retrofits.
2. 35 asthma patients in Alameda County. These could be moderate retrofits or deep retrofits, as determined by the assessments.

*Deliverables 2a:*

1. Home retrofit spreadsheet template, due three months after execution of the agreement.
2. Updated home retrofit spreadsheet, submitted quarterly to the DISTRICT.
3. Electronic documentation of completed retrofits, traceable to individual participants (anonymized pursuant to HIPAA requirements for patient privacy) and participants' home addresses, including installation photos (pre- and post-retrofits), purchase receipts, contractor name, contractor billing statements, and any other information needed to demonstrate retrofits were completed successfully, due quarterly to DISTRICT.
4. Documentation of contractors' licenses and credentials – for the companies doing the retrofit work. Since individual contractors may do the work for multiple program participants' homes, this detailed information can be in a separate, summary document, due quarterly to DISTRICT.

*Task 2b: Home Retrofits for Residents in Overburdened Communities*

GRANTEE will receive resident referrals and other related information from StopWaste. GRANTEE will coordinate with and provide information about these home retrofits to Contra Costa Health Services, StopWaste, and Asthma Start, for inclusion in the data collection spreadsheet.

GRANTEE will determine and coordinate home retrofits to address energy efficiency and weatherization, and outdoor emissions exposure prevention for residents selected through the resident selection pathway:

1. Complete retrofits in 750-1,000 multi-family building units AND up to 70 single family homes in Contra Costa and Alameda Counties, including the numbers of asthma patient homes served in Task 2a.

*Deliverables 2b:*

1. Updated retrofit spreadsheet (Task 2a), to be shared as work proceeds with Contra Costa Health Services, Asthma Start, and StopWaste, submitted quarterly to the DISTRICT as work progresses.
2. Electronic documentation of completed retrofits, traceable to individual participants (anonymized pursuant to HIPAA requirements for patient privacy) and/or participants' home address, including installation photos (pre- and post-retrofits), purchase receipts, contractor name, contractor billing statements, and any other information needed to demonstrate retrofits were completed successfully, updates submitted quarterly to DISTRICT as work progresses.
3. Updated documentation of contractors' licenses and credentials to contractor documentation from Task 2a – for the companies doing the retrofit work, updates submitted quarterly to DISTRICT as work progresses.

**Task 3: Indoor Air Quality Monitoring**

GRANTEE will allocate and/or hire staff to ensure capacity for the indoor air quality monitoring and will conduct measurements of NO<sub>x</sub>, CO, and PM levels in program participants' homes where home retrofits will be conducted, measuring these pollutants' levels both pre- and post-home retrofits. GRANTEE shall allocate and spend up to \$125,000 of funding from this grant for staff (\$65,000) and air monitoring equipment costs (\$60,000) related to indoor air quality monitoring of program participants' homes.

*Task 3a: Build Capacity for Indoor Air Quality Monitoring*

GRANTEE will provide (via allocation of current staff, hire, and/or subcontract) technical staff time from a Director, Data Analyst, Manager, and/or Scientist staff position, whose duties may include:

1. Deployment of indoor air quality monitoring equipment; and
2. Data processing, analysis, and visualization.

*Deliverable 3a:*

1. Staffing plan, including qualifications of the individuals that will deliver core program activities, due three months after execution of the agreement.

*Task 3b: Measure and Analyze NO<sub>x</sub>, CO, and PM Concentration Levels and GHG Emissions in Retrofitted Homes*

GRANTEE will craft a Measurement and Verification Plan detailing research questions and a study plan to address the research questions including data requirements, specific equipment that will be used, data collection process/protocols, participant surveys, and a Quality Assurance/Quality Control (QA/QC) plan. GRANTEE will incorporate the DISTRICT's comments and input into the Measurement and Verification Plan. GRANTEE will conduct indoor air quality (IAQ) measurements of NO<sub>x</sub>, CO, and PM in at least 21 program participants' homes where home retrofits will be conducted, measuring these pollutants' concentrations both pre- and post-home retrofits according to the Measurement and Verification Plan. Priority will be given to homes where indoor combustion appliances are being replaced with an electric non-combustion appliance (e.g., cooking, natural gas furnaces, and/or water heaters). When feasible, GRANTEE will compare IAQ measurements to outdoor air pollution levels using existing high-quality data, if available.

For each program participant that (i) receives energy-efficiency retrofits and (ii) GRANTEE is able to obtain utility bills for, GRANTEE will analyze program participants' utility bills to quantify GHG savings and utility bill savings. GRANTEE will deliver an Indoor Monitoring Report that includes a summary of how the data collected answers the research questions and a summary of raw data, data analysis, survey results, and conclusions from the data and survey results.

*Deliverables 3b:*

1. Draft Measurement and Verification Plan, due four months after contract execution.
2. Final Measurement and Verification Plan, due within fourteen days after comments received from DISTRICT.
3. Quarterly progress report for each program participant home selected for IAQ measurements, including quantitative and qualitative measurement and survey data, filed electronically and traceable to each program participant and home, shared with Contra Costa Health Services and StopWaste for Contra Costa and Alameda County, respectively, and with the DISTRICT.
4. Interim Indoor Monitoring Report, due by May 15, 2023.
5. Final comprehensive Indoor Monitoring Report, due by March 31, 2024.

**Task 4: Final Accounting and Reporting**

GRANTEE shall provide a final report summarizing all Task deliverables, outcomes of the program, and lessons learned. The Final Report shall be prepared on the DISTRICT's Final Report form (provided separately). GRANTEE shall conduct accounting that demonstrates the amount of DISTRICT funds allocated to retrofit measures versus programmatic costs and leveraged funds and incentives. GRANTEE will share all data and information with Contra Costa Health Services for Contra Costa County program participants and with Asthma Start and StopWaste for Alameda County program participants.

*Deliverables 4:*

1. Final report, due by April 30, 2024.
2. Accounting sheet that tracks all funds expended from this agreement, including labor, retrofits, and purchased instrumentation and supplies, as well as leveraged funding applied to retrofit measures, due by April 30, 2024

**Quarterly Progress Reporting:**

Beginning thirty (30) calendar days after execution of the agreement, every April 15, July 15, October 15 and January 15 until the end of the Term, GRANTEE shall provide quarterly progress reports describing GRANTEE's progress toward completion of the work outlined above.

**Reporting and Grant Payment Schedule for Grant Funds**

Payment of grant funds shall be contingent upon DISTRICT's approval of GRANTEE's quarterly progress reports and final report. DISTRICT approval will take into consideration adequate progress in implementing program tasks to meet the milestones set forth below. DISTRICT shall pay GRANTEE its grant payments upon receipt and approval of GRANTEE's quarterly reports and final report demonstrating that the applicable program milestones have been met as provided in Section 8 of this Agreement.

Milestone	Required Program Progress	Completion Date	Report	Payment
1	Task 1a – completed Task 1b – initiated Task 3a – completed	6/30/22	Quarterly progress report (QPR) No. 1 (7/15/2022)	\$251,250
2	Task 1b – continued Task 2a – initiated Task 2b – initiated Task 3b – initiated	9/30/22	QPR No. 2 (10/15/2022)	\$251,250
3	Task 1b – continued Task 2a – continued Task 2b – continued Task 3b – continued	12/31/22	QPR No. 3 (1/15/2023)	\$166,875
4	Task 1b – continued Task 2a – continued Task 2b – continued Task 3b – continued	3/31/23	QPR No. 4 (4/15/2023)	\$251,250
5	Task 1b – continued Task 2a – continued Task 2b – continued Task 3b – continued	6/30/23	QPR No. 5 (7/15/2023)	\$191,250
6	Task 1b – continued Task 2a – continued Task 2b – continued Task 3b – continued	9/30/23	QPR No. 6 (10/15/2023)	\$191,250
7	Task 1b – continued Task 2a – continued Task 2b – continued Task 3b – continued	12/31/23	QPR No. 7 (1/15/2024)	\$144,457
8	Task 1b – completed Task 2a – completed Task 2b – completed Task 3b – completed Task 4 – completed	3/31/24	Final Report (04/30/2024)	\$191,250

**Total grant payments not to exceed \$1,638,832.**

## BAY AREA AIR QUALITY MANAGEMENT DISTRICT

### GRANT AGREEMENT

#### GRANT NO. 2022.011

1. PARTIES - The parties to this Agreement (“Agreement”) are the Bay Area Air Quality Management District (“DISTRICT”) whose address is 375 Beale Street, Suite 600, San Francisco, CA 94105, and **County of Alameda** (“GRANTEE”) whose address is 7200 Bancroft Ave., Suite 202, Oakland, CA 93605.
2. RECITALS
  - A. DISTRICT is the local agency with primary responsibility for regulating stationary source air pollution in the Bay Area Air Quality Management District in the State of California. DISTRICT is authorized to enter into this Agreement under California Health and Safety Code Section 40701.
  - B. DISTRICT desires to award GRANTEE a grant for the activities described in Attachment A, Work Plan.
  - C. All parties to this Agreement have had the opportunity to have the Agreement reviewed by their attorney.
3. TERM - The term of this Agreement is from April 1, 2022 until April 30, 2024, unless further extended by amendment of this Agreement in writing, or terminated earlier.
4. TERMINATION
  - A. DISTRICT shall have the right to terminate this Agreement at its sole discretion at any time upon thirty (30) days written notice to GRANTEE. The notice of termination shall specify the effective date of termination, which shall be no less than thirty (30) calendar days from the date of delivery of the notice of termination, and shall be delivered in accordance with the provisions of section 10 below. Immediately upon receipt of the notice of termination, GRANTEE shall cease all activities under this Agreement, except such activities as are specified in the notice of termination. Within forty-five (45) days of receipt of written notice, GRANTEE is required to:
    - i) Submit a final written report describing all work performed by GRANTEE;
    - ii) Submit an accounting of all grant funds expended up to and including the date of termination; and,
    - iii) Reimburse DISTRICT for any unspent funds.
  - B. Either party may terminate this Agreement for breach by the other party.
    - i) Failure to perform any agreement or obligation contained in this Agreement or failure to perform the services in a satisfactory manner shall constitute a breach of the Agreement.
    - ii) The non-breaching party may terminate the Agreement by delivery of a written notice of breach. The notice of breach shall specify the date of termination, which shall be no earlier than ten (10) business days from delivery of the notice of breach. In the alternative, at its sole discretion, the non-breaching party may require the breaching party to cure the breach. The notice of breach shall specify the nature of the breach and the date by which such breach must be cured.
    - iii) If GRANTEE fails to perform any obligation under this Agreement, DISTRICT at its sole discretion, may perform, or cause the performance, of the obligation itself. In that event, DISTRICT shall deduct the costs to perform such obligation and any other costs to cure the breach from the payment otherwise due to GRANTEE for work performed under this



Agreement. DISTRICT's performance hereunder shall not be deemed a waiver or release of any obligation of, or default by, GRANTEE under this Agreement.

- iv) The notice of breach shall be provided in accordance with the notice requirements set forth in section 10.
  - v) The non-breaching party reserves all rights under law and equity to enforce this Agreement and recover any damages.
5. NO AGENCY RELATIONSHIP CREATED / INDEPENDENT CAPACITY - GRANTEE and the agents and employees of GRANTEE, in the performance of this Agreement, shall act in an independent capacity and not as officers or employees or agents of DISTRICT, and nothing herein shall be construed to be inconsistent with that relationship or status. DISTRICT shall not have the right to direct or control the activities of GRANTEE in performing the services provided herein.
6. CONTRACTORS / SUBCONTRACTORS / SUBGRANTEES
- A. GRANTEE will be entitled to make use of its own staff and such contractors, subcontractors, and subgrantees as are mutually acceptable to GRANTEE and DISTRICT. Any change in contractors, subcontractors, or subgrantees must be mutually acceptable to the parties. Immediately upon termination of any such contract, subcontract, or subgrant, GRANTEE shall notify DISTRICT.
  - B. Nothing contained in this Agreement or otherwise, shall create any contractual relation between DISTRICT and any contractors, subcontractors, or subgrantees of GRANTEE, and no agreement with contractors, subcontractors, or subgrantees shall relieve GRANTEE of its responsibilities and obligations hereunder. GRANTEE agrees to be as fully responsible to DISTRICT for the acts and omissions of its contractors, subcontractors, and subgrantees and of persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by GRANTEE. GRANTEE's obligation to pay its contractors, subcontractors, and subgrantees is an independent obligation from DISTRICT's obligation to make payments to GRANTEE. As a result, DISTRICT shall have no obligation to pay or to enforce the payment of any moneys to any contractor, subcontractor, or subgrantee.
7. INDEMNIFICATION - GRANTEE agrees to indemnify, defend, and hold harmless DISTRICT, its officers, employees, agents, representatives, and successors-in-interest against any and all liability, demands, claims, costs, losses, damages, recoveries, settlements, and expenses (including reasonable attorney fees) arising out of, caused by, or connected to performance of this Agreement by GRANTEE, its employees, subcontractors, subgrantees, or agents.
8. PAYMENT
- A. DISTRICT agrees to award GRANTEE a grant of \$101,750 for the activities described in Attachment A, Work Plan. DISTRICT will make payments of grant funds on a quarterly basis to reimburse GRANTEE for its costs incurred in the preceding quarter, as follows:
    - i) Seven (7) quarterly payments of \$12,718 each, payable upon DISTRICT's receipt and approval of GRANTEE's quarterly progress reports and invoices.
    - ii) One (1) final payment of \$12,724, upon completion of all tasks identified in the Work Plan, payable upon DISTRICT's receipt GRANTEE's invoice and approval of the final report.
  - B. GRANTEE shall carry out the work described on the Work Plan and shall obtain DISTRICT's written approval of any changes or modifications to the Work Plan prior to performing or incurring costs for the changed work. If GRANTEE fails to obtain such prior written approval, DISTRICT, at its sole discretion, may refuse to provide funds to pay for such work or costs.
  - C. Payment will be made only to GRANTEE.

9. AUTHORIZED REPRESENTATIVE - GRANTEE shall continuously maintain a representative vested with signature authority authorized to work with DISTRICT on all grant-related issues. GRANTEE shall, at all times, keep DISTRICT informed as to the identity of the authorized representative.
10. NOTICES - All notices that are required under this Agreement shall be provided in the manner set forth herein, unless specified otherwise. Notice to a party shall be delivered to the attention of the person listed below, or to such other person or persons as may hereafter be designated by that party in writing. Notice shall be in writing sent by e-mail, facsimile, or regular first class mail. In the case of e-mail and facsimile communications, valid notice shall be deemed to have been delivered upon sending, provided the sender obtained an electronic confirmation of delivery. E-mail and facsimile communications shall be deemed to have been received on the date of such transmission, provided such date was a business day and delivered prior to 4:00 p.m. Pacific Time. Otherwise, receipt of e-mail and facsimile communications shall be deemed to have occurred on the following business day. In the case of regular mail notice, notice shall be deemed to have been delivered on the mailing date and received five (5) business days after the date of mailing.

DISTRICT: Bay Area Air Quality Management District  
375 Beale Street, Suite 600  
San Francisco, CA 94105  
Attn: Idania Zamora  
E-mail: [izamora@baaqmd.gov](mailto:izamora@baaqmd.gov)

GRANTEE: County of Alameda  
7200 Bancroft Ave, Suite 202  
Oakland, CA 93605  
Attn: Brenda Rueda Yamashita  
E-mail: [Brenda.yamashita@acgov.org](mailto:Brenda.yamashita@acgov.org)

11. ADDITIONAL PROVISIONS - All attachment(s) to this Agreement are expressly incorporated herein by this reference and made a part hereof as though fully set forth.
12. ACKNOWLEDGEMENTS - GRANTEE shall acknowledge DISTRICT support each time the activities funded, in whole or in part, by this Agreement are publicized in any news media, brochures, or other type of promotional material. The acknowledgement of DISTRICT support must state "Funded by a Grant from the Bay Area Air Quality Management District." Initials or abbreviations for DISTRICT shall not be used.
13. ADVERTISING / PUBLIC EDUCATION - GRANTEE shall submit copies of all draft public education or advertising materials to DISTRICT for review and approval prior to GRANTEE's use of such materials.
14. FINANCIAL MANAGEMENT SYSTEM
- A. GRANTEE shall be responsible for maintaining an adequate financial management system and will immediately notify DISTRICT when GRANTEE cannot comply with the requirements in this section.
  - B. GRANTEE's financial management system shall provide for:
    - i) Financial reporting: accurate, current, and complete disclosure of the financial results of each grant in conformity with generally accepted principles of accounting, and reporting in a format that is in accordance with the financial reporting requirements of the grant.

- ii) Accounting records: records that adequately identify the source and application of funds for DISTRICT-supported activities. These records must contain information pertaining to grant awards and authorizations, obligations, unobligated balances, assets, liabilities, outlays or expenditures and income.
  - iii) Internal control: effective internal and accounting controls over all funds, property and other assets. GRANTEE shall adequately safeguard all such assets and assure that they are used solely for authorized purposes.
  - iv) Budget control: comparison of actual expenditures or outlays with budgeted amounts for each grant.
  - v) Allowable cost: procedures for determining reasonableness, allowability, and allocability of costs generally consistent with the provisions of federal and state requirements.
  - vi) Source documentation: accounting records that are supported by source documentation.
  - vii) Cash management: procedures to minimize the time elapsing between the advance of funds from DISTRICT and the disbursement by GRANTEE, whenever funds are advanced by DISTRICT.
- C. DISTRICT may review the adequacy of the financial management system of GRANTEE at any time subsequent to the award of the grant. If DISTRICT determines that GRANTEE's accounting system does not meet the standards described in paragraph B above, additional information to monitor the grant may be required by DISTRICT upon written notice to GRANTEE, until such time as the system meets with DISTRICT approval.

15. AUDIT / RECORDS ACCESS - GRANTEE agrees that DISTRICT shall have the right to review and to copy any records and supporting documentation pertaining to the performance of this Agreement. GRANTEE agrees to maintain such records for possible audit for a minimum of five (5) years after final payment, unless a longer period of records retention is stipulated, or until completion of any action and resolution of all issues which may arise as a result of any litigation, dispute, or audit, whichever is later. GRANTEE agrees to allow the DISTRICT or its designated representative(s) access to such records during normal business hours and to allow interviews of any employees who might reasonably have information related to such records. Further, GRANTEE agrees to include a similar right of DISTRICT to audit records and interview staff in any contract, subcontract, or subgrant related to performance of this Agreement.
16. FORFEIT OF GRANT FUNDS / REPAYMENT OF FUNDS IMPROPERLY EXPENDED - If grant funds are not expended, or have not been expended, in accordance with this Agreement, or if real or personal property acquired with grant funds is not being used, or has not been used, for grant purposes in accordance with this Agreement, DISTRICT, at its sole discretion, may take appropriate action under this Agreement, at law or in equity, including requiring GRANTEE to forfeit the unexpended portion of the grant funds and/or to repay to DISTRICT any funds improperly expended.
17. COMPLIANCE - GRANTEE shall comply fully with all applicable federal, state, and local laws, ordinances, regulations, and permits. GRANTEE shall also register with the California Attorney General's Registry of Charitable Trusts pursuant to California Government Code section 12585, if applicable. GRANTEE shall provide evidence, upon request, that all local, state, and/or federal permits, licenses, registrations, and approvals have been secured for the purposes for which grant funds are to be expended. GRANTEE shall maintain compliance with such requirements throughout the grant period. GRANTEE shall ensure that the requirements of the California Environmental Quality Act are met for any approvals or other requirements necessary to carry out the terms of this Agreement. Any deviation from the requirements of this section shall result in non-payment of grant funds.

18. CONFIDENTIALITY – In order to carry out the purposes of this Agreement, GRANTEE may require access to certain of DISTRICT’s confidential information (including trade secrets, inventions, confidential know-how, confidential business information, and other information that DISTRICT considers confidential) (collectively, “Confidential Information”). It is expressly understood and agreed that DISTRICT may designate in a conspicuous manner Confidential Information that GRANTEE obtains from DISTRICT, and GRANTEE agrees to:
- A. Observe complete confidentiality with respect to such information, including without limitation, agreeing not to disclose or otherwise permit access to such information by any other person or entity in any manner whatsoever, except that such disclosure or access shall be permitted to employees of GRANTEE requiring access in fulfillment of the services provided under this Agreement.
  - B. Ensure that GRANTEE’s officers, employees, agents, representatives, subgrantees, and independent contractors are informed of the confidential nature of such information and to assure by agreement or otherwise that they are prohibited from copying or revealing, for any purpose whatsoever, the contents of such information or any part thereof, or from taking any action otherwise prohibited under this section.
  - C. Not use such information or any part thereof in the performance of services to others or for the benefit of others in any form whatsoever whether gratuitously or for valuable consideration, except as permitted under this Agreement.
  - D. Notify DISTRICT promptly and in writing of the circumstances surrounding any possession, use, or knowledge of such information or any part thereof by any person or entity other than those authorized by this section. Take at GRANTEE’s expense, but at DISTRICT’s option and in any event under DISTRICT’s control, any legal action necessary to prevent unauthorized use of such information by any third party or entity which has gained access to such information at least in part due to the fault of GRANTEE.
  - E. Take any and all other actions necessary or desirable to assure such continued confidentiality and protection of such information during the term of this Agreement and following expiration or termination of the Agreement.
  - F. Prevent access to such materials by a person or entity not authorized under this Agreement.
  - G. Establish specific procedures in order to fulfill the obligations of this section.
19. INTELLECTUAL PROPERTY RIGHTS - Title and full ownership rights to all intellectual property developed under this Agreement shall at all times remain with DISTRICT, unless otherwise agreed to in writing.
20. PUBLICATION
- A. DISTRICT shall approve in writing any report or other document prepared by GRANTEE in connection with performance under this Agreement prior to dissemination or publication of such report or document to a third party. DISTRICT may waive in writing its requirement for prior approval.
  - B. Until approved by DISTRICT, any report or other document prepared by GRANTEE shall include on each page a conspicuous header, footer, or watermark stating “DRAFT – Not Reviewed or Approved by BAAQMD,” unless DISTRICT has waived its requirement for prior approval pursuant to paragraph A of this section.
  - C. Information, data, documents, or reports developed by GRANTEE for DISTRICT, pursuant to this Agreement, shall be part of DISTRICT’s public record, unless otherwise indicated. GRANTEE may use or publish, at its own expense, such information, provided DISTRICT approves use of such

information in advance. The following acknowledgment of support and disclaimer must appear in each publication of materials, whether copyrighted or not, based upon or developed under this Agreement.

“This report was prepared as a result of work sponsored, paid for, in whole or in part, by the Bay Area Air Quality Management District (District). The opinions, findings, conclusions, and recommendations are those of the author and do not necessarily represent the views of the District. The District, its officers, employees, contractors, and subcontractors make no warranty, expressed or implied, and assume no legal liability for the information in this report.”

- D. GRANTEE shall inform its officers, employees, subgrantees, and subcontractors involved in the performance of this Agreement of the restrictions contained herein and shall require compliance with the above.
21. PROPERTY AND SECURITY - Without limiting GRANTEE’s obligations with regard to security, GRANTEE shall comply with all the rules and regulations established by DISTRICT for access to and activity in and around DISTRICT’s premises.
22. ASSIGNMENT - No party shall assign, sell, license, or otherwise transfer any rights or obligations under this Agreement to a third party without the prior written consent of the other party, and any attempt to do so shall be void upon inception.
23. WAIVER - No waiver of a breach, of failure of any condition, or of any right or remedy contained in or granted by the provisions of this Agreement shall be effective unless it is in writing and signed by the party waiving the breach, failure, right, or remedy. No waiver of any breach, failure, right, or remedy shall be deemed a waiver of any other breach, whether or not similar, nor shall any waiver constitute a continuing waiver unless the writing so specifies. Further, the failure of a party to enforce performance by the other party of any term, covenant, or condition of this Agreement, and the failure of a party to exercise any rights or remedies hereunder, shall not be deemed a waiver or relinquishment by that party to enforce future performance of any such terms, covenants, or conditions, or to exercise any future rights or remedies.
24. FORCE MAJEURE - Neither DISTRICT nor GRANTEE shall be liable for or deemed to be in default for any delay or failure in performance under this Agreement or interruption of services resulting, directly or indirectly, from acts of God, enemy or hostile governmental action, civil commotion, strikes, lockouts, labor disputes, fire or other casualty, judicial orders, governmental controls, regulations or restrictions, inability to obtain labor or materials or reasonable substitutes for labor or materials necessary for performance of the services, or other causes, except financial, that are beyond the reasonable control of DISTRICT or GRANTEE, for a period of time equal to the period of such force majeure event, provided that the party failing to perform notifies the other party within fifteen calendar days of discovery of the force majeure event, and provided further that that party takes all reasonable action to mitigate the damages resulting from the failure to perform. Notwithstanding the above, if the cause of the force majeure event is due to party’s own action or inaction, then such cause shall not excuse that party from performance under this Agreement.

25. SEVERABILITY - If a court of competent jurisdiction holds any provision of this Agreement to be illegal, unenforceable or invalid in whole or in part for any reason, the validity and enforceability of the remaining provisions, or portions of them will not be affected.
26. HEADINGS - Headings on the sections and paragraphs of this Agreement are for convenience and reference only, and the words contained therein shall in no way be held to explain, modify, amplify, or aid in the interpretation, construction, or meaning of the provisions of this Agreement.
27. COUNTERPARTS/FACSIMILES/SCANS – This Contract may be executed and delivered in any number of counterparts, each of which, when executed and delivered, shall be deemed an original, and all of which together shall constitute the same contract. The parties may rely upon a facsimile copy or scanned copy of any party’s signature as an original for all purposes.
28. GOVERNING LAW - Any dispute that arises under or relates to this Agreement shall be governed by California law, excluding any laws that direct the application to another jurisdiction’s laws. Venue for resolution of any dispute that arises under or relates to this Agreement, including mediation, shall be San Francisco, California.
29. DISPUTE RESOLUTION – A party that disputes a notice of breach must first seek mediation to resolve the dispute in accordance with the provisions set forth below.
- A. Upon receipt of a notice of breach of Agreement, the party may submit a demand for mediation to resolve whether or not a breach occurred. The party must state the basis of the dispute and deliver the demand within ten (10) business days of the date of receipt of the notice of breach.
  - B. The mediation shall take place at DISTRICT’s office at 375 Beale Street, Suite 600, San Francisco, or at such other place as may be mutually agreed upon by the parties and the mediator.
  - C. The parties shall make good faith efforts to hold the mediation within thirty (30) days after receipt of the demand for mediation.
  - D. Each party shall bear its own mediation costs.
  - E. In the event the parties are unable to resolve the dispute, either party may file an action in a court of competent jurisdiction to enforce the Agreement.
  - F. Maximum recovery under this section shall be limited to \$101,750. The mediation costs shall not reduce the maximum amount recoverable under this section.
30. NON-DISCRIMINATION – In the performance of this Agreement, GRANTEE shall not discriminate in its recruitment, hiring, promotion, demotion, and termination practices on the basis of race, religious creed, color, national origin, ancestry, sex, age, marital status, sexual orientation, medical condition, or physical or mental disability and shall comply with the provisions of the California Fair Employment & Housing Act (Government Code Section 12900 et seq.), the Federal Civil Rights Act of 1964 (P.L. 88-352) and all amendments thereto, and all administrative rules and regulations issued pursuant to said Acts. GRANTEE shall also require each subcontractor performing work in connection with this Agreement to comply with this section and shall include in each contract with such subcontractor provisions to accomplish the requirements of this section.
31. INSURANCE
- A. GRANTEE shall maintain the following insurance:
    - i) Workers’ compensation and employers’ liability insurance as required by California law or other applicable statutory requirements.

- ii) Occurrence-based commercial general liability insurance or equivalent form with a limit of not less than one million dollars (\$1,000,000) each occurrence. Such insurance shall include DISTRICT and its officers, agents, and employees as additional insureds and shall be primary with respect to any insurance maintained by DISTRICT.
  - iii) Business automobile liability insurance or equivalent form with a limit of not less than one million dollars (\$1,000,000) each accident. Such insurance shall include coverage for owned, hired, and non-owned vehicles. If GRANTEE is a sole proprietor, GRANTEE may meet this insurance requirement with personal automobile liability insurance carrying a business use endorsement or by demonstrating to the satisfaction of DISTRICT that business use is covered under the GRANTEE's personal automobile liability insurance. A GRANTEE using only rental vehicles in performing work under this Agreement may meet this insurance requirement by purchasing automobile liability insurance in the required coverage amount from the rental agency.
- B. All insurance shall be placed with insurers acceptable to DISTRICT.
  - C. Prior to commencement of work under this Agreement, GRANTEE shall furnish properly-executed certificates of insurance for all required insurance. Upon request by DISTRICT, GRANTEE shall provide a complete copy of any required insurance policy. GRANTEE shall notify DISTRICT in writing thirty (30) days prior to cancellation or modification of any required insurance policy. Any such modifications are subject to pre-approval by DISTRICT.
  - D. If GRANTEE fails to maintain the required insurance coverage set forth above, DISTRICT reserves the right either to purchase such additional insurance and to deduct the cost thereof from any payments owed to GRANTEE or to terminate this Agreement for breach.
32. ENTIRE AGREEMENT AND MODIFICATION - This Agreement represents the final, complete, and exclusive statement of the agreement between the parties and supersedes all prior and contemporaneous understandings and agreements of the parties. No party has been induced to enter into this Agreement by, nor is any party relying upon, any representation or warranty outside those expressly set forth herein. This Agreement may only be amended by mutual agreement of the parties in writing and signed by both parties.
33. SURVIVAL OF TERMS - The provisions of sections 7 (Indemnification), 15 (Audit / Records Access), 16 (Forfeit of Grant Funds / Repayment of Funds Improperly Expended), 18 (Confidentiality), 19 (Intellectual Property Rights), and 20 (Publication) shall survive the expiration or termination of this Agreement.

IN WITNESS WHEREOF, the parties to this Agreement have caused this Agreement to be duly executed on their behalf by their authorized representatives.

BAY AREA AIR QUALITY  
MANAGEMENT DISTRICT

COUNTY OF ALAMEDA

By: \_\_\_\_\_  
Jack P. Broadbent  
Executive Officer/APCO

By: \_\_\_\_\_  
Kimi Watkins-Tartt  
Director of Public Health

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Approved as to form:  
District Counsel

By: \_\_\_\_\_  
Adan Schwartz  
Acting District Counsel

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## ATTACHMENT A

### WORK PLAN

#### Overview

The Bay Area Healthy Homes Initiative (“INITIATIVE” or “program”) seeks to build on and expand the Asthma Mitigation Project pilot effort in Contra Costa County, which is run by Contra Costa Public Health in partnership with Association for Energy Affordability (“AEA”). The INITIATIVE seeks to improve health outcomes for Contra Costa and Alameda County residents living in communities disproportionately impacted by air pollution by integrating multiple interventions that address cumulative air pollution burden. DISTRICT was awarded nearly \$2 million from the Automobile Emissions Research and Technology Fund by the California Attorney General’s Office for the INITIATIVE and will disburse these funds through grant agreements to GRANTEE, Contra Costa Health Services, AEA, and Energy Council (“StopWaste”) (collectively referred to as “program partners”) to implement the INITIATIVE. Program partners will collaborate in the implementation of core areas of the program including home asthma education and trigger assessments, energy efficiency assessments, provision of consumer supplies, equipment, and services, home retrofits, and indoor air monitoring. Anticipated outcomes include improved indoor air quality, decreased energy usage, reduced greenhouse gas (GHG) emissions, and improved health outcomes in program participants’ households.

GRANTEE, as a program partner of the INITIATIVE, will recruit and refer program participants; lead the home asthma care, education, and trigger assessment visits; and provide information on program scaling to DISTRICT.

#### **Task 1: Staff Hiring and Participant Recruitment**

GRANTEE will enhance the program by hiring or allocating additional staff to the program and will recruit eligible program participants.

##### *Task 1a: Build Capacity for Home Asthma Education and Mitigation Program Area*

GRANTEE will hire or allocate staff for an Asthma Coordinator who will conduct outreach, intake of patients and households, and conduct home visits for asthma assessment, education, and follow-up.

##### *Deliverable 1a:*

1. Staffing plan for the Asthma Coordinator, including the salary, benefits, employment term, and qualifications of the individual(s) filling this role, due by June 30, 2022.

##### *Task 1b: Recruit Program Participants*

GRANTEE will recruit 10 program participants in the first year of this agreement and 25 program participants in the second year of this agreement. GRANTEE will update the data collection spreadsheet, developed by Contra Costa Health Services, with information about the selected program participants and documentation on how participants meet the eligibility criteria. GRANTEE will select program participants who meet all the following criteria:

1. Reside in households (single-family house or multi-family building units) within a community overburdened with air pollution emissions (especially particulate matter (PM) 2.5 and diesel PM) as defined by being within one of the census tracts in the top 30% identified by CalEnviroScreen 4.0 scoring;
2. Reside in households within 1,000 feet of freeways, major transportation corridors, or large transportation sources – as indicated on a map provided by DISTRICT;

3. Reside in households that include high-risk asthma patients (children) with a referral from GRANTEE's Asthma Start Program AND have either a referral from the California Advancing and Innovating Medi-Cal (CalAIM) and Asthma Mitigation Project (AMP) grant OR a referral from the Alameda Alliance for Health.
  - a. Referrals from Asthma Start Program includes any patients 0-18 years old living in Alameda County and diagnosed with asthma.
  - b. Referrals from California Advancing and Innovating Medi-Cal (CalAIM) and Asthma Mitigation Project (AMP) grant, includes patients with:
    - i. Asthma Control Test scores of 19 or less; and
    - ii. Two visits to urgent care or hospitalized or in the emergency department in the last 12 months.
  - c. Referrals from Alameda Alliance for Health include patients who have had four (4) albuterol refills in a 12-month period.

*Deliverables 1b:*

1. Materials (hardcopy or digital) used for recruitment of and outreach to prospective program participants or to physicians for referrals, description of data mining from the Alameda Alliance for Health Plan database, and listservs/distribution lists used, due by September 30, 2022.
2. Updated data collection spreadsheet, due September 30, 2022 and quarterly thereafter as work progresses.

**Task 2: Home Asthma Education and Assessment**

GRANTEE will develop curriculum and supporting materials, such as handouts for in-home asthma education. GRANTEE will lead in-home asthma education and care for program participants. GRANTEE will conduct assessment of asthma triggers present in each program participant's home and purchase supplies as needed for remediation.

*Task 2a: Home Asthma Education and Assessment*

GRANTEE will coordinate with primary care providers (PCPs) on Asthma Action Plan (e.g., request PCPs to send the patients' Asthma Action Plans), provide medication usage training (e.g., how to properly use inhalers), and educate program participants regarding environmental triggers and the relationship between indoor air quality and respiratory health. GRANTEE will perform an asthma control test using a clinically validated tool to determine asthma control at baseline. After all asthma remediation is completed by GRANTEE and/or AEA, and home retrofits are completed by AEA, GRANTEE will perform a follow-up asthma control test to monitor changes in the participants' asthma condition. GRANTEE will update the data collection spreadsheet with information about home education and initial and follow-up patient assessments for each program participant, including the total number of participants ( $\geq$ age ~14) exposed to training to document co-benefits of the program.

*Deliverables 2a:*

1. Copies of curriculum and supporting materials for in-home asthma education, due quarterly beginning July 1, 2022 through September 30, 2023.
2. Updated data collection spreadsheet, due quarterly beginning July 1, 2022, through September 30, 2023.

*Task 2b: Asthma Trigger Assessment and Remediation*

GRANTEE, in coordination with AEA, will perform in-home assessments for conditions that can trigger asthma attacks and provide consumer supplies to remediate those conditions, on an as-needed basis, up to a maximum of \$75 per program participant from these funds in this agreement (leveraging up to \$1000 per family from AMP). Supplies and services may include cleaning supplies, less-toxic pest management supplies, hypo-allergenic bedding, high efficiency particulate absorbing (HEPA) vacuum cleaners, carpet cleaning, etc. GRANTEE will work with program participants and AEA to determine other types of remediation that may be provided through the program. GRANTEE will update the data collection spreadsheet detailing itemization of conditions found in program participant's homes that might be asthma triggers, along with remediation measures completed (e.g., providing consumer supply packages) and any recommendations referred to AEA for home retrofits (e.g., installation of indoor filtration, replacement windows, building envelope sealing, mold remediation, carpet removal).

*Deliverables 2b:*

1. Updated data collection spreadsheet, due quarterly with progress reports.
2. Receipts (electronic copies) of purchased consumer products – traceable to individual participants (but anonymized pursuant to HIPAA requirements for patient privacy), due quarterly with progress reports.

**Task 3: Program Scaling**

GRANTEE will provide the DISTRICT with an estimate of the total need for the program within Alameda County and with any lessons learned and potential solutions that should be considered when scaling county-wide and to the San Francisco Bay Area, beyond the scope of this agreement.

*Task 3a: Overall Program Need*

GRANTEE will provide data on the total number of eligible people that would benefit from the program in Alameda County, beyond the 35 program participants served through this grant agreement. The data will include the number of potential program participants based on GRANTEE's definition of asthma eligibility and DISTRICT-provided parameters around overburdened communities (CalEnviroScreen 4.0 top 30% scoring) and distance from major air pollution sources due to transportation activities as indicated on a map provided by the DISTRICT.

*Deliverables 3a:*

1. Initial estimate of data and description of how these data were determined (e.g., data sources, calculations, etc.), due by March 31, 2023.
2. Refined estimate of data, with description of data provided and how the estimates were determined (e.g., data sources, calculations, etc.), due by March 31, 2024.

*Task 3b: Lessons Learned*

GRANTEE will submit a narrative in the final report (Task 4) describing lessons learned and strategies to increase participants for the program.

*Deliverable 3b:*

1. Document describing lessons learned applicable to Program Scaling, including anecdotes, as appropriate, due by April 30, 2024.

**Task 4: Final Accounting and Reporting**

GRANTEE shall provide a final report summarizing all Task deliverables, outcomes of the INITIATIVE, and lessons learned. The Final Report, to be prepared on the DISTRICT’s Final Report form (provided separately), GRANTEE shall conduct accounting that demonstrates the amount of DISTRICT funds allocated to recruitment, assessment, education, and remediation measures versus programmatic costs, as well as leveraged funds and incentives.

**Deliverables 4:**

1. Final report, due by April 30, 2024.
2. Accounting sheet, showing how all funds were used, including salaries (with benefits and overhead), and the total amount of funding applied to remediation measures due by April 30, 2024.

**Quarterly Progress Reporting:**

Beginning thirty (30) calendar days after execution of the agreement, every April 15, July 15, October 15 and January 15 until the end of the Term, GRANTEE shall provide quarterly progress reports describing GRANTEE’s progress toward completion of the work outlined above.

**Reporting and Grant Payment Schedule for Grant Funds**

Payment of grant funds shall be contingent upon DISTRICT’s approval of GRANTEE’s quarterly progress reports and final report. DISTRICT approval will take into consideration adequate progress in implementing program tasks to meet the milestones set forth below. DISTRICT shall pay GRANTEE its grant payments upon receipt and approval of GRANTEE’s quarterly reports and final report demonstrating that the applicable program milestones have been met as provided in Section 8 of this Agreement.

<b>Milestone</b>	<b>Required Program Progress</b>	<b>Completion Date</b>	<b>Report</b>	<b>Payment</b>
1	Task 1a - initiated	6/30/22	Quarterly progress report (QPR) #1 (7/15/22)	\$12,718
2	Task 1a – completed Task 1b – initiated Task 2a – initiated	9/30/22	QPR #2 (10/15/22)	\$12,718
3	Task 1b – completed Task 2a – continued Task 2b – initiated	12/31/22	QPR #3 (1/15/23)	\$12,718
4	Task 2a – continued Task 2b – continued	3/31/23	QPR #4 (4/15/23)	\$12,718
5	Task 2a – continued Task 2b – continued Task 3a – initiated	6/30/23	QPR #5 (7/15/23)	\$12,718
6	Task 2a – continued Task 2b – continued Task 3a – continued	9/30/23	QPR #6 (10/15/23)	\$12,718
7	Task 2a – continued Task 2b – continued Task 3a – continued	12/31/23	QPR #7 (1/15/24)	\$12,718

Milestone	Required Program Progress	Completion Date	Report	Payment
8	Task 2a – completed Task 2b – completed Task 3a – completed Task 3b – completed	3/31/24	Final Report (4/30/24)	\$12,724

**Total grant payments not to exceed \$101,750.**

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## BAY AREA AIR QUALITY MANAGEMENT DISTRICT

### GRANT AGREEMENT

#### GRANT NO. 2022.012

1. PARTIES - The parties to this Agreement (“Agreement”) are the Bay Area Air Quality Management District (“DISTRICT”) whose address is 375 Beale Street, Suite 600, San Francisco, CA 94105, and **Contra Costa Health Services** (“GRANTEE”) whose address is 597 Center Ave., Suite 110, Martinez, CA 94553.
2. RECITALS
  - A. DISTRICT is the local agency with primary responsibility for regulating stationary source air pollution in the Bay Area Air Quality Management District in the State of California. DISTRICT is authorized to enter into this Agreement under California Health and Safety Code Section 40701.
  - B. DISTRICT desires to award GRANTEE a grant for the activities described in Attachment A, Work Plan.
  - C. All parties to this Agreement have had the opportunity to have the Agreement reviewed by their attorney.
3. TERM - The term of this Agreement is from April 1, 2022 until April 30, 2024, unless further extended by amendment of this Agreement in writing, or terminated earlier.
4. TERMINATION
  - A. DISTRICT shall have the right to terminate this Agreement at its sole discretion at any time upon thirty (30) days written notice to GRANTEE. The notice of termination shall specify the effective date of termination, which shall be no less than thirty (30) calendar days from the date of delivery of the notice of termination and shall be delivered in accordance with the provisions of section 10 below. Immediately upon receipt of the notice of termination, GRANTEE shall cease all activities under this Agreement, except such activities as are specified in the notice of termination. Within forty-five (45) days of receipt of written notice, GRANTEE is required to:
    - i) Submit a final written report describing all work performed by GRANTEE;
    - ii) Submit an accounting of all grant funds expended up to and including the date of termination; and,
    - iii) Reimburse DISTRICT for any unspent funds.
  - B. Either party may terminate this Agreement for breach by the other party.
    - i) Failure to perform any agreement or obligation contained in this Agreement or failure to perform the services in a satisfactory manner shall constitute a breach of the Agreement.
    - ii) The non-breaching party may terminate the Agreement by delivery of a written notice of breach. The notice of breach shall specify the date of termination, which shall be no earlier than ten (10) business days from delivery of the notice of breach. In the alternative, at its sole discretion, the non-breaching party may require the breaching party to cure the breach. The notice of breach shall specify the nature of the breach and the date by which such breach must be cured.
    - iii) If GRANTEE fails to perform any obligation under this Agreement, DISTRICT at its sole discretion, may perform, or cause the performance, of the obligation itself. In that event, DISTRICT shall deduct the costs to perform such obligation and any other costs to cure the

breach from the payment otherwise due to GRANTEE for work performed under this Agreement. DISTRICT's performance hereunder shall not be deemed a waiver or release of any obligation of, or default by, GRANTEE under this Agreement.

- iv) The notice of breach shall be provided in accordance with the notice requirements set forth in section 10.
  - v) The non-breaching party reserves all rights under law and equity to enforce this Agreement and recover any damages.
5. NO AGENCY RELATIONSHIP CREATED / INDEPENDENT CAPACITY - GRANTEE and the agents and employees of GRANTEE, in the performance of this Agreement, shall act in an independent capacity and not as officers or employees or agents of DISTRICT, and nothing herein shall be construed to be inconsistent with that relationship or status. DISTRICT shall not have the right to direct or control the activities of GRANTEE in performing the services provided herein.
6. CONTRACTORS / SUBCONTRACTORS / SUBGRANTEES
- A. GRANTEE will be entitled to make use of its own staff and such contractors, subcontractors, and subgrantees as are mutually acceptable to GRANTEE and DISTRICT. Any change in contractors, subcontractors, or subgrantees must be mutually acceptable to the parties. Immediately upon termination of any such contract, subcontract, or subgrant, GRANTEE shall notify DISTRICT.
  - B. Nothing contained in this Agreement or otherwise, shall create any contractual relation between DISTRICT and any contractors, subcontractors, or subgrantees of GRANTEE, and no agreement with contractors, subcontractors, or subgrantees shall relieve GRANTEE of its responsibilities and obligations hereunder. GRANTEE agrees to be as fully responsible to DISTRICT for the acts and omissions of its contractors, subcontractors, and subgrantees and of persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by GRANTEE. GRANTEE's obligation to pay its contractors, subcontractors, and subgrantees is an independent obligation from DISTRICT's obligation to make payments to GRANTEE. As a result, DISTRICT shall have no obligation to pay or to enforce the payment of any moneys to any contractor, subcontractor, or subgrantee.
7. INDEMNIFICATION - GRANTEE agrees to indemnify, defend, and hold harmless DISTRICT, its officers, employees, agents, representatives, and successors-in-interest against any and all liability, demands, claims, costs, losses, damages, recoveries, settlements, and expenses (including reasonable attorney fees) arising out of, caused by, or connected to performance of this Agreement by GRANTEE, its employees, subcontractors, subgrantees, or agents.
8. PAYMENT
- A. DISTRICT agrees to award GRANTEE a grant of \$238,697 for the activities described in Attachment A, Work Plan. DISTRICT will make payments of grant funds on a quarterly basis to reimburse GRANTEE for its costs incurred in the preceding quarter, as follows:
    - i) Seven (7) quarterly payments of \$25,243 each, plus expenses for consumer supplies, payable upon DISTRICT's receipt and approval of GRANTEE's quarterly progress reports and invoices.
    - ii) One (1) final payment of \$25,246, plus expenses for consumer supplies, upon completion of all tasks identified in the Work Plan, payable upon DISTRICT's receipt GRANTEE's invoice and approval of the final report
    - iii) Over the duration of the Agreement, expenses for consumer supplies shall not exceed \$36,750.

- B. GRANTEE shall carry out the work described on the Work Plan and shall obtain DISTRICT's written approval of any changes or modifications to the Work Plan prior to performing or incurring costs for the changed work. If GRANTEE fails to obtain such prior written approval, DISTRICT, at its sole discretion, may refuse to provide funds to pay for such work or costs.
  - C. Payment will be made only to GRANTEE.
9. AUTHORIZED REPRESENTATIVE - GRANTEE shall continuously maintain a representative vested with signature authority authorized to work with DISTRICT on all grant-related issues. GRANTEE shall, at all times, keep DISTRICT informed as to the identity of the authorized representative.
10. NOTICES - All notices that are required under this Agreement shall be provided in the manner set forth herein, unless specified otherwise. Notice to a party shall be delivered to the attention of the person listed below, or to such other person or persons as may hereafter be designated by that party in writing. Notice shall be in writing sent by e-mail, facsimile, or regular first class mail. In the case of e-mail and facsimile communications, valid notice shall be deemed to have been delivered upon sending, provided the sender obtained an electronic confirmation of delivery. E-mail and facsimile communications shall be deemed to have been received on the date of such transmission, provided such date was a business day and delivered prior to 4:00 p.m. Pacific Time. Otherwise, receipt of e-mail and facsimile communications shall be deemed to have occurred on the following business day. In the case of regular mail notice, notice shall be deemed to have been delivered on the mailing date and received five (5) business days after the date of mailing.

DISTRICT: Bay Area Air Quality Management District  
375 Beale Street, Suite 600  
San Francisco, CA 94105  
Attn: Idania Zamora  
E-mail: izamora@baaqmd.gov

GRANTEE: Contra Costa Health Services  
597 Center Ave., Suite 110  
Martinez, CA 94553  
Attn: Michael Kent  
E-mail: Michael.Kent@cchealth.org

11. ADDITIONAL PROVISIONS - All attachment(s) to this Agreement are expressly incorporated herein by this reference and made a part hereof as though fully set forth.
12. ACKNOWLEDGEMENTS - GRANTEE shall acknowledge DISTRICT support each time the activities funded, in whole or in part, by this Agreement are publicized in any news media, brochures, or other type of promotional material. The acknowledgement of DISTRICT support must state "Funded by a Grant from the Bay Area Air Quality Management District." Initials or abbreviations for DISTRICT shall not be used.
13. ADVERTISING / PUBLIC EDUCATION - GRANTEE shall submit copies of all draft public education or advertising materials to DISTRICT for review and approval prior to GRANTEE's use of such materials.



14. FINANCIAL MANAGEMENT SYSTEM

- A. GRANTEE shall be responsible for maintaining an adequate financial management system and will immediately notify DISTRICT when GRANTEE cannot comply with the requirements in this section.
- B. GRANTEE's financial management system shall provide for:
  - i) Financial reporting: accurate, current, and complete disclosure of the financial results of each grant in conformity with generally accepted principles of accounting and reporting in a format that is in accordance with the financial reporting requirements of the grant.
  - ii) Accounting records: records that adequately identify the source and application of funds for DISTRICT-supported activities. These records must contain information pertaining to grant awards and authorizations, obligations, unobligated balances, assets, liabilities, outlays or expenditures and income.
  - iii) Internal control: effective internal and accounting controls over all funds, property and other assets. GRANTEE shall adequately safeguard all such assets and assure that they are used solely for authorized purposes.
  - iv) Budget control: comparison of actual expenditures or outlays with budgeted amounts for each grant.
  - v) Allowable cost: procedures for determining reasonableness, allowability, and allocability of costs generally consistent with the provisions of federal and state requirements.
  - vi) Source documentation: accounting records that are supported by source documentation.
  - vii) Cash management: procedures to minimize the time elapsing between the advance of funds from DISTRICT and the disbursement by GRANTEE, whenever funds are advanced by DISTRICT.
- C. DISTRICT may review the adequacy of the financial management system of GRANTEE at any time subsequent to the award of the grant. If DISTRICT determines that GRANTEE's accounting system does not meet the standards described in paragraph B above, additional information to monitor the grant may be required by DISTRICT upon written notice to GRANTEE, until such time as the system meets with DISTRICT approval.

15. AUDIT / RECORDS ACCESS - GRANTEE agrees that DISTRICT shall have the right to review and to copy any records and supporting documentation pertaining to the performance of this Agreement. GRANTEE agrees to maintain such records for possible audit for a minimum of five (5) years after final payment, unless a longer period of records retention is stipulated, or until completion of any action and resolution of all issues which may arise as a result of any litigation, dispute, or audit, whichever is later. GRANTEE agrees to allow the DISTRICT or its designated representative(s) access to such records during normal business hours and to allow interviews of any employees who might reasonably have information related to such records. Further, GRANTEE agrees to include a similar right of DISTRICT to audit records and interview staff in any contract, subcontract, or subgrant related to performance of this Agreement.

16. FORFEIT OF GRANT FUNDS / REPAYMENT OF FUNDS IMPROPERLY EXPENDED - If grant funds are not expended, or have not been expended, in accordance with this Agreement, or if real or personal property acquired with grant funds is not being used, or has not been used, for grant purposes in accordance with this Agreement, DISTRICT, at its sole discretion, may take appropriate action under this Agreement, at law or in equity, including requiring GRANTEE to forfeit the unexpended portion of the grant funds and/or to repay to DISTRICT any funds improperly expended.

17. COMPLIANCE - GRANTEE shall comply fully with all applicable federal, state, and local laws, ordinances, regulations, and permits. GRANTEE shall also register with the California Attorney General's Registry of Charitable Trusts pursuant to California Government Code section 12585, if

applicable. GRANTEE shall provide evidence, upon request, that all local, state, and/or federal permits, licenses, registrations, and approvals have been secured for the purposes for which grant funds are to be expended. GRANTEE shall maintain compliance with such requirements throughout the grant period. GRANTEE shall ensure that the requirements of the California Environmental Quality Act are met for any approvals or other requirements necessary to carry out the terms of this Agreement. Any deviation from the requirements of this section shall result in non-payment of grant funds.

18. CONFIDENTIALITY – In order to carry out the purposes of this Agreement, GRANTEE may require access to certain of DISTRICT’s confidential information (including trade secrets, inventions, confidential know-how, confidential business information, and other information that DISTRICT considers confidential) (collectively, “Confidential Information”). It is expressly understood and agreed that DISTRICT may designate in a conspicuous manner Confidential Information that GRANTEE obtains from DISTRICT, and GRANTEE agrees to:

- A. Observe complete confidentiality with respect to such information, including without limitation, agreeing not to disclose or otherwise permit access to such information by any other person or entity in any manner whatsoever, except that such disclosure or access shall be permitted to employees of GRANTEE requiring access in fulfillment of the services provided under this Agreement.
- B. Ensure that GRANTEE’s officers, employees, agents, representatives, subgrantees, and independent contractors are informed of the confidential nature of such information and to assure by agreement or otherwise that they are prohibited from copying or revealing, for any purpose whatsoever, the contents of such information or any part thereof, or from taking any action otherwise prohibited under this section.
- C. Not use such information or any part thereof in the performance of services to others or for the benefit of others in any form whatsoever whether gratuitously or for valuable consideration, except as permitted under this Agreement.
- D. Notify DISTRICT promptly and in writing of the circumstances surrounding any possession, use, or knowledge of such information or any part thereof by any person or entity other than those authorized by this section. Take at GRANTEE’s expense, but at DISTRICT’s option and in any event under DISTRICT’s control, any legal action necessary to prevent unauthorized use of such information by any third party or entity which has gained access to such information at least in part due to the fault of GRANTEE.
- E. Take any and all other actions necessary or desirable to assure such continued confidentiality and protection of such information during the term of this Agreement and following expiration or termination of the Agreement.
- F. Prevent access to such materials by a person or entity not authorized under this Agreement.
- G. Establish specific procedures in order to fulfill the obligations of this section.

19. INTELLECTUAL PROPERTY RIGHTS - Title and full ownership rights to all intellectual property developed under this Agreement shall at all times remain with DISTRICT, unless otherwise agreed to in writing.

20. PUBLICATION

- A. DISTRICT shall approve in writing any report or other document prepared by GRANTEE in connection with performance under this Agreement prior to dissemination or publication of such report or document to a third party. DISTRICT may waive in writing its requirement for prior approval.

- B. Until approved by DISTRICT, any report or other document prepared by GRANTEE shall include on each page a conspicuous header, footer, or watermark stating "DRAFT – Not Reviewed or Approved by BAAQMD," unless DISTRICT has waived its requirement for prior approval pursuant to paragraph A of this section.
- C. Information, data, documents, or reports developed by GRANTEE for DISTRICT, pursuant to this Agreement, shall be part of DISTRICT's public record, unless otherwise indicated. GRANTEE may use or publish, at its own expense, such information, provided DISTRICT approves use of such information in advance. The following acknowledgment of support and disclaimer must appear in each publication of materials, whether copyrighted or not, based upon or developed under this Agreement.

"This report was prepared as a result of work sponsored, paid for, in whole or in part, by the Bay Area Air Quality Management District (District). The opinions, findings, conclusions, and recommendations are those of the author and do not necessarily represent the views of the District. The District, its officers, employees, contractors, and subcontractors make no warranty, expressed or implied, and assume no legal liability for the information in this report."

- D. GRANTEE shall inform its officers, employees, subgrantees, and subcontractors involved in the performance of this Agreement of the restrictions contained herein and shall require compliance with the above.
21. PROPERTY AND SECURITY - Without limiting GRANTEE's obligations with regard to security, GRANTEE shall comply with all the rules and regulations established by DISTRICT for access to and activity in and around DISTRICT's premises.
  22. ASSIGNMENT - No party shall assign, sell, license, or otherwise transfer any rights or obligations under this Agreement to a third party without the prior written consent of the other party, and any attempt to do so shall be void upon inception.
  23. WAIVER - No waiver of a breach, of failure of any condition, or of any right or remedy contained in or granted by the provisions of this Agreement shall be effective unless it is in writing and signed by the party waiving the breach, failure, right, or remedy. No waiver of any breach, failure, right, or remedy shall be deemed a waiver of any other breach, whether or not similar, nor shall any waiver constitute a continuing waiver unless the writing so specifies. Further, the failure of a party to enforce performance by the other party of any term, covenant, or condition of this Agreement, and the failure of a party to exercise any rights or remedies hereunder, shall not be deemed a waiver or relinquishment by that party to enforce future performance of any such terms, covenants, or conditions, or to exercise any future rights or remedies.
  24. FORCE MAJEURE - Neither DISTRICT nor GRANTEE shall be liable for or deemed to be in default for any delay or failure in performance under this Agreement or interruption of services resulting, directly or indirectly, from acts of God, enemy or hostile governmental action, civil commotion, strikes, lockouts, labor disputes, fire or other casualty, judicial orders, governmental controls, regulations or restrictions, inability to obtain labor or materials or reasonable substitutes for labor or materials necessary for performance of the services, or other causes, except financial, that are beyond the reasonable control of DISTRICT or GRANTEE, for a period of time equal to the period of such force majeure event, provided that the party failing to perform notifies the other party within fifteen

calendar days of discovery of the force majeure event, and provided further that that party takes all reasonable action to mitigate the damages resulting from the failure to perform. Notwithstanding the above, if the cause of the force majeure event is due to party's own action or inaction, then such cause shall not excuse that party from performance under this Agreement.

25. SEVERABILITY - If a court of competent jurisdiction holds any provision of this Agreement to be illegal, unenforceable or invalid in whole or in part for any reason, the validity and enforceability of the remaining provisions, or portions of them will not be affected.
26. HEADINGS - Headings on the sections and paragraphs of this Agreement are for convenience and reference only, and the words contained therein shall in no way be held to explain, modify, amplify, or aid in the interpretation, construction, or meaning of the provisions of this Agreement.
27. COUNTERPARTS/FACSIMILES/SCANS – This Contract may be executed and delivered in any number of counterparts, each of which, when executed and delivered, shall be deemed an original, and all of which together shall constitute the same contract. The parties may rely upon a facsimile copy or scanned copy of any party's signature as an original for all purposes.
28. GOVERNING LAW - Any dispute that arises under or relates to this Agreement shall be governed by California law, excluding any laws that direct the application to another jurisdiction's laws. Venue for resolution of any dispute that arises under or relates to this Agreement, including mediation, shall be San Francisco, California.
29. DISPUTE RESOLUTION – A party that disputes a notice of breach must first seek mediation to resolve the dispute in accordance with the provisions set forth below.
  - A. Upon receipt of a notice of breach of Agreement, the party may submit a demand for mediation to resolve whether or not a breach occurred. The party must state the basis of the dispute and deliver the demand within ten (10) business days of the date of receipt of the notice of breach.
  - B. The mediation shall take place at DISTRICT's office at 375 Beale Street, Suite 600, San Francisco, or at such other place as may be mutually agreed upon by the parties and the mediator.
  - C. The parties shall make good faith efforts to hold the mediation within thirty (30) days after receipt of the demand for mediation.
  - D. Each party shall bear its own mediation costs.
  - E. In the event the parties are unable to resolve the dispute, either party may file an action in a court of competent jurisdiction to enforce the Agreement.
  - F. Maximum recovery under this section shall be limited to \$1,638,832. The mediation costs shall not reduce the maximum amount recoverable under this section.
30. NON-DISCRIMINATION – In the performance of this Agreement, GRANTEE shall not discriminate in its recruitment, hiring, promotion, demotion, and termination practices on the basis of race, religious creed, color, national origin, ancestry, sex, age, marital status, sexual orientation, medical condition, or physical or mental disability and shall comply with the provisions of the California Fair Employment & Housing Act (Government Code Section 12900 et seq.), the Federal Civil Rights Act of 1964 (P.L. 88-352) and all amendments thereto, and all administrative rules and regulations issued pursuant to said Acts. GRANTEE shall also require each subcontractor performing work in connection with this Agreement to comply with this section and shall include in each contract with such subcontractor provisions to accomplish the requirements of this section.

31. INSURANCE

- A. GRANTEE shall maintain the following insurance:
  - i) Workers' compensation and employers' liability insurance as required by California law or other applicable statutory requirements.
  - ii) Occurrence-based commercial general liability insurance or equivalent form with a limit of not less than one million dollars (\$1,000,000) each occurrence. Such insurance shall include DISTRICT and its officers, agents, and employees as additional insureds and shall be primary with respect to any insurance maintained by DISTRICT.
  - iii) Business automobile liability insurance or equivalent form with a limit of not less than one million dollars (\$1,000,000) each accident. Such insurance shall include coverage for owned, hired, and non-owned vehicles. If GRANTEE is a sole proprietor, GRANTEE may meet this insurance requirement with personal automobile liability insurance carrying a business use endorsement or by demonstrating to the satisfaction of DISTRICT that business use is covered under the GRANTEE's personal automobile liability insurance. A GRANTEE using only rental vehicles in performing work under this Agreement may meet this insurance requirement by purchasing automobile liability insurance in the required coverage amount from the rental agency.
- B. All insurance shall be placed with insurers acceptable to DISTRICT.
- C. Prior to commencement of work under this Agreement, GRANTEE shall furnish properly-executed certificates of insurance for all required insurance. Upon request by DISTRICT, GRANTEE shall provide a complete copy of any required insurance policy. GRANTEE shall notify DISTRICT in writing thirty (30) days prior to cancellation or modification of any required insurance policy. Any such modifications are subject to pre-approval by DISTRICT.
- D. If GRANTEE fails to maintain the required insurance coverage set forth above, DISTRICT reserves the right either to purchase such additional insurance and to deduct the cost thereof from any payments owed to GRANTEE or to terminate this Agreement for breach.

32. ENTIRE AGREEMENT AND MODIFICATION - This Agreement represents the final, complete, and exclusive statement of the agreement between the parties and supersedes all prior and contemporaneous understandings and agreements of the parties. No party has been induced to enter into this Agreement by, nor is any party relying upon, any representation or warranty outside those expressly set forth herein. This Agreement may only be amended by mutual agreement of the parties in writing and signed by both parties.

33. SURVIVAL OF TERMS - The provisions of sections 7 (Indemnification), 15 (Audit / Records Access), 16 (Forfeit of Grant Funds / Repayment of Funds Improperly Expended), 18 (Confidentiality), 19 (Intellectual Property Rights), and 20 (Publication) shall survive the expiration or termination of this Agreement.

IN WITNESS WHEREOF, the parties to this Agreement have caused this Agreement to be duly executed on their behalf by their authorized representatives.

BAY AREA AIR QUALITY  
MANAGEMENT DISTRICT

CONTRA COSTA HEALTH SERVICES

By: \_\_\_\_\_  
Jack P. Broadbent  
Executive Officer/APCO

By: \_\_\_\_\_  
Ori Tzvieli  
Public Health Director

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Approved as to form:  
District Counsel

By: \_\_\_\_\_  
Adan Schwartz  
Acting District Counsel

DRAFT

## ATTACHMENT A

### WORK PLAN

#### **Overview**

The Bay Area Healthy Homes Initiative (“INITIATIVE” or “program”) seeks to build on and expand the Asthma Mitigation Project pilot effort in Contra Costa County, which is run by Contra Costa Public Health in partnership with Association for Energy Affordability (“AEA”). The INITIATIVE seeks to improve health outcomes for Contra Costa and Alameda County residents living in communities disproportionately impacted by air pollution by integrating multiple interventions that address cumulative air pollution burden. DISTRICT was awarded nearly \$2 million from the Automobile Emissions Research and Technology Fund by the California Attorney General’s Office for the INITIATIVE and will disburse these funds through grant agreements to GRANTEE, Energy Council (“StopWaste”), AEA, and County of Alameda (“Asthma Start”) (collectively referred to as “program partners”) to implement the INITIATIVE. Program partners will collaborate in the implementation of core areas of the program including home asthma education and trigger assessments, energy efficiency assessments, provision of consumer supplies, equipment, and services, home retrofits, and indoor air monitoring. Anticipated outcomes include improved indoor air quality, decreased energy usage, reduced greenhouse gas (GHG) emissions, and improved health outcomes in program participants’ households.

GRANTEE, as a program partner of the INITIATIVE, will manage and coordinate the implementation of the INITIATIVE in Contra Costa County; recruit and refer program participants; lead the home asthma care, education and trigger assessment visits; and provide information on program scaling to the DISTRICT.

#### **Task 1: Program Management**

GRANTEE will execute overall program management for the implementation of the INITIATIVE in Contra Costa County, including coordination with program partners on all program areas, data collection, final accounting, evaluation and reporting to the DISTRICT. GRANTEE will also manage the Home Asthma Education and Assessment program area, in close coordination with AEA.

##### *Task 1a: Development of Data Collection Spreadsheet*

GRANTEE will create a data collection spreadsheet to record information about patient selection, including visit types and dates, assessment results, recommendations, etc. DISTRICT will review and collaborate with GRANTEE and program partners to refine this data collection spreadsheet, which will be used for program reporting for Contra Costa and Alameda County. This template will be shared with all program partners to facilitate collaboration. Participants will be anonymized pursuant to HIPAA requirements for patient privacy.

##### *Deliverable 1a:*

1. Spreadsheet template for data collection of participant selection information as described above, due June 30, 2022.

##### *Task 1b: Recordkeeping of Patient Selection*

GRANTEE will maintain records of all patients entering the program in Contra Costa County, using the data collection spreadsheet developed in Task 1a.

*Deliverable 1b:*

1. Summary of activities in quarterly reports, including the data collection spreadsheet completed with updated information and any additional information requested under specific Tasks below, due every April 15; July 15; Oct 15; Jan 15 during contract period.

**Task 2: Staff Hiring and Participant Recruitment**

GRANTEE will enhance the structure created during the pilot project by hiring additional needed staff and will recruit eligible program participants.

*Task 2a: Build Capacity for Home Asthma Education and Mitigation Program Area*

GRANTEE will hire a Community Health Worker to conduct outreach, intake of patients and households, and home visits for asthma assessments, education, follow-ups, and distribution of supplies and/or services to the program participants. GRANTEE will also hire a Clerk Specialist to identify patients, manage data, and purchase supplies for distribution by the Community Health Worker.

*Deliverable 2a:*

1. Staffing plan for the Community Health Worker and the Clerk Specialist staff hired, including the salaries, benefits, employment term and qualifications of the individuals hired, due by October 31, 2022.

*Task 2b: Recruit Program Participants*

GRANTEE will recruit 70 program participants: 20 program participants during the first year of this agreement and 50 program participants during the second year of this agreement. GRANTEE will update the data collection spreadsheet previously developed by GRANTEE with information about the selected program participants and documentation on how participants meet the eligibility criteria. GRANTEE will select program participants using all the following criteria:

1. Reside in households within a community overburdened with air pollution emissions (especially particulate matter (PM) 2.5 and diesel PM) as defined by being within one of the census tracts in the top 30% identified by CalEnviroScreen 4.0 scoring;
2. Reside in households within 1,000 feet of freeways, major transportation corridors, or large transportation sources – as indicated on a map provided by DISTRICT; and
3. Reside in households that include Contra Costa Health Plan Medi-Cal patients (children and adults) with uncontrolled moderate to severe asthma selected using information provided by the Contra Costa County Health Plan or by a health provider referral.

*Deliverables 2b:*

1. Materials (hardcopy or digital) used for recruitment and outreach to prospective program participants or to physicians for referrals, description of data mining from the Contra Costa Health Plan database, and listservs/distribution lists used, due by September 30, 2022 and on a quarterly basis thereafter.
2. Updated data collection spreadsheet, due September 30, 2022 and on a quarterly basis thereafter.

**Task 3: Home Asthma Education and Assessment**

GRANTEE will distribute existing or new curriculum and supporting materials, such as handouts for in-home asthma education. GRANTEE will lead in-home asthma education and trigger assessments for each selected program participant. GRANTEE will purchase, distribute consumer supplies and medical supplies



(i.e., spacers and peak flow meters), and recommend referrals to AEA for home retrofits on an as-needed basis.

*Task 3a: Home Asthma Education and Patient Assessments*

GRANTEE will coordinate with primary care providers (PCPs) on Asthma Action Plan (i.e., request PCPs to send the patients' Asthma Action Plans), provide medication usage training, and educate program participants regarding environmental triggers and the relationship between indoor air quality and respiratory health. GRANTEE will perform an asthma control test using a clinically validated tool to determine asthma control at baseline. After all asthma remediation is completed by GRANTEE and/or AEA, and home retrofits are completed by AEA, GRANTEE will perform a follow-up asthma control test to monitor changes in the patient's asthma condition. GRANTEE will update the data collection spreadsheet with information about home education and initial and follow-up patient assessments for each program participant, including the total number of household residents who attended training to document co-benefits of the program.

*Deliverable 3a:*

1. Copies of curricula, handouts for training and educating patients, and any other supporting materials, due quarterly beginning July 1, 2022 through September 30, 2023.
2. Updated data collection spreadsheet, due quarterly beginning July 1, 2022, through September 30, 2023.

*Task 3b: Asthma Trigger Assessment and Remediation*

GRANTEE, in coordination with AEA, will perform in-home assessments for conditions that can trigger asthma attacks and provide consumer supplies or services to remediate those conditions, on an as-needed basis, up to a maximum amount of \$525 per program participant. Supplies and services may include cleaning supplies, less-toxic pest management supplies, hypo-allergenic bedding, high-efficiency particulate absorbing (HEPA) vacuum cleaners, and carpet cleaning, etc. GRANTEE will work with the residents and AEA to determine other types of remediation that may be provided through this program. GRANTEE will update the data collection spreadsheet detailing itemization of conditions found in program participant's homes that might be asthma triggers, along with remediation measures completed (e.g., providing consumer supply packages) and any recommendations for home retrofits (e.g., installation of indoor filtration, replacement windows, building envelope sealing, mold remediation, carpet removal).

*Deliverable 3b:*

1. Updated data collection spreadsheet, due quarterly with progress reports.
2. Receipts (electronic copies) of purchased consumer products – traceable to individual participants (but anonymized pursuant to HIPAA requirements for patient privacy), due quarterly with progress reports.

**Task 4: Program Scaling**

GRANTEE will provide the DISTRICT with an estimate of the total need for the program within Contra Costa County and with any lessons learned and potential solutions that should be considered when scaling county-wide and to the San Francisco Bay Area, beyond the scope of this agreement.

*Task 4a: Overall Program Need*

GRANTEE will provide data on the total number of eligible people that would benefit from this program in Contra Costa County, beyond the 70 households served through this agreement. The data will include the number of potential participants based on GRANTEE's definition of asthma eligibility and DISTRICT-

provided parameters around overburdened communities (CalEnviroScreen 4.0 top 30% scoring) and distance from major air pollution sources due to transportation activities as indicated on a map provided by the DISTRICT.

*Deliverable 4a:*

1. Initial estimate of data and how these data were determined (e.g., data sources, calculations, etc.), due by March 31, 2023.
2. Refined estimate of data, with description of data provided and how these were determined (e.g., data sources, calculations, etc.), due by March 31, 2024.

*Task 4b: Lessons Learned*

GRANTEE will submit a narrative in the final report (Task 5) describing lessons learned and strategies to increase participants for the program.

*Deliverable 4b:*

1. Document describing lessons learned and any solutions applicable to Program Scaling, including anecdotes, as appropriate, due by April 30, 2024.

**Task 5: Final Accounting and Reporting**

GRANTEE shall provide a final report summarizing all Task deliverables, outcomes of the project, and lessons learned. The Final Report, to be prepared on the District's Final Report form (provided separately). GRANTEE shall conduct accounting that demonstrates the amount of DISTRICT funds allocated to recruitment, assessment, education, and remediation measures versus programmatic costs, as well as leveraged funds and incentives.

*Deliverables 5:*

1. Final report, due by April 30, 2024.
2. Accounting sheet, showing how all funds were used, including salaries (with benefits and overhead) and the total amount of funding applied to remediation measures, due by April 30, 2024.

**Quarterly Progress Reporting:**

Beginning thirty (30) calendar days after execution of the agreement, every April 15, July 15, October 15, and January 15 until the end of the Term, GRANTEE shall provide quarterly progress reports describing GRANTEE's progress toward completion of the work outlined above.

**Reporting and Grant Payment Schedule for Grant Funds**

Payment of grant funds shall be contingent upon DISTRICT's approval of GRANTEE's quarterly progress reports and final report. DISTRICT approval will take into consideration adequate progress in implementing program tasks to meet the milestones set forth below. DISTRICT shall pay GRANTEE its grant payments upon receipt and approval of GRANTEE's quarterly reports and final report demonstrating that the applicable program milestones have been met as provided in Section 8 of this Agreement.

Milestone	Required Program Progress	Completion Date	Report	Payment
1	Task 1a – completed Task 1b – initiated Task 2a – initiated	6/30/22	Quarterly progress report (QPR) #1 (7/15/22)	\$25,243 plus invoiced consumer supplies*
2	Task 2a – completed Task 2b – initiated Task 3a – initiated	10/30/22	QPR #2 (10/15/22)	\$25,243 plus invoiced consumer supplies*
3	Task 2b – completed Task 3a – continued Task 3b – initiated	12/31/22	QPR #3 (1/15/23)	\$25,243 plus invoiced consumer supplies*
4	Task 3a – continued Task 3b – continued	3/31/23	QPR #4 (4/15/23)	\$25,243 plus invoiced consumer supplies*
5	Task 3a – continued Task 3b – continued Task 4a – initiated	6/30/23	QPR #5 (7/15/23)	\$25,243 plus invoiced consumer supplies*
6	Task 3a – continued Task 3b – continued Task 4a – continued	9/30/23	QPR #6 (10/15/23)	\$25,243 plus invoiced consumer supplies*
7	Task 3a – continued Task 3b – continued Task 4a – continued	12/31/23	QPR #7 (1/15/24)	\$25,243 plus invoiced consumer supplies*
8	Task 1b – completed Task 3a – completed Task 3b – completed Task 4a – completed Task 4b – completed Task 5 – completed	3/31/24	Final Report (4/30/24)	\$25,246 plus invoiced consumer supplies*

\* Over the duration of the Agreement, expenses for consumer supplies shall not exceed \$36,750.

**Total grant payments not to exceed \$238,697.**

## BAY AREA AIR QUALITY MANAGEMENT DISTRICT

### GRANT AGREEMENT

#### GRANT NO. 2022.013

1. **PARTIES** - The parties to this Agreement (“Agreement”) are the Bay Area Air Quality Management District (“DISTRICT”) whose address is 375 Beale Street, Suite 600, San Francisco, CA 94105, and **Energy Council** (“GRANTEE”), commonly known as “StopWaste”, whose address is 1537 Webster Street, Oakland, CA 94612.
2. **RECITALS**
  - A. DISTRICT is the local agency with primary responsibility for regulating stationary source air pollution in the Bay Area Air Quality Management District in the State of California. DISTRICT is authorized to enter into this Agreement under California Health and Safety Code Section 40701.
  - B. DISTRICT desires to award GRANTEE a grant for the activities described in Attachment A, Work Plan.
  - C. All parties to this Agreement have had the opportunity to have the Agreement reviewed by their attorney.
3. **TERM** - The term of this Agreement is from April 1, 2022 until April 30, 2024, unless further extended by amendment of this Agreement in writing, or terminated earlier.
4. **TERMINATION**
  - A. DISTRICT shall have the right to terminate this Agreement at its sole discretion at any time upon thirty (30) days written notice to GRANTEE. The notice of termination shall specify the effective date of termination, which shall be no less than thirty (30) calendar days from the date of delivery of the notice of termination and shall be delivered in accordance with the provisions of section 10 below. Immediately upon receipt of the notice of termination, GRANTEE shall cease all activities under this Agreement, except such activities as are specified in the notice of termination. Within forty-five (45) days of receipt of written notice, GRANTEE is required to:
    - i) Submit a final written report describing all work performed by GRANTEE;
    - ii) Submit an accounting of all grant funds expended up to and including the date of termination; and,
    - iii) Reimburse DISTRICT for any unspent funds.
  - B. Either party may terminate this Agreement for breach by the other party.
    - i) Failure to perform any agreement or obligation contained in this Agreement or failure to perform the services in a satisfactory manner shall constitute a breach of the Agreement.
    - ii) The non-breaching party may terminate the Agreement by delivery of a written notice of breach. The notice of breach shall specify the date of termination, which shall be no earlier than ten (10) business days from delivery of the notice of breach. In the alternative, at its sole discretion, the non-breaching party may require the breaching party to cure the breach. The notice of breach shall specify the nature of the breach and the date by which such breach must be cured.
    - iii) If GRANTEE fails to perform any obligation under this Agreement, DISTRICT at its sole discretion, may perform, or cause the performance, of the obligation itself. In that event, DISTRICT shall deduct the costs to perform such obligation and any other costs to cure the

breach from the payment otherwise due to GRANTEE for work performed under this Agreement. DISTRICT's performance hereunder shall not be deemed a waiver or release of any obligation of, or default by, GRANTEE under this Agreement.

- iv) The notice of breach shall be provided in accordance with the notice requirements set forth in section 10.
  - v) The non-breaching party reserves all rights under law and equity to enforce this Agreement and recover any damages.
5. NO AGENCY RELATIONSHIP CREATED / INDEPENDENT CAPACITY - GRANTEE and the agents and employees of GRANTEE, in the performance of this Agreement, shall act in an independent capacity and not as officers or employees or agents of DISTRICT, and nothing herein shall be construed to be inconsistent with that relationship or status. DISTRICT shall not have the right to direct or control the activities of GRANTEE in performing the services provided herein.
6. CONTRACTORS / SUBCONTRACTORS / SUBGRANTEES
- A. GRANTEE will be entitled to make use of its own staff and such contractors, subcontractors, and subgrantees as are mutually acceptable to GRANTEE and DISTRICT. Any change in contractors, subcontractors, or subgrantees must be mutually acceptable to the parties. Immediately upon termination of any such contract, subcontract, or subgrant, GRANTEE shall notify DISTRICT.
  - B. Nothing contained in this Agreement or otherwise, shall create any contractual relation between DISTRICT and any contractors, subcontractors, or subgrantees of GRANTEE, and no agreement with contractors, subcontractors, or subgrantees shall relieve GRANTEE of its responsibilities and obligations hereunder. GRANTEE agrees to be as fully responsible to DISTRICT for the acts and omissions of its contractors, subcontractors, and subgrantees and of persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by GRANTEE. GRANTEE's obligation to pay its contractors, subcontractors, and subgrantees is an independent obligation from DISTRICT's obligation to make payments to GRANTEE. As a result, DISTRICT shall have no obligation to pay or to enforce the payment of any moneys to any contractor, subcontractor, or subgrantee.
7. INDEMNIFICATION - GRANTEE agrees to indemnify, defend, and hold harmless DISTRICT, its officers, employees, agents, representatives, and successors-in-interest against any and all liability, demands, claims, costs, losses, damages, recoveries, settlements, and expenses (including reasonable attorney fees) arising out of, caused by, or connected to performance of this Agreement by GRANTEE, its employees, subcontractors, subgrantees, or agents.
8. PAYMENT
- A. DISTRICT agrees to award GRANTEE a grant of \$20,000 for the activities described in Attachment A, Work Plan. DISTRICT will make payments of grant funds on a quarterly basis to reimburse GRANTEE for its costs incurred in the preceding quarter, as follows:
    - i) Seven (7) quarterly payments of \$2,500 each, payable upon DISTRICT's receipt and approval of GRANTEE's quarterly progress reports and invoices.
    - ii) One (1) final payment of \$2,500, upon completion of all tasks identified in the Work Plan, payable upon DISTRICT's receipt GRANTEE's invoice and approval of the final report.
  - B. GRANTEE shall carry out the work described on the Work Plan and shall obtain DISTRICT's written approval of any changes or modifications to the Work Plan prior to performing or incurring costs for the changed work. If GRANTEE fails to obtain such prior written approval, DISTRICT, at its sole discretion, may refuse to provide funds to pay for such work or costs.

C. Payment will be made only to GRANTEE.

9. AUTHORIZED REPRESENTATIVE - GRANTEE shall continuously maintain a representative vested with signature authority authorized to work with DISTRICT on all grant-related issues. GRANTEE shall, at all times, keep DISTRICT informed as to the identity of the authorized representative.
10. NOTICES - All notices that are required under this Agreement shall be provided in the manner set forth herein, unless specified otherwise. Notice to a party shall be delivered to the attention of the person listed below, or to such other person or persons as may hereafter be designated by that party in writing. Notice shall be in writing sent by e-mail, facsimile, or regular first class mail. In the case of e-mail and facsimile communications, valid notice shall be deemed to have been delivered upon sending, provided the sender obtained an electronic confirmation of delivery. E-mail and facsimile communications shall be deemed to have been received on the date of such transmission, provided such date was a business day and delivered prior to 4:00 p.m. Pacific Time. Otherwise, receipt of e-mail and facsimile communications shall be deemed to have occurred on the following business day. In the case of regular mail notice, notice shall be deemed to have been delivered on the mailing date and received five (5) business days after the date of mailing.

DISTRICT: Bay Area Air Quality Management District  
375 Beale Street, Suite 600  
San Francisco, CA 94105  
Attn: Idania Zamora  
E-mail: [izamora@baaqmd.gov](mailto:izamora@baaqmd.gov)

GRANTEE: Energy Council  
1537 Webster Street  
Oakland, CA 94612  
Attn: Candis Mary-Dauphin  
E-mail: [dauphin@stopwaste.org](mailto:dauphin@stopwaste.org)

11. ADDITIONAL PROVISIONS - All attachment(s) to this Agreement are expressly incorporated herein by this reference and made a part hereof as though fully set forth.
12. ACKNOWLEDGEMENTS - GRANTEE shall acknowledge DISTRICT support each time the activities funded, in whole or in part, by this Agreement are publicized in any news media, brochures, or other type of promotional material. The acknowledgement of DISTRICT support must state "Funded by a Grant from the Bay Area Air Quality Management District." Initials or abbreviations for DISTRICT shall not be used.
13. ADVERTISING / PUBLIC EDUCATION - GRANTEE shall submit copies of all draft public education or advertising materials to DISTRICT for review and approval prior to GRANTEE's use of such materials.
14. FINANCIAL MANAGEMENT SYSTEM
- A. GRANTEE shall be responsible for maintaining an adequate financial management system and will immediately notify DISTRICT when GRANTEE cannot comply with the requirements in this section.
  - B. GRANTEE's financial management system shall provide for:

- i) Financial reporting: accurate, current, and complete disclosure of the financial results of each grant in conformity with generally accepted principles of accounting and reporting in a format that is in accordance with the financial reporting requirements of the grant.
  - ii) Accounting records: records that adequately identify the source and application of funds for DISTRICT-supported activities. These records must contain information pertaining to grant awards and authorizations, obligations, unobligated balances, assets, liabilities, outlays or expenditures and income.
  - iii) Internal control: effective internal and accounting controls over all funds, property and other assets. GRANTEE shall adequately safeguard all such assets and assure that they are used solely for authorized purposes.
  - iv) Budget control: comparison of actual expenditures or outlays with budgeted amounts for each grant.
  - v) Allowable cost: procedures for determining reasonableness, allowability, and allocability of costs generally consistent with the provisions of federal and state requirements.
  - vi) Source documentation: accounting records that are supported by source documentation.
  - vii) Cash management: procedures to minimize the time elapsing between the advance of funds from DISTRICT and the disbursement by GRANTEE, whenever funds are advanced by DISTRICT.
- C. DISTRICT may review the adequacy of the financial management system of GRANTEE at any time subsequent to the award of the grant. If DISTRICT determines that GRANTEE's accounting system does not meet the standards described in paragraph B above, additional information to monitor the grant may be required by DISTRICT upon written notice to GRANTEE, until such time as the system meets with DISTRICT approval.

15. AUDIT / RECORDS ACCESS - GRANTEE agrees that DISTRICT shall have the right to review and to copy any records and supporting documentation pertaining to the performance of this Agreement. GRANTEE agrees to maintain such records for possible audit for a minimum of five (5) years after final payment, unless a longer period of records retention is stipulated, or until completion of any action and resolution of all issues which may arise as a result of any litigation, dispute, or audit, whichever is later. GRANTEE agrees to allow the DISTRICT or its designated representative(s) access to such records during normal business hours and to allow interviews of any employees who might reasonably have information related to such records. Further, GRANTEE agrees to include a similar right of DISTRICT to audit records and interview staff in any contract, subcontract, or subgrant related to performance of this Agreement.

16. FORFEIT OF GRANT FUNDS / REPAYMENT OF FUNDS IMPROPERLY EXPENDED - If grant funds are not expended, or have not been expended, in accordance with this Agreement, or if real or personal property acquired with grant funds is not being used, or has not been used, for grant purposes in accordance with this Agreement, DISTRICT, at its sole discretion, may take appropriate action under this Agreement, at law or in equity, including requiring GRANTEE to forfeit the unexpended portion of the grant funds and/or to repay to DISTRICT any funds improperly expended.

17. COMPLIANCE - GRANTEE shall comply fully with all applicable federal, state, and local laws, ordinances, regulations, and permits. GRANTEE shall also register with the California Attorney General's Registry of Charitable Trusts pursuant to California Government Code section 12585, if applicable. GRANTEE shall provide evidence, upon request, that all local, state, and/or federal permits, licenses, registrations, and approvals have been secured for the purposes for which grant funds are to be expended. GRANTEE shall maintain compliance with such requirements throughout the grant period. GRANTEE shall ensure that the requirements of the California Environmental Quality Act are

met for any approvals or other requirements necessary to carry out the terms of this Agreement. Any deviation from the requirements of this section shall result in non-payment of grant funds.

18. CONFIDENTIALITY – In order to carry out the purposes of this Agreement, GRANTEE may require access to certain of DISTRICT’s confidential information (including trade secrets, inventions, confidential know-how, confidential business information, and other information that DISTRICT considers confidential) (collectively, “Confidential Information”). It is expressly understood and agreed that DISTRICT may designate in a conspicuous manner Confidential Information that GRANTEE obtains from DISTRICT, and GRANTEE agrees to:

- A. Observe complete confidentiality with respect to such information, including without limitation, agreeing not to disclose or otherwise permit access to such information by any other person or entity in any manner whatsoever, except that such disclosure or access shall be permitted to employees of GRANTEE requiring access in fulfillment of the services provided under this Agreement.
- B. Ensure that GRANTEE’s officers, employees, agents, representatives, subgrantees, and independent contractors are informed of the confidential nature of such information and to assure by agreement or otherwise that they are prohibited from copying or revealing, for any purpose whatsoever, the contents of such information or any part thereof, or from taking any action otherwise prohibited under this section.
- C. Not use such information or any part thereof in the performance of services to others or for the benefit of others in any form whatsoever whether gratuitously or for valuable consideration, except as permitted under this Agreement.
- D. Notify DISTRICT promptly and in writing of the circumstances surrounding any possession, use, or knowledge of such information or any part thereof by any person or entity other than those authorized by this section. Take at GRANTEE’s expense, but at DISTRICT’s option and in any event under DISTRICT’s control, any legal action necessary to prevent unauthorized use of such information by any third party or entity which has gained access to such information at least in part due to the fault of GRANTEE.
- E. Take any and all other actions necessary or desirable to assure such continued confidentiality and protection of such information during the term of this Agreement and following expiration or termination of the Agreement.
- F. Prevent access to such materials by a person or entity not authorized under this Agreement.
- G. Establish specific procedures in order to fulfill the obligations of this section.

19. INTELLECTUAL PROPERTY RIGHTS - Title and full ownership rights to all intellectual property developed under this Agreement shall at all times remain with DISTRICT, unless otherwise agreed to in writing.

20. PUBLICATION

- A. DISTRICT shall approve in writing any report or other document prepared by GRANTEE in connection with performance under this Agreement prior to dissemination or publication of such report or document to a third party. DISTRICT may waive in writing its requirement for prior approval.
- B. Until approved by DISTRICT, any report or other document prepared by GRANTEE shall include on each page a conspicuous header, footer, or watermark stating “DRAFT – Not Reviewed or Approved by BAAQMD,” unless DISTRICT has waived its requirement for prior approval pursuant to paragraph A of this section.



- C. Information, data, documents, or reports developed by GRANTEE for DISTRICT, pursuant to this Agreement, shall be part of DISTRICT's public record, unless otherwise indicated. GRANTEE may use or publish, at its own expense, such information, provided DISTRICT approves use of such information in advance. The following acknowledgment of support and disclaimer must appear in each publication of materials, whether copyrighted or not, based upon or developed under this Agreement.

"This report was prepared as a result of work sponsored, paid for, in whole or in part, by the Bay Area Air Quality Management District (District). The opinions, findings, conclusions, and recommendations are those of the author and do not necessarily represent the views of the District. The District, its officers, employees, contractors, and subcontractors make no warranty, expressed or implied, and assume no legal liability for the information in this report."

- D. GRANTEE shall inform its officers, employees, subgrantees, and subcontractors involved in the performance of this Agreement of the restrictions contained herein and shall require compliance with the above.
21. PROPERTY AND SECURITY - Without limiting GRANTEE's obligations with regard to security, GRANTEE shall comply with all the rules and regulations established by DISTRICT for access to and activity in and around DISTRICT's premises.
22. ASSIGNMENT - No party shall assign, sell, license, or otherwise transfer any rights or obligations under this Agreement to a third party without the prior written consent of the other party, and any attempt to do so shall be void upon inception.
23. WAIVER - No waiver of a breach, of failure of any condition, or of any right or remedy contained in or granted by the provisions of this Agreement shall be effective unless it is in writing and signed by the party waiving the breach, failure, right, or remedy. No waiver of any breach, failure, right, or remedy shall be deemed a waiver of any other breach, whether or not similar, nor shall any waiver constitute a continuing waiver unless the writing so specifies. Further, the failure of a party to enforce performance by the other party of any term, covenant, or condition of this Agreement, and the failure of a party to exercise any rights or remedies hereunder, shall not be deemed a waiver or relinquishment by that party to enforce future performance of any such terms, covenants, or conditions, or to exercise any future rights or remedies.
24. FORCE MAJEURE - Neither DISTRICT nor GRANTEE shall be liable for or deemed to be in default for any delay or failure in performance under this Agreement or interruption of services resulting, directly or indirectly, from acts of God, enemy or hostile governmental action, civil commotion, strikes, lockouts, labor disputes, fire or other casualty, judicial orders, governmental controls, regulations or restrictions, inability to obtain labor or materials or reasonable substitutes for labor or materials necessary for performance of the services, or other causes, except financial, that are beyond the reasonable control of DISTRICT or GRANTEE, for a period of time equal to the period of such force majeure event, provided that the party failing to perform notifies the other party within fifteen calendar days of discovery of the force majeure event, and provided further that that party takes all reasonable action to mitigate the damages resulting from the failure to perform. Notwithstanding the above, if the cause of the force majeure event is due to party's own action or inaction, then such cause shall not excuse that party from performance under this Agreement.

25. SEVERABILITY - If a court of competent jurisdiction holds any provision of this Agreement to be illegal, unenforceable or invalid in whole or in part for any reason, the validity and enforceability of the remaining provisions, or portions of them will not be affected.
26. HEADINGS - Headings on the sections and paragraphs of this Agreement are for convenience and reference only, and the words contained therein shall in no way be held to explain, modify, amplify, or aid in the interpretation, construction, or meaning of the provisions of this Agreement.
27. COUNTERPARTS/FACSIMILES/SCANS – This Contract may be executed and delivered in any number of counterparts, each of which, when executed and delivered, shall be deemed an original, and all of which together shall constitute the same contract. The parties may rely upon a facsimile copy or scanned copy of any party’s signature as an original for all purposes.
28. GOVERNING LAW - Any dispute that arises under or relates to this Agreement shall be governed by California law, excluding any laws that direct the application to another jurisdiction’s laws. Venue for resolution of any dispute that arises under or relates to this Agreement, including mediation, shall be San Francisco, California.
29. DISPUTE RESOLUTION – A party that disputes a notice of breach must first seek mediation to resolve the dispute in accordance with the provisions set forth below.
- A. Upon receipt of a notice of breach of Agreement, the party may submit a demand for mediation to resolve whether or not a breach occurred. The party must state the basis of the dispute and deliver the demand within ten (10) business days of the date of receipt of the notice of breach.
  - B. The mediation shall take place at DISTRICT’s office at 375 Beale Street, Suite 600, San Francisco, or at such other place as may be mutually agreed upon by the parties and the mediator.
  - C. The parties shall make good faith efforts to hold the mediation within thirty (30) days after receipt of the demand for mediation.
  - D. Each party shall bear its own mediation costs.
  - E. In the event the parties are unable to resolve the dispute, either party may file an action in a court of competent jurisdiction to enforce the Agreement.
  - F. Maximum recovery under this section shall be limited to \$20,000. The mediation costs shall not reduce the maximum amount recoverable under this section.
30. NON-DISCRIMINATION – In the performance of this Agreement, GRANTEE shall not discriminate in its recruitment, hiring, promotion, demotion, and termination practices on the basis of race, religious creed, color, national origin, ancestry, sex, age, marital status, sexual orientation, medical condition, or physical or mental disability and shall comply with the provisions of the California Fair Employment & Housing Act (Government Code Section 12900 et seq.), the Federal Civil Rights Act of 1964 (P.L. 88-352) and all amendments thereto, and all administrative rules and regulations issued pursuant to said Acts. GRANTEE shall also require each subcontractor performing work in connection with this Agreement to comply with this section and shall include in each contract with such subcontractor provisions to accomplish the requirements of this section.
31. INSURANCE
- A. GRANTEE shall maintain the following insurance:
    - i) Workers’ compensation and employers’ liability insurance as required by California law or

- other applicable statutory requirements.
- ii) Occurrence-based commercial general liability insurance or equivalent form with a limit of not less than one million dollars (\$1,000,000) each occurrence. Such insurance shall include DISTRICT and its officers, agents, and employees as additional insureds and shall be primary with respect to any insurance maintained by DISTRICT.
  - iii) Business automobile liability insurance or equivalent form with a limit of not less than one million dollars (\$1,000,000) each accident. Such insurance shall include coverage for owned, hired, and non-owned vehicles. If GRANTEE is a sole proprietor, GRANTEE may meet this insurance requirement with personal automobile liability insurance carrying a business use endorsement or by demonstrating to the satisfaction of DISTRICT that business use is covered under the GRANTEE's personal automobile liability insurance. A GRANTEE using only rental vehicles in performing work under this Agreement may meet this insurance requirement by purchasing automobile liability insurance in the required coverage amount from the rental agency.
- B. All insurance shall be placed with insurers acceptable to DISTRICT.
  - C. Prior to commencement of work under this Agreement, GRANTEE shall furnish properly-executed certificates of insurance for all required insurance. Upon request by DISTRICT, GRANTEE shall provide a complete copy of any required insurance policy. GRANTEE shall notify DISTRICT in writing thirty (30) days prior to cancellation or modification of any required insurance policy. Any such modifications are subject to pre-approval by DISTRICT.
  - D. If GRANTEE fails to maintain the required insurance coverage set forth above, DISTRICT reserves the right either to purchase such additional insurance and to deduct the cost thereof from any payments owed to GRANTEE or to terminate this Agreement for breach.
32. ENTIRE AGREEMENT AND MODIFICATION - This Agreement represents the final, complete, and exclusive statement of the agreement between the parties and supersedes all prior and contemporaneous understandings and agreements of the parties. No party has been induced to enter into this Agreement by, nor is any party relying upon, any representation or warranty outside those expressly set forth herein. This Agreement may only be amended by mutual agreement of the parties in writing and signed by both parties.
33. SURVIVAL OF TERMS - The provisions of sections 7 (Indemnification), 15 (Audit / Records Access), 16 (Forfeit of Grant Funds / Repayment of Funds Improperly Expended), 18 (Confidentiality), 19 (Intellectual Property Rights), and 20 (Publication) shall survive the expiration or termination of this Agreement.

IN WITNESS WHEREOF, the parties to this Agreement have caused this Agreement to be duly executed on their behalf by their authorized representatives.

BAY AREA AIR QUALITY  
MANAGEMENT DISTRICT

ENERGY COUNCIL

By: \_\_\_\_\_  
Jack P. Broadbent  
Executive Officer/APCO

By: \_\_\_\_\_  
Timothy Burroughs  
Executive Director

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Approved as to form:  
District Counsel

By: \_\_\_\_\_  
Adan Schwartz  
Acting District Counsel

DRAFT

## ATTACHMENT A

### WORK PLAN

#### Overview

The Bay Area Healthy Homes Initiative (“INITIATIVE” or “program”) seeks to build on and expand the Asthma Mitigation Project pilot effort in Contra Costa County, which is run by Contra Costa Public Health in partnership with Association for Energy Affordability (“AEA”). The INITIATIVE seeks to improve health outcomes for Contra Costa and Alameda County residents living in communities disproportionately impacted by air pollution by integrating multiple interventions that address cumulative air pollution burden. DISTRICT was awarded nearly \$2 million from the Automobile Emissions Research and Technology Fund by the California Attorney General’s Office for the INITIATIVE and will disburse these funds through grant agreements to GRANTEE, Contra Costa Health Services, AEA, and County of Alameda (“Asthma Start”) (collectively referred to as “program partners”) to implement the INITIATIVE. Program partners will collaborate in the implementation of core areas of the program including home asthma education and trigger assessments, energy efficiency assessments, provision of consumer supplies, equipment, and services, home retrofits, and indoor air monitoring. Anticipated outcomes include improved indoor air quality, decreased energy usage, reduced greenhouse gas (GHG) emissions, and improved health outcomes in program participants’ households.

GRANTEE, as a program partner of the INITIATIVE, will recruit and refer program participants for the resident selection pathway through outreach and engagement in Alameda and Contra Costa Counties, and provide information on scaling this program to residents beyond those provided for by the current available funds for the program.

#### **Task 1: Outreach and Engagement**

GRANTEE will create and disseminate outreach materials to raise awareness of the INITIATIVE and to recruit program participants for the resident selection pathway in Alameda and Contra Costa Counties. Program participants of the resident selection pathway must meet the following eligibility criteria:

1. Reside in a household within a community overburdened with air pollution emissions (especially particulate matter (PM) 2.5 and diesel PM) as defined by being within one of the census tracts in the top 30% identified by CalEnviroScreen 4.0 scoring; and
2. Reside in a household within 1,000 feet of freeways, major transportation corridors, or large transportation sources – as indicated on a map provided by DISTRICT.

#### *Task 1a: Develop Materials for Public Outreach and Engagement*

In collaboration with Asthma Start and AEA, GRANTEE will create materials to inform the public about the INITIATIVE and to provide the public with information to recruit potential program participants meeting the eligibility criteria for the resident selection pathway. GRANTEE will work with the DISTRICT and program partners to ensure that the messaging is consistent across all program partners. Outreach will include methods such as workshops for combined single-family and multi-family housing, direct phone calls, letters, and e-mails sent to building owners. GRANTEE will host a total of four in person or virtual workshops for single-family and multi-family building owners (one per year in each Alameda and Contra Costa counties). GRANTEE will develop templates for letters and emails to be sent to home and building owners. GRANTEE will include a Call-to-Action link in outreach letters and e-mails for potential participants to sign up for the program.

#### *Deliverables 1a:*

1. Electronic copies of all outreach materials disseminated, due by March 31, 2023 and any updates by September 30, 2023.
2. Supporting documentation, such as dates, agendas, number of attendees (or copies of sign-in sheets), handouts for workshops and summaries of phone call logs, due by March 31, 2023 and updates by September 30, 2023.

*Task 1b: Recruit Program Participants Eligible for the Resident Selection Pathway*

GRANTEE will recruit program participants (up to 750-1000 units in 5-15 multi-family buildings) in both Contra Costa and Alameda Counties for the resident selection pathway. GRANTEE will refer eligible program participants to AEA so that AEA can assess and implement home retrofits needed to increase the energy efficiency of the home, and to prevent residents' exposure to outdoor air pollution. GRANTEE will send two to four bulk letters and four to eight mass e-mails to home and building owners to recruit participants.

*Deliverable 1b:*

1. List with information about program participants recruited, such as addresses and/or locations on a map and documentation of participant eligibility, due quarterly beginning July 1, 2022.
2. Electronic copies of two to four bulk letters and four to eight mass emails sent to home and building owners to recruit participants.

**Task 2: Program Scaling**

GRANTEE will provide DISTRICT with an estimate of the total need for the resident selection pathway within Alameda and Contra Costa Counties and with any lessons learned and potential solutions that should be considered when scaling county-wide and to the San Francisco Bay Area, beyond the scope of this agreement.

*Task 2a: Overall Program Need*

GRANTEE will provide data on the total number of eligible people, beyond the scope of this agreement, that would benefit from the program in all Bay Area counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Sonoma, Solano. The data will include the number of potential program participants based on the eligibility criteria for the resident selection pathway.

*Deliverables 2a:*

1. Initial estimate of data and description of how the data were determined (e.g., data sources, calculations, etc.), due by September 30, 2022.
2. Refined estimate of data, with description of data provided and how the estimates were determined (e.g., data sources, calculations, etc.), due by March 30, 2024.

*Task 2b: Lessons Learned*

GRANTEE will submit a narrative in the final report describing lessons learned and strategies to increase participant recruitment for the program.

*Deliverable 2b:*

1. Document describing lessons learned applicable to Program Scaling, including anecdotes, as appropriate, due by April 30, 2024.

**Task 3: Final Accounting and Reporting**

GRANTEE shall provide a final report summarizing all Task deliverables, outcomes of the program, and lessons learned. The Final Report shall be prepared on the DISTRICT’s Final Report form (provided separately).

GRANTEE shall conduct accounting that demonstrates the amount of DISTRICT funds allocated to outreach and recruitment measures versus programmatic costs, as well as leveraged funds and incentives.

*Deliverables 3:*

1. Final report, due by April 30, 2024.
2. Accounting sheet, itemizing how all funds were used, due by April 30, 2024.

**Quarterly Progress Reporting:**

Beginning thirty (30) calendar days after execution of the agreement, every April 15, July 15, October 15 and January 15 until the end of the Term, GRANTEE shall provide quarterly progress reports describing GRANTEE’s progress toward completion of the work outlined above.

**Reporting and Grant Payment Schedule for Grant Funds**

Payment of grant funds shall be contingent upon DISTRICT’s approval of GRANTEE’s quarterly progress reports and final report. DISTRICT approval will take into consideration adequate progress in implementing program tasks to meet the milestones set forth below. DISTRICT shall pay GRANTEE its grant payments upon receipt and approval of GRANTEE’s quarterly reports and final report demonstrating that the applicable program milestones have been met as provided in Section 8 of this Agreement.

Milestone	Required Program Progress	Completion Date	Report	Payment
1	Task 1 – initiated Task 2 - initiated	6/30/22	Quarterly progress report (QPR) #1 (7/15/22)	\$2,500
2	Task 1 – continued Task 2 – continued	9/30/22	QPR #2 (10/15/22)	\$2,500
3	Task 1 – continued Task 2 – continued	12/31/22	QPR #3 (1/15/23)	\$2,500
4	Task 1 – continued Task 2 – continued	3/31/23	QPR #4 (4/15/23)	\$2,500
5	Task 1 – continued Task 2 – continued	6/30/23	QPR #5 (7/15/23)	\$2,500
6	Task 1 – continued Task 2 – continued	9/30/23	QPR #6 (10/15/23)	\$2,500
7	Task 1 – continued Task 2 – continued	12/31/23	QPR #7 (1/15/24)	\$2,500
8	Task 1 – completed Task 2 – completed Task 3 – completed	3/31/24	Final Report (4/30/24)	\$2,500

**Total grant payments not to exceed \$20,000.**

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

## Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Set a Public Hearing for April 6, 2022, to Consider Adoption of Proposed New Regulation 13: Climate Pollutants, Rule 5: Industrial Hydrogen Plants (Rule 13-5) and amendments to Regulation 8: Organic Compounds, Rule 2: Miscellaneous Operations (Rule 8-2), and Certification of an Environmental Impact Report for Rule 13-5 and Approval to File a Notice of Exemption for Rule 8-2 Pursuant to the California Environmental Quality Act (CEQA)

**RECOMMENDED ACTION**

Set a Public Hearing for April 6, 2022, to Consider Adoption of Proposed New Regulation 13: Climate Pollutants, Rule 5: Industrial Hydrogen Plants (Rule 13-5) and amendments to Regulation 8: Organic Compounds, Rule 2: Miscellaneous Operations (Rule 8-2), and Certification of an Environmental Impact Report for Rule 13-5 and Approval to File a Notice of Exemption for Rule 8-2 Pursuant to the California Environmental Quality Act (CEQA).

**BACKGROUND**

The Air District has a policy goal of reducing Bay Area greenhouse gas emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050. Methane is a potent and short-lived climate pollutant with a global warming potential 86 times greater than that of carbon dioxide, when compared on a 20-year time horizon. The intent of Proposed Rule 13-5 is to minimize both methane and other organic compound emissions, normally emitted from atmospheric vents at industrial hydrogen plants during normal operating conditions, startups, shutdowns, malfunctions, upsets, and emergencies. Staff is also proposing to amend Rule 8-2 to exempt those hydrogen plant sources that meet the emissions standards expressed in section 301 of Proposed Rule 13-5, and to amend section 601 to allow for approved alternate test methods for facilities that process non-petroleum feedstock consistent with recent refinery rule revisions.

The Air District held a public workshop at its headquarters in San Francisco in January 2020 to present and discuss draft regulatory language for Proposed Rule 13-5, along with a workshop report. Based on comments received and additional research, Air District staff revised draft Rule 13-5 to address concerns and comments raised by stakeholders and published a revised version of draft Proposed Rule 13-5 and the associated Preliminary Staff Report in September 2020.



The Air District received comments on the September 2020 version of the revised draft rule and subsequently updated the draft rule language to accommodate reasonable concerns related to definitions, testing methods, monitoring, reporting, and compliance timelines. On June 30, 2021, the Air District released a request for comments along with the updated draft rule language, as well as a California Environmental Quality Act (CEQA) Notice of Preparation of a Draft Environmental Impact Report and an Initial Study (NOP/IS). Air District staff hosted a scoping meeting held in a virtual format on Tuesday, July 27, 2021, and accepted comments on the revised rule language and CEQA NOP/IS through July 30, 2021. In September 2021, Air District staff met with refinery staff to better understand potential emissions reduction measures that might be implemented to comply with Proposed Rule 13-5 in lieu of flaring. On October 20, 2021, the Air District met with the Western State Petroleum Association and refinery staff to discuss the potential challenges and issues related to monitoring emissions from carbon dioxide scrubbing and deaerator vents. In response to feedback from the public, regulated community, and internal staff, along with that of the Board of Directors, Air District staff prepared the Proposed Rule 13-5, Staff Report, and Draft Environmental Impact Report.

On Monday, January 24, 2022, Air District staff released a Notice of Public Hearing, Notice of Completion and Availability of a CEQA Draft Environmental Impact Report, Proposed Rule 13-5, Proposed Amendments to Rule 8-2, Staff Report, Socioeconomic Impact Analysis, and other supporting documents. Written comments on the Draft Environmental Impact Report will be accepted until March 10, 2022, the deadline for the 45-day written comment period required by CEQA.

## DISCUSSION

### *Proposed New Rule 13-5: Industrial Hydrogen Plants*

Proposed Rule 13-5 is designed to reduce methane and other organic compounds—referred to as “total organic compounds”—from industrial hydrogen plant operations. The Proposal will require that, within six years from adoption, each atmospheric vent at an industrial hydrogen plant meet a combined emission standard for total organic compounds of 15 pounds per day and 300 parts per million by volume (ppmv), except for deaerator and carbon dioxide vents.

Proposed Rule 13-5 also provides an alternative compliance option whereby an affected facility could opt to reduce the overall emissions of methane and other greenhouse gases by 90 percent via an approach approved by the Air District. An Alternative Compliance Plan prepared by the owner or operator of an industrial hydrogen plant would detail the measures undertaken to achieve these emissions reductions. It should be noted that only the hydrogen plants at PBF Energy (PBF) and Valero refineries are anticipated to require modifications to comply with the emission standards of the proposal and that the three other Bay Area refineries would not be impacted by the emission standards of the rule but may be impacted by other requirements of Proposed Rule 13-5. Proposed Rule 13-5 includes reporting requirements for owners or operators to notify the Air District of hydrogen plant atmospheric venting occurrences when total organic compound emissions exceed 15 pounds per day and the concentrations exceed 300 ppmv measured as methane on a dry basis.

The operator of an industrial hydrogen plant subject to the Proposed Rule 13-5 would have to monitor and record all parameters necessary to demonstrate compliance with the provisions contained in the standards section of the rule. Hydrogen plant atmospheric vents would be required to have flowrate meters installed. Operators of hydrogen plant deaerator vents and carbon dioxide scrubbing vents would have to install flowrate meters, recorders, and sampling ports, and must monitor total organic compound emissions. Because atmospheric venting from a pressure swing absorption unit that is properly maintained and operated should never exceed the total organic compound atmospheric vent emission standards of Proposed Rule 13-5, the owner or operator of a hydrogen plant with a pressure swing absorption vent would not be required to maintain emission records from the pressure swing absorption vent unless the unit malfunctions, which would likely lead to an exceedance of the vent emissions standards.

#### *Proposed amendments to Rule 8-2: Miscellaneous Operations*

Staff is proposing to exempt sources that are subject to the atmospheric vent emission standard of Proposed Rule 13-5 from the requirements of Rule 8-2. This is because the vent emissions standard contained in Proposed Rule 13-5 is more stringent than the general emission standard contained in Rule 8-2, which only addresses organic compounds excluding methane. Facilities complying with Proposed Rule 13-5 through the alternative compliance option would remain subject to Rule 8-2 because this option applies to only methane.

Staff is also proposing amendments to Rule 8-2 to allow for alternative test methods to ensure that facilities that process non-petroleum products utilize the appropriate test methods for the materials that are being processed. This additional amendment to Rule 8-2 is being made at this time to be consistent with other recently amended rules and is unrelated to Proposed Rule 13-5.

Air District staff released Proposed Rule 13-5, Proposed Amendments to Rule 8-2, Staff Report, Socioeconomic Impact Analysis, Notice of Public Hearing, Notice of Completion and Availability of a CEQA Draft Environmental Impact Report, and other supporting documents for public review and comment. The materials are available on the Air District's website at: <https://www.baaqmd.gov/rules-and-compliance/rules/reg-13-rule-5-petroleum-refinery-hydrogen-plants>.

#### BUDGET CONSIDERATION/FINANCIAL IMPACT

Staff anticipates implementation of Proposed Rule 13-5 and Proposed Amendments to Rule 8-2 will require additional staff time and resources in a number of areas. The Engineering Division would need two additional full-time equivalents (FTEs); the Compliance and Enforcement Division would need one additional FTE; and the Meteorology and Measurements Division would need one FTE for a total of four FTEs. The Air District will evaluate whether Regulation 3: Fees will need to be updated to ensure consistency and cost recovery when incorporating the increased administrative time that will be necessary to process applications to comply with the provisions of the Proposed Rule 13-5.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Robert Cave and Alex Sohn  
Reviewed by: David Joe and Elizabeth Yura

ATTACHMENTS:

None

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Report of the Advisory Council Meeting of February 14, 2022

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

None.

DISCUSSION

The Advisory Council met on Monday, February 14, 2022, and approved the minutes of December 13, 2021. This meeting was conducted under procedures authorized by Assembly Bill 361. Members of the Council participated by teleconference.

The Council then received the staff presentation *Building Appliance Rules: Benefits to Outdoor Air Quality and Health*, which explain the results of a modeling-based evaluation of outdoor air quality and health benefits of proposed amendments to rules on natural gas-fired space heaters, water heaters, and boilers.

The Council then received the staff presentation *Regulatory Toolbox and Particulate Matter Health Impacts Methodology*, explaining the Air District's regulatory tools and how they relate to the development of a Particulate Matter<sub>2.5</sub> local risk methodology.

Finally, the Council received the staff presentation *2022 Advisory Council Work Plan Review*. The workplan proposed to focus on four key elements:

- Working with Air District staff and other external experts to develop a standard methodology to assess the impacts of fine particulate matter<sub>2.5</sub> exposure.
- Developing a strategy to address combustion sources culminating in a report to the Board of Directors by the end of the year.

- Addressing questions raised by the Community Advisory Council about air pollution and health.
- Reviewing and commenting on other Air District staff work developed to support key decisions by the Board of Directors.

The next meeting of the Council will be held at the Call of the Co-Chairs, via webcast, pursuant to procedures in accordance with Assembly Bill 361. This concludes the Chair Report of the Advisory Council meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Marcy Hiratzka  
Reviewed by: Vanessa Johnson

ATTACHMENTS:

1. Advisory Council February 14, 2022 Meeting Memorandums

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

## Memorandum

To: Chairpersons Linda Rudolph and Gina Solomon, and Members  
of the Advisory Council

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 14, 2022

Re: Building Appliance Rules: Benefits to Outdoor Air Quality and Health

**RECOMMENDED ACTION**

None; receive and file.

**BACKGROUND**

The Air District's 2017 Clean Air Plan identifies the importance of reducing nitrogen oxide (NO<sub>x</sub>) emissions from residential appliances; these sources are responsible for a significant portion of total NO<sub>x</sub> emissions in the Bay Area. To reduce these emissions, Air District staff recently crafted draft amendments to Regulation 9, Rule 4: Nitrogen Oxides from Fan Type Residential Central Furnaces ("Rule 9-4") and Regulation 9, Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Boilers and Water Heaters ("Rule 9-6"). In the near term, these draft rule amendments include low-NO<sub>x</sub> requirements. In the longer-term (initial compliance dates from 2027 to 2031), they introduce a zero-NO<sub>x</sub> requirement. In practice, a zero-NO<sub>x</sub> standard would be expected to eliminate combustion emissions from new equipment and encourage adoption and development of alternative technologies for building appliances in the Bay Area. Air District staff plan to bring the proposal for adoption of the draft amendments to the Board of Directors in the summer of 2022.

As supplemental information to support the development of Rules 9-4 and 9-6, Air District staff have conducted a modeling-based evaluation of the impacts of natural gas combustion from residential and commercial space heaters, water heaters, and boilers. This evaluation quantifies benefits to outdoor air quality and health from the rules. It includes an estimate of the health benefits of reductions in secondary fine particulate matter (PM<sub>2.5</sub>) that would result from reducing NO<sub>x</sub>. It also includes an estimate of the health benefits of reductions in total PM<sub>2.5</sub> (directly emitted and secondary) from eliminating all natural gas combustion emissions from these building appliances. This item presents progress to date on the modeling-based evaluation.

## DISCUSSION

Air District staff applied its regional air quality modeling system to estimate air pollution levels in a baseline emissions scenario and a control emissions scenario, with reductions in the control scenario matching emission estimates from natural gas-fired building appliances covered under Rules 9-4 and 9-6. Differences between baseline and control scenarios provided an estimate of the building appliance contributions to outdoor air pollution. Differences in PM<sub>2.5</sub> were used as inputs to the US Environmental Protection Agency's (EPA) Benefits Mapping and Analysis Program (BenMAP) to estimate health benefits from the proposed rules and monetary valuations associated with those benefits. Methods applied for this Bay Area study were similar to those applied in prior studies of the benefits of eliminating natural gas combustion in building appliances in the U.S. and in California. This presentation includes a summary-level comparison to those prior studies, in terms of methods and findings.

Modeled benefits of eliminating primary and secondary PM<sub>2.5</sub> generated by natural gas-fired combustion from the building appliances targeted in amendments to Rules 9-4 and 9-6 included the prevention of 39 to 89 premature deaths per year, with lower and upper estimates corresponding to the set of functions used by the US EPA to link PM<sub>2.5</sub> concentrations to health outcomes. Modeled benefits also included reductions in many non-fatal adverse health outcomes, such as heart attacks, strokes, and asthma onset and symptoms. The total valuation of all modeled health benefits was estimated to be between 410 and 930 million dollars per year. About 60% of the estimated benefits were attributed to reductions in secondary PM<sub>2.5</sub>.

Under this item, staff will seek Advisory Council guidance on ideas for refining health impact evaluations, for enhancing presentation materials, and for identifying productive next steps. Because this study may serve as a prototype for future assessments, such guidance may find broader application in the Air District's future work. One next step, currently underway, is an equity assessment to evaluate exposures of residential populations, by race and ethnicity, to identify who is most and least exposed to the PM<sub>2.5</sub> generated by the building appliances covered under the proposed rule amendments. Staff will specifically invite Advisory Council suggestions and ideas on well-designed and informative equity assessment methods, examples, and clear visual representations and framings of findings.

## BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Phil Martien  
Reviewed by: Greg Nudd

ATTACHMENTS:

None.

ADVISORY COUNCIL MEETING  
OF 02/14/2022



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairpersons Linda Rudolph and Gina Solomon, and Members  
of the Advisory Council

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 14, 2022

Re: Regulatory Toolbox and PM Health Impacts Methodology

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The 2020 Advisory Council researched and provided a report to the Air District Board of Directors on particulate matter at a joint meeting of the Advisory Council and Board of Directors in December 2020. In 2021, the Advisory Council received a presentation on particulate matter health impacts.

This report highlighted the significant health impacts of localized exposure to fine particulate matter (PM<sub>2.5</sub>). Unfortunately, the current tools for regulating air pollution do not adequately address these impacts. The Air District has been working with the Office of Environmental Health Impacts Assessment, the California Air Resources Board, and the U.S. Environmental Protection Agency on a new methodology for quantifying the localized health impacts of PM<sub>2.5</sub>. A detailed white paper on the draft methodology is attached.

DISCUSSION

In order to guide the development of the PM<sub>2.5</sub> health impacts methodology, it's important to understand the regulatory context in which that methodology is likely to be used.

The Air District's regulatory authority over stationary sources of air pollution can be described by three complimentary approaches:

- **New Source Review Permitting**—New Source Review applies to new and modified sources; any significant modifications at a regulated stationary source trigger a new source review. Smaller sources may be exempt from permitting because they are individually not significant contributors to regional air pollution.

- **Regulations for Existing Sources**—Regulations for Existing Sources require feasible emissions reductions at existing sources and usually require retrofits. Regulations of Existing Sources may include emission limits or health impact limits.
- **Point-of-Sale Rules**—Point-of-Sale Rules set emissions performance limits for air pollution-emitting products sold and used within the Air District’s jurisdiction. Examples of this include volatile organic compound limits on architectural coatings or nitrogen oxides limits on residential space and water heaters.

The Air District's regulatory authority is limited to stationary sources. Mobile sources are regulated under the jurisdiction of the California Air Resources Board (CARB) and/or the U.S. Environmental Protection Agency. In addition, there must be technically feasible mechanisms for reducing emissions and the source or source category must significantly contribute to emissions and/or health risk.

The Air District’s work on the development of a PM2.5 local risk methodology will fill gaps in the Air District’s regulatory tools and strengthen the Air District’s ability to reduce emissions. As the Air District develops this methodology, it must consider key questions including the following:

- Focus on mortality or include other health endpoints?
- How to incorporate baseline incidence rates?

Air District staff will provide a detailed presentation and request the Advisory Council’s input and feedback.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Sonam Shah-Paul  
Reviewed by: Greg Nudd

ATTACHMENTS:

1. BAAQMD Modeling Local Sources of Fine Particulate Matter (PM2.5) for Risk Management Methodology, Implementation, and Case Studies

ADVISORY COUNCIL MEETING  
OF 02/14/2022

Modeling Local Sources of Fine Particulate Matter  
(PM<sub>2.5</sub>) for Risk Management  
Methodology, Implementation, and Case Studies

Bay Area Air Quality Management District (BAAQMD)

DRAFT | January 6, 2022

ADVISORY COUNCIL MEETING  
OF 02/14/2022  
DRAFT

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## Authors and Contributors

This report has benefited from extensive collaboration, and we thank all those who have contributed. This work builds on earlier work at the Air District integrating BenMAP with regional air quality modeling assessments.

Yuanyuan Fang was the primary author of the first draft, and the primary author of an early second draft. Yuanyuan ran the U.S. EPA's Environmental Benefits Mapping and Analysis Program-Community Edition (BenMAP-CE) and produced data, code, and draft figures for the case studies.

David Holstius served as the primary author of this draft. David was an early consultant to this work and took a lead role in documenting and exploring the methodology, including the development of supplemental material.

Judith Cutino helped to develop contacts, especially within the Office of Environmental Health Hazard Assessment (OEHHA), and drafted a letter requesting OEHHA participation.

Phil Martien served as a consultant, reviewer, and project coordinator.

Neal Fann and Ken Davidson at the US Environmental Protection Agency (US EPA) provided technical training, support, and consultation on BenMAP-CE software, which they and their team developed. Lauren Zeise, Rupa Basu, and their team at the Office of Environmental Health Hazard Assessment (OEHHA) lent their expertise concerning health-impact functions. Both US EPA and OEHHA staff reviewed and provided extensive comments on an early draft of this document that helped strengthen this report and methodology.

Amy Kyle, Consulting Scientist in Health and Environment, reviewed a previous



version and provided insightful comments and suggestions.

The Bay Area Air Quality Management District's Advisory Council, through their deliberations and recommendations, have spurred additional action in protecting Bay Area residents from the adverse health impacts of fine particulate matter.

Finally, many members of the Bay Area public and representatives of community and environmental organizations have long advocated for additional stringency in regulating sources of air pollution that impact community health. This proposed methodology has benefited from their input and advocacy, and is intended to advance the protection of public health through the quantification and management of risks posed by local sources of fine particulate matter.

ADVISORY COUNCIL MEETING  
OF 02/14/2022

# Executive Summary

The Bay Area Air Quality Management District (BAAQMD) has assembled a draft methodology for use in managing health risks posed by specific sources of fine particulate matter ( $PM_{2.5}$ ) at the community level. Its primary purpose is to inform  $PM_{2.5}$  air quality assessments and policies designed and implemented by local air quality agencies, including technical assessments, regulations, and plans to reduce local  $PM_{2.5}$  emissions and exposures.

In this whitepaper, we focus on adult mortality from long-term exposures, guided primarily by evidence and methods reviewed, summarized, and applied by the US EPA (US EPA 2019, 2021b, 2021a). We also focus on modeling a certain class of facilities: those with inventoried  $PM_{2.5}$  emission rates that are a relatively small fraction of regional totals, but still large enough to be a significant local concern. Compared to the largest permitted stationary sources, such facilities typically have larger exposure factors (impact per ton of emissions). They are often located in closer proximity to residential populations and may not be equipped with the tall, hot stacks associated with the largest sources.

As a proof-of-concept, BAAQMD conducted two case studies, drawing upon recent air quality modeling conducted in support of the recent West Oakland Community Action Plan (BAAQMD and WOEIP 2019). We caution that our purpose in this report is not to attribute impacts or risks to any actual facility. For our case studies, we assumed baseline conditions and population characteristics uniformly equivalent to a Bay Area average, and a relative risk consistent with important cohort studies on which US EPA evaluations are based. With these assumptions, we estimated that  $PM_{2.5}$  emissions from such a facility could be increasing mortality rates by approx-

imately  $+3/M$  (i.e., deaths per million persons per year) per facility, on average, across residential neighborhoods in a community similar to West Oakland in size and composition. The impact at short distances could be on the order of  $+100/M$ . These estimates are for a statistically representative resident of the Bay Area, without any added margin of safety.

Within a larger risk-management context, we recommend that known modifiers of risk be considered. At the time of this writing, for the endpoint we are considering, the US EPA has determined these to include lifestage and race/ethnicity (US EPA 2019, 2021b). We provide information and sensitivity analyses for race/ethnicity alongside the results from our case studies. In the Discussion, we articulate some relevant limitations and tradeoffs in calculations for at-risk groups.

We modeled several metrics of impact: concentrations; relative risks; risk differences; exposures; and burdens. The ideal metric or set of metrics to model and evaluate depends on the functional form and intent of the larger risk-management process. For example: whether it is to be based on a maximum impact or an impact across a local area; whether additional endpoints are to be considered; tolerance for uncertainties and errors of different kinds; and the relative weight placed on other aspects of the process, such as implementation requirements, transparency, and robustness. Some combinations of these argue for a metric based on relative risk; others, for a risk difference; still others, a population-dependent metric such as exposure or burden. Next steps for this work include the assessment, in consultation with risk assessors and managers, of the relative feasibility and fitness-for-purpose of each.

In the text that follows, we explain the components of the framework and how we arrived at the statements above. The explanation is presented in three parts: (1) a description of the general framework and concepts; (2) details of our implementation, including datasets and parameters; and (3) the results of our case studies. We close by discussing the strengths, limitations, and implications of the work, including issues that we are actively working to resolve.

# 1 Introduction

Our purpose in this report is to propose a general methodology, demonstrate its application, and discuss its strengths, limitations, and implications for the practice of regulating fine particulate matter (PM<sub>2.5</sub>) at the community level. National- and regional-scale health impact assessments (HIAs) for PM<sub>2.5</sub> have been conducted for many years (Fann et al. 2011; Howard et al. 2019; Tanrikulu, Tran, and Beaver 2011; Tanrikulu et al. 2019), corresponding to the needs of current regulatory frameworks that focus on reducing regional PM<sub>2.5</sub> levels to meet the National Ambient Air Quality Standards (NAAQS). Continuous observation of ambient PM<sub>2.5</sub> levels, through agencies' official measurement networks, has also been successful in monitoring and verifying the success of policies to reduce average ambient PM<sub>2.5</sub> and meet the NAAQS in many regions, including the Bay Area. However, it has become increasingly clear that gaps left by the NAAQS-centered approach must be addressed.

A gap that this work contributes to closing is the persistent exposure of some communities and populations to locally elevated concentrations of PM<sub>2.5</sub>. Although a large fraction of PM<sub>2.5</sub> is regionally contributed (Blanchard 2004; Robinson et al. 2007), variations in exposure exist within communities (Colmer et al. 2020; Chambliss et al. 2021; Wilson et al. 2005; Blanchard 2004; Eeftens et al. 2012) and have been linked to legacies of structural and institutional discrimination (Morello-Frosch and Lopez 2006; Fisher, Kelly, and Romm 2006; Houston et al. 2004; Houston, Krudysz, and Winer 2008; Quiros et al. 2013; Jacobson, Hengartner, and Louis 2005).

One way to accelerate the closure of this gap may be to introduce a complementary approach to local air quality regulation, one that relies on estimates of health impacts from specific sources at small spatial scales. Such an approach has been taken for

many years to regulate the impacts from toxic air contaminants (TACs) emitted by individually permitted sources, but not the impacts from PM<sub>2.5</sub>.<sup>1</sup>

---

<sup>1</sup>With the exception of diesel exhaust particulate matter (DPM), which is treated as a TAC. DPM is typically a small fraction of total ambient PM<sub>2.5</sub> by mass.

## 2 Concepts and Methods

In this section, we describe a methodology for the estimation of impacts from long-term exposure to  $\text{PM}_{2.5}$  on adult mortality. We introduce the relevant concepts and methods in two parts: first, the general framework; and second, an example implementation of that framework. Its application is illustrated through case studies sited in West Oakland, the results of which are reported in the following section. Additional details and considerations may be found in the Discussion.

### 2.1 General Framework

The general framework proposed here is similar in some ways to a framework that is widely employed in health risk assessments (HRAs) of toxic air contaminants (TACs). For the reader who is already familiar with such HRAs, understanding the similarities and differences may be helpful.<sup>1</sup>

Table 2.1 lists ten elements common to both (a) the proposed framework (“ $\text{PM}_{2.5} \rightarrow$  Mortality”), and (b) the TAC framework (“TAC  $\rightarrow$  Cancer”).<sup>2</sup> Below, we explain each of these elements, comparing and contrasting them with respect to (a) and (b).

---

<sup>1</sup>In comparing the two frameworks, we are not advancing any arguments for any particular legal justification for the regulation of  $\text{PM}_{2.5}$ . Neither are we endorsing the TAC framework, or its use in practice, without reservation. Rather, we are simply illustrating by way of analogy.

<sup>2</sup>For a complete description of the “TAC  $\rightarrow$  Cancer” framework, see OEHHA (2015) and ARB/CAPCOA (2015). See also Appendix B.

Table 2.1: Elements of established and proposed frameworks.

	TAC → Cancer	PM <sub>2.5</sub> → Mortality
Emissions	As inventoried	As inventoried
Concentrations	Modeled ambient (annual average)	Modeled ambient (annual average)
Health Endpoint	Cancer	Mortality
Exposure Duration	Long-term (30 years)	Long-term (chronic)
Population	All ages	Adults
Response Function	Linear	Log-linear, though approximately linear
Intermediate Factors	Linear decomposition into components of exposure and dose (age-dependent)	Not applicable; population responses are estimated directly from ambient concentrations
Effect Size	From toxicological and/or epidemiological studies	From epidemiological studies
Baseline Conditions	Not applicable	Baseline mortality rate
Margin of Safety	Included in slope and unit-risk factors	To be determined

## Emissions and Concentrations

Both frameworks shown in Table 2.1 assume that contributions to near-field ambient concentrations can be adequately estimated using dispersion models. These models rely on user input of pollutant emission rates, release parameters, site conditions, and meteorological conditions to predict annual average concentrations on a user-defined grid of coordinates (“receptor locations”).

In the TAC  $\rightarrow$  Cancer framework, modeled concentrations are weighted by “toxicity factors” that are effectively determined by both the particular TAC and by the scope of the assessment (e.g., inhalation-only *vs* multipathway). This step puts all designated carcinogens on a common scale. In this PM<sub>2.5</sub>  $\rightarrow$  Mortality framework, the intensity of PM<sub>2.5</sub> concentrations is assumed to be adequately captured by a mass-concentration metric (US EPA 2019).

Because of the short distances (and hence, short timescales) involved, we consider here only emissions and transport of primary PM<sub>2.5</sub>, holding aside the complex chemistry involved in the formation of secondary PM<sub>2.5</sub>. While we acknowledge that there is evidence for varying toxicity among PM<sub>2.5</sub> subspecies, we do not yet have enough information to conduct assessments based on subspecies (US EPA 2019, 2021b).

## Health Endpoint

In principle, the mortality endpoint can be evaluated for all age groups, but for reasons explained in Section 2.2, we restricted it to adults  $\geq 30$  years of age.

**Mortality rate.** Dividing mortality (deaths) by population size and time (over which both the deaths and the persons are counted) yields a metric known as the *mortality rate*. Conventionally, annual mortality rates are typically reported as “deaths per 100,000 persons [per year].” For ease of comparison with the TAC  $\rightarrow$  Cancer framework, hereafter we will express them in terms of “deaths per million persons [per



year].”

**Mortality risk.** As a corollary, “*annual mortality risk*” is analogous to what “*annual cancer risk*” would be in the TAC → Cancer framework (which actually evaluates contributions to a *lifetime* risk of cancer.) Risk in a technical sense is the probability of an outcome in a given period of time; the length of time is important, since the lifetime risk of mortality is always 100%.

Although risks to human health are technically only present where exposures are not zero, in practice many stakeholders use the word “risk” to mean risk *conditional* on a “statistically representative person” being exposed. In this whitepaper, we follow that convention.

**Mortality.** Finally, “mortality” (count of deaths [per year]) is analogous to “cancer burden” (count of cases). The equations in the next section estimate mortality *rates* ( $y$ ) — or changes therein ( $\Delta y$ ) — rather than mortality counts. Simply multiplying  $y$  by the size of the population at risk yields mortality instead; likewise, multiplying  $\Delta y$  by the population size yields an estimated change.

## Response Function

A response function—also known as a health impact function, an exposure-response function, or a concentration-response function—expresses a relationship between  $x$  (an independent variable; often but not always “exposure”) and  $y$  (the outcome). In our context,  $x$  is a “unit increment” of exposure to PM<sub>2.5</sub> (e.g., 10 µg/m<sup>3</sup>), while  $y$  is a mortality rate.

Generally, a response function can be written in the form of a mathematical equation, like the ones that follow. In the TAC → Cancer framework, the response function  $y = f(x)$  is linear in  $x$ . This means that an additive change in  $x$  induces, and can only induce, an additive change in  $y$ . In this proposed PM<sub>25</sub> → Mortality framework,

the response function, Equation (2.1), is nonlinear.<sup>3</sup> (See Section 4.4 and Appendix C for discussion.)

$$\begin{aligned}\ln(y) &= \beta x + C \\ y &= \exp(\beta x + C)\end{aligned}\tag{2.1}$$

The term  $e^{\beta \Delta x}$  in Equations (2.2) and (2.3) expresses relative risk (RR), or the *multiplicative* change in  $y$  that is associated with a linear change in  $x$ . However, suppose we are interested in modeling excess risk on an additive scale, as in the TAC  $\rightarrow$  Cancer framework. Let  $\Delta x = x - x_0$  and  $\Delta y = y - y_0$ , where  $x_0$  and  $y_0$  represent the baseline (i.e., existing) PM<sub>2.5</sub> concentration and mortality rate, respectively. Taking  $\Delta x > 0$  to mean an increase in PM<sub>2.5</sub>, and  $\Delta y > 0$  a corresponding increase in  $y$ , we have:

$$y/y_0 = e^{\beta \Delta x}\tag{2.2}$$

$$\Delta y = y - y_0 = y_0 (e^{\beta \Delta x} - 1)\tag{2.3}$$

In the TAC  $\rightarrow$  Cancer framework, because risk is assumed to increase linearly with exposure, “risk” always means “risk difference” (additive scale), never “relative risk” (multiplicative scale). As such, an estimate of baseline risk ( $y_0$ ) is never needed. (See Section 4.5.3 and Appendix A for discussion.)

A delta-response function can offer a more convenient way of evaluating a *change* in impacts, starting with a *change* in PM<sub>2.5</sub>. This can be evaluated either on a multiplicative scale, as in Eq (2.2), or on an additive scale, as in Eq (2.3). In either case, when a source does not yet exist, we can set  $\Delta x$  in Eq (2.2) or (2.3) proportional to the potential PM<sub>2.5</sub> concentrations attributable to that source, or to a proposed

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<sup>3</sup>Note:  $C$  is a constant offset, not an ambient concentration.

increase. When a source already exists, we may wish to estimate the benefit from a potential reduction in emissions. The same equations can be used; the signs on  $\Delta x$  and  $\Delta y$  should be positive, corresponding to reductions in emissions and damages respectively.<sup>4</sup>

## Effect Size, Exposure, and Dose

The *effect size*, or the change in  $y$  associated with a unit change in  $x$ , is represented in Equations (2.2) and (2.3) by the term  $\beta$ . Typically,  $\beta$  will be based on an epidemiological study in which ambient  $\text{PM}_{2.5}$ , measured or estimated at some locations, was the independent variable. This means that  $\beta$  will encompass all of the factors (indoor/outdoor ratios, breathing rates, fractions of time at home, etc.) that lay on the causal pathways between ambient  $\text{PM}_{2.5}$  and mortality for the population that was studied. Generally, epidemiological studies estimate  $\beta$  by adjusting for other measured factors in such a way that  $\beta$  will (ideally) approximate the causal effect of  $x$  alone. Most such studies report an estimated risk ratio, such as a relative risk (RR), hazard ratio (HR), or odds ratio (OR), for a given increment of  $\text{PM}_{2.5}$  (such as  $+10 \mu\text{g}/\text{m}^3$ ). In the equations above,  $\beta$  is effectively the natural logarithm of that risk ratio.

## Baseline Conditions

In Equation (2.3), the parameter  $y_0$  stands for the baseline mortality rate. It is not the mortality rate that would exist in the absence of any  $\text{PM}_{2.5}$ , but rather the mortality rate in the world as-is. Issues related to obtaining or estimating  $y_0$  do not arise in the TAC  $\rightarrow$  Cancer framework, which is independent of baseline conditions.

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<sup>4</sup>In some settings, a positive  $\Delta x > 0$  is instead taken to mean a reduction, rather than an increase. Similarly, a positive  $\Delta y > 0$  is instead interpreted as beneficial, rather than harmful. For such an interpretation, the appropriate form of the equation is  $\Delta y = y_0(1 - e^{-\beta \Delta x})$ . See Appendix C for details.

These are discussed in Section 4.5.3.

Estimates of baseline rates can be allowed to vary by subgroup. This may sometimes, but not always, be protective of at-risk populations; Section 3.3 illustrates this paradox using example data.

## Conceptual Diagram

Figure 2.1 is a conceptual diagram of the relationships between the concepts and metrics described above. Generally, these increase in complexity as one moves from top to bottom. Figure 2.1 also serves as a guide to the next full section (Results and Case Studies).

**Concentrations and Relative Risks.** We begin with a spatially resolved map of predicted *concentrations*, which itself depends on emissions and meteorology (not shown). With an estimated effect size ( $\beta$ ) that is spatially invariant and population-average, we can apply Eq (2.2) to generate a map of *relative risk* that looks essentially the same.<sup>5</sup> This relative risk can itself be visualized as a smooth surface or converted to contour lines (see Figure 3.1 for an example).

**Risk Differences.** We can then incorporate a constant baseline ( $y_0$ ) to arrive at a *risk difference* map. Since our case studies do not cross county lines, we can readily adopt either a county-specific baseline, or a regional average; for our case studies, we opt for the former.

It is also possible to estimate a “local” baseline rate by combining stratified<sup>6</sup> county-level rates with similarly stratified block-level population counts. This option requires the determination of a “local” boundary (i.e., which blocks to include in an assessment). We do not take that path here, but we report such an estimate for the purposes

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<sup>5</sup>The units will be different, of course, and there will be some nonlinear warping of the surface, but the apparent difference is small and the shapes of contours do not change.

<sup>6</sup>Commonly-used strata include age, sex, and race/ethnicity. Any combination is possible.

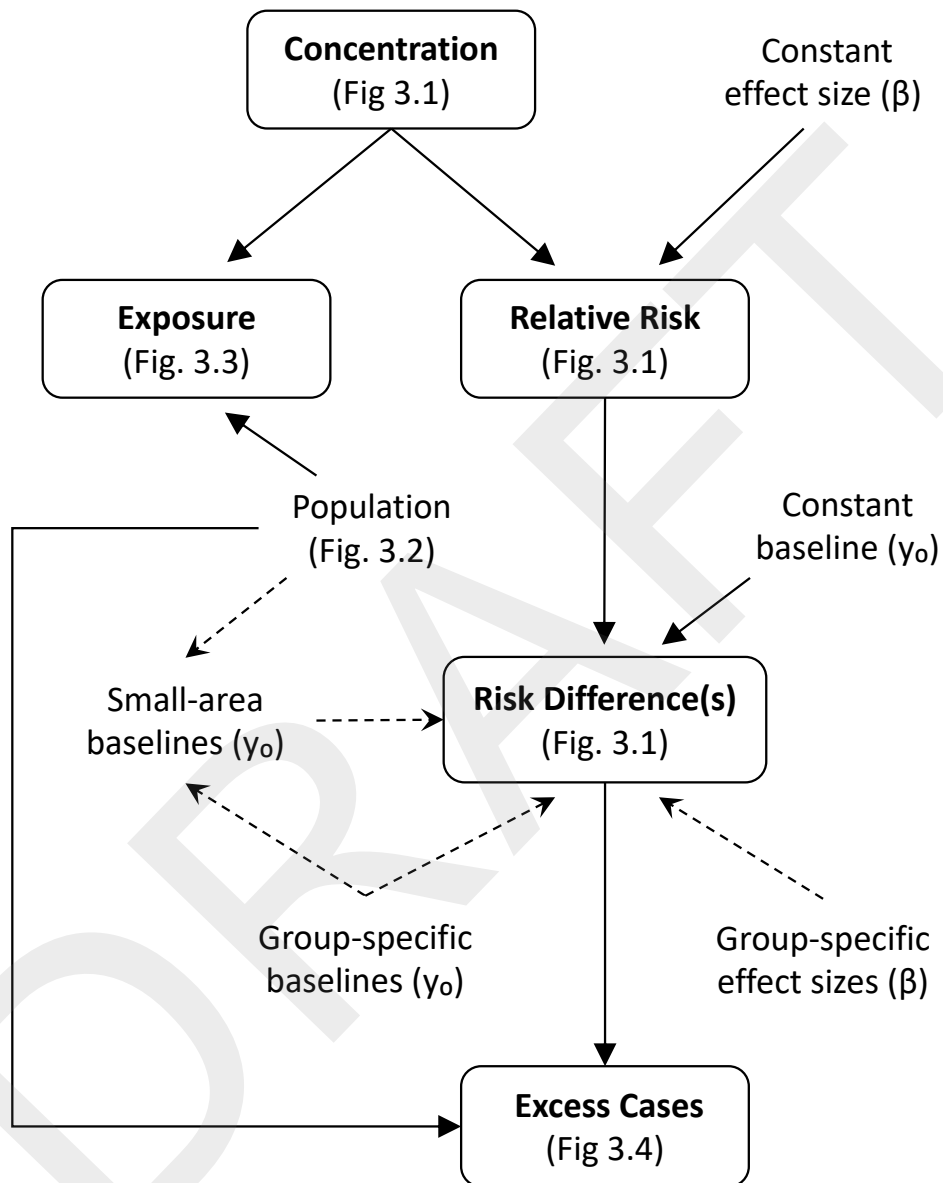


Figure 2.1: Pathways to the construction of spatially-resolved predictions of: ambient concentrations, population exposures, excess risk, and excess cases of, e.g., mortality. Dashed lines indicate certain options that can increase the specificity of predictions, potentially at some cost to reliability or feasibility. Tradeoffs and recommendations, as well as enhancements not depicted here, are taken up in the Discussion.

of sensitivity analysis.

**Constant vs Group-Specific Parameters.** To construct maps of population-average relative risks or risk differences, we do not require data on the spatial distribution, composition, and/or risk factors of the local population. We can think of these as estimates of the excess risk *conditional on* a “statistically average person” being exposed.

It is also possible to incorporate group-specific effect sizes and baselines into risk-difference maps, which in effect generates maps of risks for different hypothetical populations. We do not take that path here, for reasons articulated in the Discussion, but we supply Table 2.4 and accompanying results in order to demonstrate that incorporating some baseline variation alone, without considering effect modification, is not necessarily protective of at-risk populations.

**Exposure and Excess Mortality.** Excess mortality (deaths) can be calculated by combining a risk-difference estimate with population-density data. This is conceptually equivalent to combining estimates of relative risk and exposure.

The Discussion covers additional considerations relevant to risk management, decision-making, and the selection and/or combination of appropriate metrics. The next section outlines the specifics of our implementation, including parameters and datasets that we used to construct our case studies.

## 2.2 Implementation and Case Studies

Our implementation has three kinds of elements: first, the input data; second, our additional assumptions; and third, the methods and tools used to calculate results. From a procedural perspective, we can also think of these as comprising:

- Estimates of  $\text{PM}_{2.5}$  emissions from the BAAQMD inventory;

- The dispersion model AERMOD;
- US EPA methodology, consistent with its BenMAP implementation (US EPA 2021a, 2021c);
- Estimate(s) of effect sizes; and
- Estimate(s) of baseline mortality rates (for risk differences) and/or population (for exposure and burden).

To illustrate the application of this methodology, we conducted two case studies. Each simulated a single facility having multiple sources of PM<sub>2.5</sub> emissions. We caution that these simulations are intended to illustrate and explain our implementation, rather than to quantify the actual impacts of any actual facility. For a discussion of the representativeness of these case studies, see Section 4.10.

## West Oakland

Our case studies focus on West Oakland, a community in the San Francisco Bay Area (Figure 2.2). West Oakland has previously been the subject of relatively extensive air quality measurement studies and modeling efforts — see, for example, the West Oakland Community Action Plan (BAAQMD and WOEIP 2019) and its supporting projects, including a regional-scale photochemical model developed by BAAQMD (Tanrikulu et al. 2019).

There is one BAAQMD-run air quality monitoring site in West Oakland, and another nearby at Laney College (Figure 2.2). In recent years (2016-2018), three-year average PM<sub>2.5</sub> concentrations at these two sites have ranged from approximately 9 to 12  $\mu\text{g}/\text{m}^3$  (US EPA 2020).<sup>7</sup> For comparison, in a recent modeling assessment conducted at 1×1km scale, simulated annual average PM<sub>2.5</sub> concentrations across West Oakland varied from approximately 7 to 9  $\mu\text{g}/\text{m}^3$  (Tanrikulu et al. 2019).

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<sup>7</sup>The upper end of this range has been significantly influenced by wildfires. The main point is that, in terms of magnitude, average ambient PM<sub>2.5</sub> concentrations in West Oakland are much closer to 10  $\mu\text{g}/\text{m}^3$  than 100  $\mu\text{g}/\text{m}^3$ .

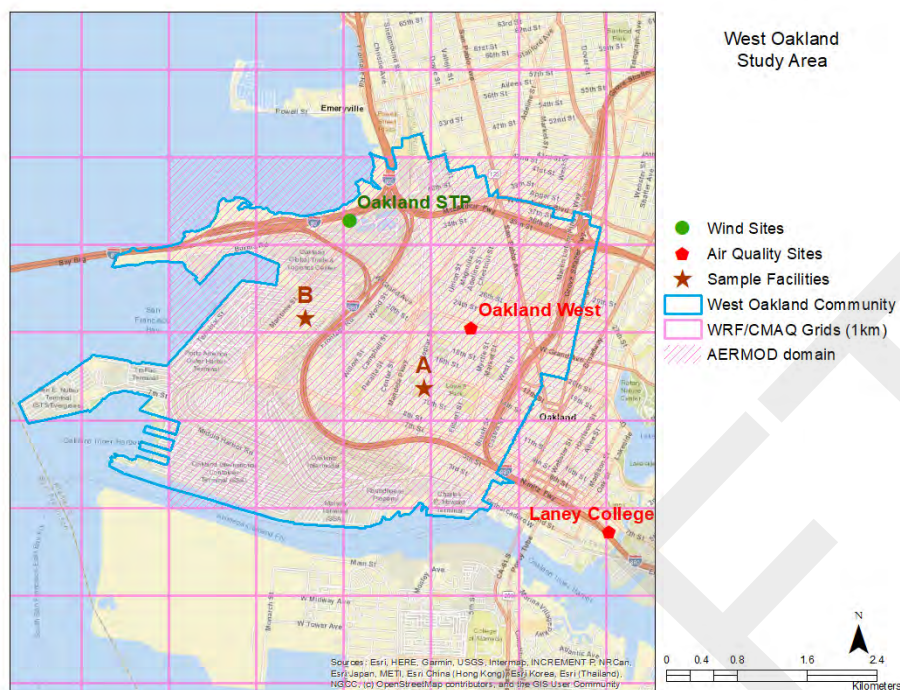


Figure 2.2: Map of the West Oakland study area

## Emissions

Estimated  $PM_{2.5}$  emission rates (Table 2.2) were taken from BAAQMD’s emission inventory. These were derived by applying source-specific or category-specific specification factors ( $PM_{2.5} / PM_{10}$ ) to inventoried estimates of  $PM_{10}$ . We note that they have not been evaluated against direct measurements of  $PM_{2.5}$  from these specific sources. For further discussion, see Sections 4.10 and 4.12.

## Modeled $PM_{2.5}$

To generate estimates of the primary  $PM_{2.5}$  attributable to modeled sources, we used the AERMOD model (US EPA 2018) to predict directly attributable ambient  $PM_{2.5}$  concentrations ( $\Delta PM_{2.5}$ ) on a  $20 \times 20$  m scale for each source at each facility. AERMOD is a steady-state plume model that incorporates air dispersion based



Table 2.2: Emissions from modeled sources, as inventoried.

Facility	Source Type	Emissions (ton/yr)
Facility A	Stack	0.002
	Stack	0.010
	Stack	0.000
	Fugitive	0.564
Facility B	Fugitive	0.714
	Fugitive	0.769

on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources. Details regarding our AERMOD configuration (local meteorology, release heights, flow rates, etc.) can be found in the technical appendices to the West Oakland Action Plan (BAAQMD and WOEIP 2019).

After generating modeled  $20 \times 20$  m annual average  $PM_{2.5}$  concentrations with AERMOD, we also computed the corresponding area-weighted arithmetic means for all West Oakland Census blocks, for use in calculating block-level risks and exposures.

## Population

Estimates of the size of the West Oakland population vary, depending on how the boundary is defined and which populations are counted (e.g. residents vs daytime). We adopted the boundary shown in Figure 2.2, which is consistent with the West Oakland Action Plan (BAAQMD and WOEIP 2019). Using the PopGrid tool included with the BenMAP-CE platform, we extracted block-level residential adult (age  $\geq 30$ ) population counts from from 2010 US Census data, stratified by age, sex, race, and ethnicity. Using the PopGrid tool included with the BenMAP-CE platform, we extracted block-level residential adult (age  $\geq 30$ ) population counts from from

Table 2.3: Selected estimates of the long-term effect of PM<sub>2.5</sub> on adult mortality.

Publication	Basis		RR per 10 $\mu\text{g}/\text{m}^3$
	Cohort	Exposure	
Jerrett (2013)	ACS CSP-II <sup>a</sup>	LUR-DSA <sup>1</sup>	1.065 (1.035, 1.096)
Jerrett (2013)	ACS CSP-II <sup>ab</sup>	LUR-DSA <sup>1</sup>	1.060 (1.003, 1.120)
Pope (2015)	ACS CSP-II <sup>a</sup>	LUR-BME <sup>2</sup>	1.07 (1.06, 1.09)
Turner (2016)	ACS CSP-II <sup>a</sup>	Hybrid <sup>34</sup>	1.06 (1.04, 1.08)
Di (2017)	Medicare <sup>c</sup>	Hybrid <sup>3</sup>	1.073 (1.071, 1.075)
Di (2017)	Medicare <sup>c</sup>	Monitor <sup>5</sup>	1.061 (1.059, 1.063)

<sup>1</sup> Land Use Regression with Deletion-Substitution-Addition

<sup>2</sup> Land Use Regression with Bayesian Max Entropy kriging of residuals

<sup>3</sup> Ground-level monitoring combined with photochemical model predictions

<sup>4</sup> Hierarchical Bayesian space-time model (HBM)

<sup>5</sup> Nearest ground-level monitor within 50 km

<sup>a</sup> Adults age  $\geq 30$

<sup>b</sup> California subset of national cohort

<sup>c</sup> Adults age  $\geq 65$

2010 US Census data for blocks contained within or intersected by that boundary. We then used the Woods and Poole (2015) forecasting method, as implemented by BenMAP-CE, to predict block-level population counts for 2018.

## Effect Sizes and At-Risk Populations

Table 2.3 lists different estimates of the effect of a +10  $\mu\text{g}/\text{m}^3$  increase in long-term PM<sub>2.5</sub> exposure on an adult population. For our case studies, we provisionally adopted a relative risk estimate of 1.07. As Table 2.3 shows, despite variation among the exposure-assignment methods used, and the cohorts studied, there is enough agreement to consider this a serviceable estimate.<sup>8</sup>

Although PM<sub>2.5</sub> has varying effects on different kinds of mortality (cardiopulmonary,

<sup>8</sup>For the purposes of this whitepaper, we can set aside more complex techniques like pooling or meta-analysis. The point is to illustrate and examine the framework itself, for which one digit of precision is enough.

all-cause, etc.), these studies examined all-cause adult mortality. Therefore, we also used an all-cause adult mortality baseline when calculating risk differences, and restricted our estimates of excess exposure and mortality to an adult population as well (age  $\geq 30$ ).

Table 2.4: Hazard ratios for a +10  $\mu\text{g}/\text{m}^3$  increase in annual mean  $\text{PM}_{2.5}$  exposure. Reproduced from the Supplement to Di et al (2017); these data also appear in the current version (v1.5.8) of BenMAP-CE.

Race / Ethnicity	Relative Risk
White	1.063 (1.060, 1.065)
Black	1.208 (1.199, 1.217)
Asian	1.096 (1.075, 1.117)
Hispanic	1.116 (1.100, 1.133)
Native American	1.100 (1.060, 1.140)
(All)	1.073 (1.071, 1.075)

As described in Section 2.1, it is possible to incorporate group-specific effect-size estimates. Table 2.4, reproduced from the Supplement to Di et al (2017), lists estimates obtained from a large cohort study of  $\text{PM}_{2.5}$  and mortality in the United States.

According to these data, for the same fixed increment of  $\text{PM}_{2.5}$ , the relative risks for non-white populations are larger. For example, the excess relative risk for Black cohort members is estimated to be 2.8 times as large as the average.<sup>9</sup> In the Results (Section 3.3), we use these data to illustrate the effects of incorporating group-specific variation.

<sup>9</sup>A ratio of excess relative risks is calculated as  $(RR_1 - 1)/(RR_0 - 1)$ .

## Baseline Mortality Rate

To obtain an estimate of the risk difference (RD), equation (2.3) requires an estimate of the baseline mortality rate ( $y_0$ ) as input. For our primary analysis, we used the crude (not age-adjusted) 2007-2016 rate for the nine counties in the San Francisco Bay Area. For a sensitivity analysis, we obtained two additional rates from CDC-WONDER<sup>10</sup>: an age-adjusted regional rate, and a county-level crude rate. We also derived a (provisional) community-specific estimate for West Oakland by downscaling age- and race/ethnicity- stratified adult mortality rates for Alameda County, using similarly stratified BenMAP-exported population projections for 2018. Specifically, we calculated a single  $y_0$  for West Oakland as:

$$y_0 = \frac{\sum (P_{ij} \times R_j)}{\sum P_{ij}} \quad (2.4)$$

... where:

- $i$  is the geographic unit<sup>11</sup>;
- $j$  is the population stratum<sup>12</sup>;
- $P_{ij}$  is the population size for block  $i$ , stratum  $j$ ; and
- $R_j$  is the county-level mortality rate (deaths/person) for stratum  $j$ .

Geographic units  $i$  consisted of Census blocks in West Oakland. Strata for the mortality rates  $R_j$  were limited by BenMAP to the crossing of **Race** (WHITE / Non-WHITE) with **Age** (7 brackets). Strata for  $P_{ij}$  were consolidated to match, with ages restricted to 30 years and up.

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<sup>10</sup>Wide-ranging Online Data for Epidemiologic Research (WONDER) database, operated by the U.S. Centers for Disease Control and Prevention (CDC).

<sup>11</sup>Frequently-encountered geographic units include Census blocks, Census blockgroups, Census tracts, and ZIP code tabulation areas (ZCTAs). In our case studies, we used Census blocks.

<sup>12</sup>The population strata may be defined by a combination of variables including Age, Race, Ethnicity, and/or Sex.

See Appendix A for tables of stratified mortality rates ( $R_j$ ), as well as examples and discussion of issues related to small counts, age-adjustment, and race/ethnicity.

## Increments *vs* Ambient Concentrations

Of interest in this proposed framework are not total ambient concentrations *per se*, but rather *incremental* concentrations (that is, contributions or changes to those totals).<sup>13</sup> These increments are generally on the order of  $\pm 1 \mu\text{g}/\text{m}^3$  or less, within a policy-relevant range centered on roughly  $10 \mu\text{g}/\text{m}^3$ . Figure 2.3 illustrates that there is ample evidence, based on contrasts within that policy-relevant range, supporting the two major U.S. cohort studies listed in Table 2.3.<sup>14</sup> Estimates of the impacts of such increments, within that range, will therefore be well supported. For extended discussion, please see US EPA (2021a), Section 4.4, and the Appendices.

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<sup>13</sup>To maintain the distinction, we have attempted to prefix incremental concentrations and their corresponding impacts with a plus symbol (“+”) throughout this report.

<sup>14</sup>US EPA (2021a) characterizes the range for cohort studies evaluated for the 2019 ISA at 5.9 to  $16.5 \mu\text{g}/\text{m}^3$ , and the range for the most recent studies as 5.9 to  $11.65 \mu\text{g}/\text{m}^3$ .

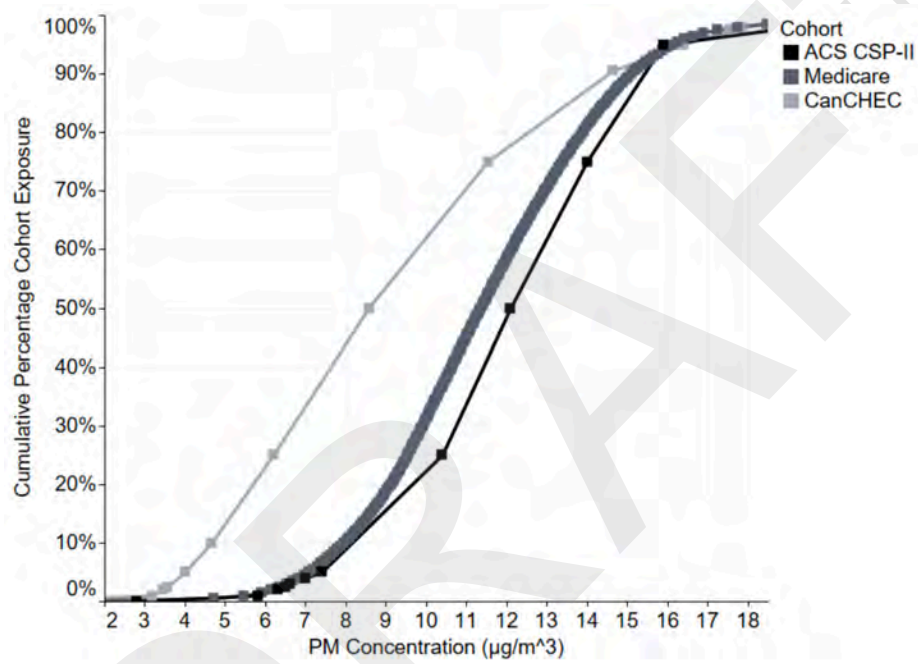


Figure 2.3: Cumulative percentile of PM<sub>2.5</sub> cohort exposure from the ACS CSP-II, Medicare, and CanCHEC cohorts. Reproduced from p. 98 of EPA-HQ-OAR-2020-0272 (EPA 2021 TSD).

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## 3 Results and Case Studies

### 3.1 Overview

Five types of calculated impacts are presented in this section:  $\text{PM}_{2.5}$  concentration; relative risk; risk difference; exposure, and excess mortality. For a conceptual diagram, see Figure 2.1 in the previous section.

### 3.2 $\text{PM}_{2.5}$

Figure 3.1 shows the incremental contributions to ambient concentrations ( $\Delta\text{PM}_{2.5}$ ) modeled using AERMOD. For each facility, a contour line is drawn corresponding to an increment of  $\Delta\text{PM}_{2.5} = +0.1 \mu\text{g}/\text{m}^3$ . (This is approximately 1% of total annual average ambient  $\text{PM}_{2.5}$  in the Bay Area.) Both facilities are modeled using the same meteorological data and model parameters (deposition, etc.), so the results differ only due to differences in release parameters and emission rates. A slightly smaller  $+0.1 \mu\text{g}/\text{m}^3$  contour line is associated with Figure A, which has lower emissions (Table 2.2). However, the two contour lines are similar in shape.

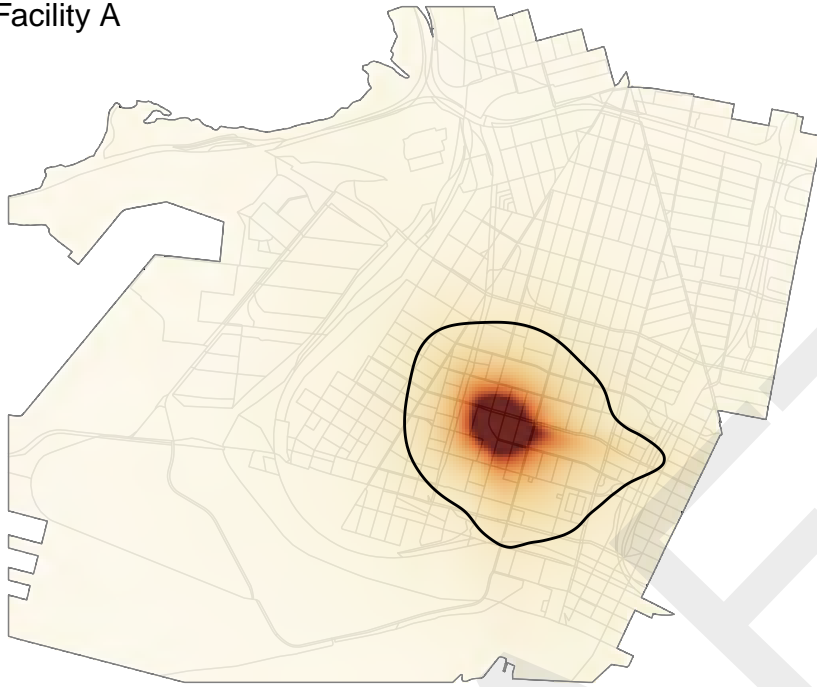
Across the modeled domain, the population-weighted average  $\Delta\text{PM}_{2.5}$  contributed by Facility A is  $0.049 \mu\text{g}/\text{m}^3$ ; for Facility B, it is  $0.042 \mu\text{g}/\text{m}^3$ . For Facility A, the maximum<sup>1</sup> modeled  $\Delta\text{PM}_{2.5}$  for any receptor within a residential block is  $+17.5 \mu\text{g}/\text{m}^3$ . For Facility B, it is  $+0.8 \mu\text{g}/\text{m}^3$ .

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<sup>1</sup>Maxima for gridded  $\Delta\text{PM}_{2.5}$  can be sensitive to aspects of the grid that was used, including its orientation, offset, and resolution. In typical applications of the TAC  $\rightarrow$  Cancer framework, screening for maxima is limited to identifiable residential parcels, rather than all locations within a residential block.



Facility A



Facility B

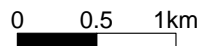
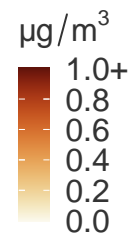
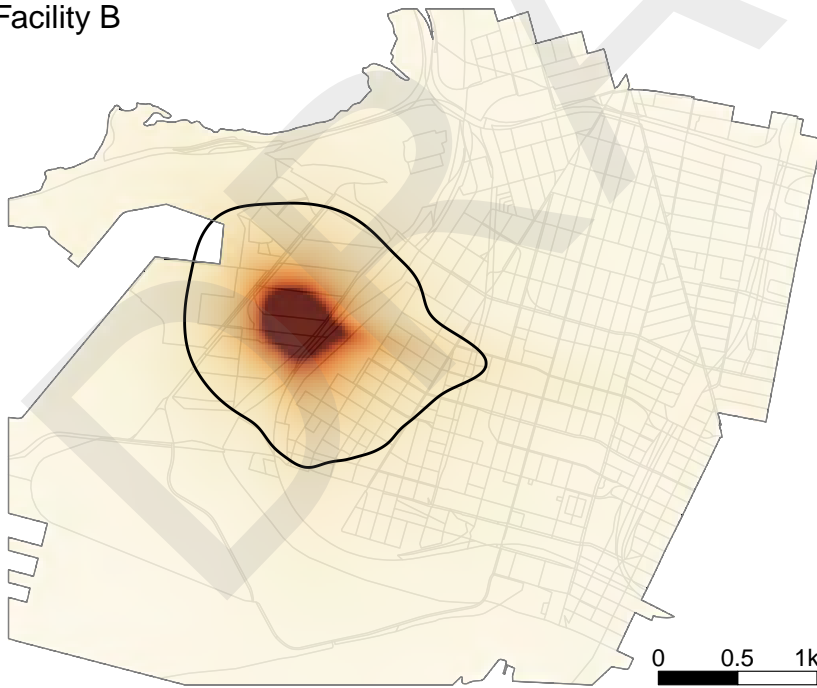


Figure 3.1: Modeled contributions to  $\text{PM}_{2.5}$  from selected facilities. For each facility, a contour line is drawn at an increment of  $+0.1 \mu\text{g}/\text{m}^3$ . With assumptions (see text), these same contour lines also correspond to an excess relative risk of  $+0.07\%$ , or a risk difference of  $+6/\text{M}$ .

### 3.3 Risk

As discussed in Section 2.1, excess risk can first be calculated on a multiplicative scale. This is *relative risk* (RR), which does not depend on baseline conditions. Using an estimate of baseline risk, that relative risk can be converted to risk on an additive scale. This is known as a *risk difference* (RD).

#### Relative Risk (Multiplicative)

With the assumptions described in Section 2.2 (i.e., a relative risk of 1.07 per  $+10 \mu\text{g}/\text{m}^3 \text{PM}_{2.5}$ ), an increment of  $+0.1 \mu\text{g}/\text{m}^3 \text{PM}_{2.5}$  corresponds to an increase in the annual risk of mortality, for our hypothetical population, of approximately  $+0.07\%$ . The same  $+0.1 \mu\text{g}/\text{m}^3 \text{PM}_{2.5}$  contour line in Figure 3.1 thus also corresponds to that measure of excess risk ( $+0.07\%$ ).

#### Risk Difference (Additive)

To convert a relative risk into a risk difference, an estimate of the baseline ( $y_0$ ) is required. This baseline can be taken as constant across the study area, or it can be allowed to vary geographically. In our case studies, we employ the former approach; see Section 4.5.3 for our rationale.

For the Bay Area as a whole, the 2007-2016 crude regional all-cause adult mortality rate obtained from CDC-WONDER is 8,733/M (Table 3.1). In other words, approximately 0.87% of the adult population died each year during that ten-year span. From detailed historical and/or auxiliary data, it can be possible to forecast more accurate present-day or future rates, but we do not attempt that here. (See Section 4.5.3 for discussion.)

Taking that estimate of 8,733/M as serviceable, the  $+0.1 \mu\text{g}/\text{m}^3$  contour line in Figure

Table 3.1: 2007-2016 all-cause adult mortality rates (age  $\geq 30$ ). Basis: CDC-WONDER.

Geography	Method	Rate	Analysis	Difference*
Bay Area	Crude	8,896/M	Primary	—
Bay Area	Age-adjusted	8,733/M	Sensitivity	-2%
Alameda County	Crude	8,608/M	Sensitivity	-3%
Alameda County	Adjusted	9,102/M	Sensitivity	+2%
West Oakland	Downscaled	8,982/M	Sensitivity	+1%

\* For risk-difference and mortality metrics, compared to primary analysis.

3.1 corresponds not only to a relative risk increment of +0.07%, but also to a risk difference of +6/M.

Tables 3.3 and 3.4 contain summaries of modeled block-level risk differences, as well as summaries of other metrics of impact, which the reader is encouraged to consider. Using a different baseline mortality rate would affect the overall result in a linear way. See Table 3.1 for examples, and Section 4.7 for discussion.

## Group-Specific Parameters

In Equation (2.3), we can allow the baseline ( $y_0$ ) to vary by subgroup. This results in different calculated risk differences for different subpopulations. Crucially, this is not the same as allowing the effect size ( $\beta$ ) to vary. It can actually have an opposite effect, which we illustrate by example below.

It is well-established that, despite a number of higher-than-average risk factors, Hispanic/Latino populations in the United States consistently exhibit a lower-than-average mortality rate (Ruiz, Steffen, and Smith 2013). This has been termed the “Hispanic mortality advantage,” and it holds true within the Bay Area. Taking Alameda County as an example, the 2007-2016 age-adjusted all-cause adult mortality rate for Hispanic individuals was 7,558/M, -17% lower than the county average. Regionally, the rate was -16% lower. (See also Appendix A.)

If we do not allow  $\beta$  to vary in Equation (2.3), a lower mortality rate ( $y_0$ ) always yields a lower estimated risk difference. However, recall the data in Table 2.4: for a fixed increment of  $\text{PM}_{2.5}$ , the incremental *relative risk* borne by Hispanic populations is estimated to be larger than average (1.6 times as large, to be exact).

Table 3.2 shows three different results obtained by using this data, allowing (a) the effect size, and/or (b) the baseline rate, to vary while we calculate results for the Hispanic population. For the sake of illustration, this example uses age-adjusted rates for Alameda County.<sup>2</sup>

Table 3.2: Three example calculations performed for a Hispanic population exposed to a  $\text{PM}_{2.5}$  increment of  $+0.1 \mu\text{g}/\text{m}^3$ . Second row: when using a group-specific baseline, the calculated risk difference is decreased. Third row: when a group-specific effect size is also incorporated, the result is increased, even beyond the original result.

Effect Size		Baseline Mortality		Risk Difference
Basis <sup>1</sup>	Relative Risk	Basis <sup>2</sup>	Value	
(All)	+7.3%	(All)	9,102/M	+6/M
(All)	+7.3%	Hispanic	7,558/M	+5/M
Hispanic	+11.6%	Hispanic	7,558/M	+8/M

<sup>1</sup> Di et al (2017) and the BenMAP-CE User Manual (EPA 2021)

<sup>2</sup> Alameda County, 2007-2016 (age-adjusted all-cause adult, CDC-WONDER)

In the first row of Table 3.2, we rely on a population-wide mortality rate, and on a population-wide estimate of the effect size. We are simply not taking any group-specific information into account. In the second row, we use a baseline mortality rate that is specific to the Hispanic population (7,558/M). Because it is lower than average, this step lowers the calculated risk difference. In the third row, we additionally employ

<sup>2</sup>Age-stratified calculations, such as those that would be performed by BenMAP if this particular set of response functions were selected, would be more difficult to follow. If regional data are used, instead of county-specific data, the results are identical to one significant digit.

an effect-size estimate ( $RR = 1.116$ ) that is also group-specific. This increases the risk difference, even compared to the first row.

Thus, if we did not take a group-specific effect size into account, but only a group-specific baseline, we would obtain an estimate for impact on Hispanic individuals that was smaller than average. If we took both into account, the estimate would be larger. We note that this does not apply to all groups—only those for which there is an effect size that is both larger and in the opposite direction from the baseline, relative to the average.

### 3.4 Population

Figure 3.2 shows the modeled spatial distribution of the 2018 residential population within the West Oakland area. The definition (i.e., boundary) of the area is taken from the West Oakland Action Plan (BAAQMD and WOEIP 2019). Figure 3.2 also shows, for reference, the same contour lines depicted in Figure 3.1 and discussed in Section 3.2.

Within this area, we calculated the total residential population (all ages) to be  $n = 32,697$  persons. Of these, 61% ( $n = 20,040$ ) were adults (age  $\geq 30$ ). For additional breakdowns by age and race/ethnicity, see Appendix A.

### 3.5 Exposure

Figure 3.3 combines the adult population-density data (Figure 3.2) with the modeled  $PM_{2.5}$  data (Figure 3.1). The result is a map of population-weighted impacts, which are larger where (a) the concentration of  $PM_{2.5}$  is greater, or (b) the concentration of adult residents is greater.

Despite having similar contour lines, the impact of Facility A—as measured by expo-

All Ages



Adults (Age > 30)

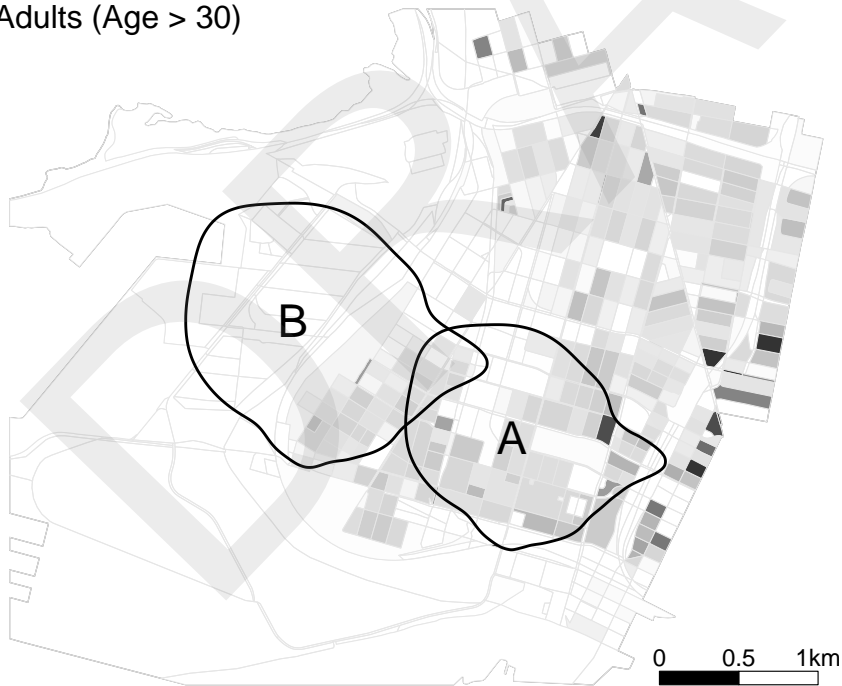


Figure 3.2: Block-level residential population density. For ease of reference, the contour lines from Figure 3.1 are reproduced here. In later calculations of exposure and mortality (Figures 3.3 and 3.4), results are restricted to the adult population (age  $\geq 30$ ). The all-ages population is shown here for reference.

Table 3.3: Summary of modeled impacts for residential blocks in West Oakland.

Metric	Facility A	Facility B	Unit
Maximum relative risk at any block	+1.79%	+0.23%	(unitless)
Maximum risk difference at any block	+156/M	+20/M	death/person-yr
Average risk difference across all blocks	+2.9/M	+2.5/M	death/person-yr
Total population exposure across all blocks	+983	+843	person- $\mu\text{g}/\text{m}^3$
Total excess mortality across all blocks	+0.058	+0.050	death/yr

*Note:*

All metrics reported in this table are restricted to the adult population (age  $\geq 30$ ).

Table 3.4: Counts of impacted residents and blocks, split by facility and level of impact. Impact levels are divided into four tiers.

PM <sub>2.5</sub>	Excess Risk		Facility A		Facility B	
	Relative <sup>1</sup>	Difference <sup>12</sup>	Blocks	Population	Blocks	Population
0 to 0.1	0 to 0.07%	0 to 6/M	337	18,401	324	18,294
0.1 to 0.6	0.07 to 0.4%	6 to 40/M	31	1,515	48	1,746
0.6 to 1	0.4 to 0.7%	40 to 60/M	3	70	–	–
>1	>0.7%	>60/M	1	54	–	–

*Note:*

All metrics reported in this table are restricted to the adult population (age  $\geq 30$ ).

<sup>1</sup> Assuming effect size of 1.07 per +10  $\mu\text{g}/\text{m}^3$  PM<sub>2.5</sub>.

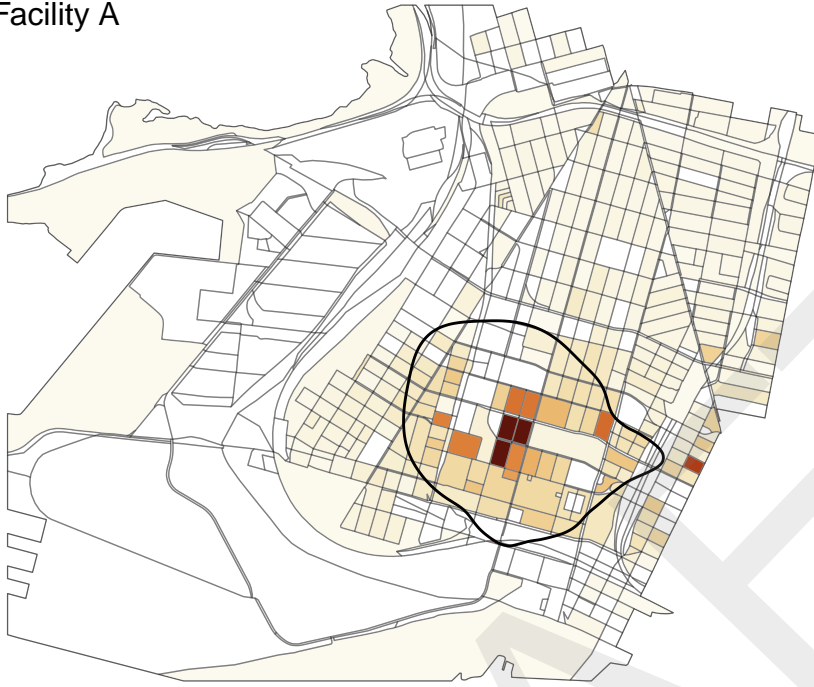
<sup>2</sup> Assuming baseline mortality rate of 8,733/M.

sure, so defined—is larger, as it is located in closer proximity to more adult residents.

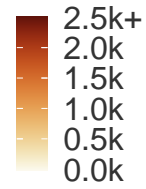
### 3.6 Excess Mortality

Figure 3.4 shows the block-by-block variation in impacts attributed to each facility, given a baseline mortality rate of 8,733/M. Since we used a spatially invariant baseline mortality rate, the block-by-block variation is solely driven by (a) variation in the modeled PM<sub>2.5</sub> contributions, and (b) variation in population density, just as in Figure 3.3. As with our risk-difference results, adopting a sub-regional mortality rate would change these results by a small percentage (Table 3.1).

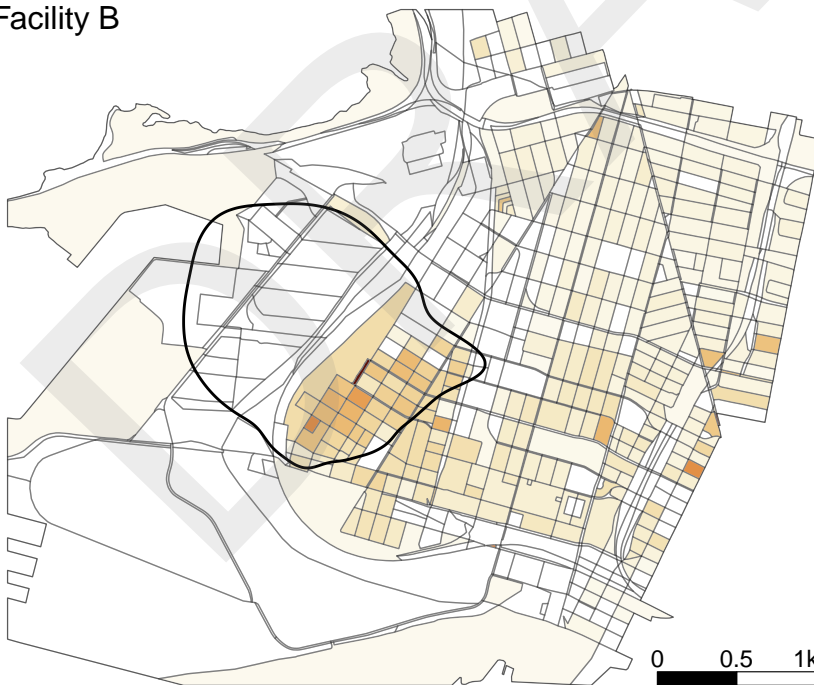
Facility A



$\frac{\mu\text{g}}{\text{m}^3} \cdot \frac{\text{pop}}{\text{km}^2}$



Facility B

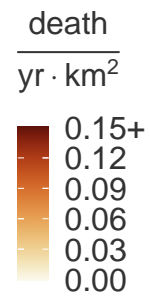
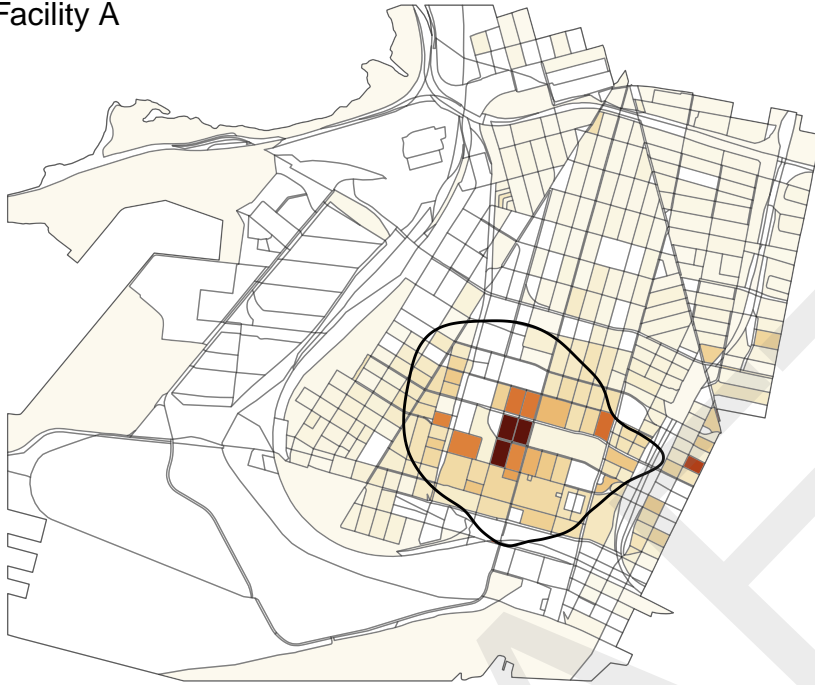


0 0.5 1km

Figure 3.3: Adult exposure, calculated as the product of adult residential population density ( $\text{pop}/\text{km}^2$ ) and  $\text{PM}_{2.5}$  concentration ( $\mu\text{g}/\text{m}^3$ ).



Facility A



Facility B

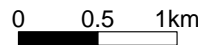
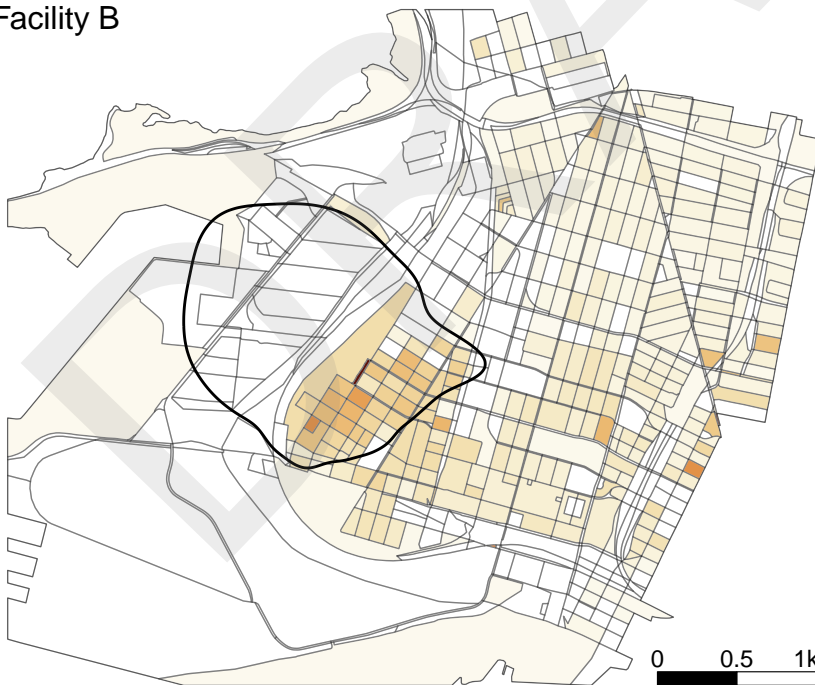


Figure 3.4: Excess mortality, calculated using a constant baseline mortality rate  $y_0 = 8,733/M$  and an effect size  $RR = 1.07$  per  $+10 \mu\text{g}/\text{m}^3 \text{PM}_{2.5}$ .

## 4 Discussion

In this section, we discuss the strengths, limitations, and implications of the proposed methodology for the assessment and regulation of impacts from  $\text{PM}_{2.5}$  emissions at community scale. We also discuss issues related to (a) nonlinearity, (b) baseline mortality rates, and (c) subgroup analyses. We use examples from the results of our case studies to illustrate these issues. Supporting material is provided in the Appendices.

### 4.1 Health Endpoint and Exposure Duration

The EPA’s most recent Integrated Science Assessment (US EPA 2019) has linked  $\text{PM}_{2.5}$  exposure to a broad set of human health outcomes, including respiratory effects, cardiovascular effects, nervous system effects, cancer, and mortality (Table 4.1). Studies consistently find that long-term exposure to  $\text{PM}_{2.5}$  is associated with increased risk of lung cancer, cardiovascular, respiratory and all-cause mortalities (Pope et al. 2002, 2020; Pope and Dockery 2006; Krewski et al. 2009; Lipsett et al. 2011; Jerrett et al. 2013; Ostro et al. 2010, 2015; Thurston et al. 2016).

Table 4.1: Causality determinations for  $\text{PM}_{2.5}$ , adapted from Table 1-1 of EPA (2019). A "causal" determination reflects the highest degree to which the evidence reduces chance, confounding, and other biases in the exposure-health effect.

Health Effect Category	Short-Term	Long-Term
Mortality	Causal	Causal
Cardiovascular	Causal	Causal
Nervous System	–	Likely to be causal
Cancer	–	Likely to be causal

Mortality is a critical endpoint and, as such, a useful motivation for this methodology. In spite of decades of progress, current  $PM_{2.5}$  pollution has been estimated to be responsible for over 30,000 deaths each year in the United States (Bennett et al. 2019). There are also known populations at risk for increased impacts (US EPA 2019, 2021b, 2021a).

The risks of premature mortality induced by long-term exposures and short-term exposures may overlap. The position taken by the US EPA in its 2021 Technical Support Document (TSD) for the Final Revised Cross-State Air Pollution Rule Update for the 2008 Ozone Season NAAQS is as follows:

“We assume that effects found in studies of long-term exposures may include some effects of short-term exposures. Therefore, only mortality impacts from long-term  $PM_{2.5}$  exposure will be quantified, so as not to overestimate impacts. This may potentially bias [...] estimates toward the null in the main benefit estimate.” (US EPA 2021a)

We note that our focus on long-term exposures in this whitepaper in no way precludes the consideration of short-term exposures in future work (Section 4.12).

Apart from mortality, other health endpoints are significant and clearly merit attention. And, the set of impacts considered could affect evaluations or decisions. As an example: cases of impaired lung development will be driven by the presence of younger populations, whose spatial distribution differs from that of the adult population. See Section 4.9 for discussion of multiple metrics and their evaluation.

## 4.2 Comparing Frameworks

Health risk assessments (HRAs) conducted to estimate impacts of toxic air contaminants (TACs) are a mainstay of regulatory activity. Our proposed framework has much in common with the framework for these (Table 2.1), including some limitations.

Examples of limitations common to both frameworks include the accuracy and completeness of: estimates of emissions; modeled transport of emissions; and the pathways, functions, and parameters used to estimate health effects.

Because these shared limitations are widely discussed elsewhere, we focus on other issues here. However, efforts to address some of them are discussed in Future Work.

### 4.3 Pathway Composition

HRAs for TACs are conducted using a framework that breaks apart the *ambient concentration*  $\rightarrow$  *response* pathway into a set of factors (Appendix B) which are then multiplied together. This “bottom-up” approach provides a way to plug in estimates of different factors for specific parts of the pathway, such as the fraction of time at home (FAH). This facilitates the integration of information accumulated from multiple studies, with different scopes and methodologies, over time (US EPA 2005).

$$\textit{ambient concentration} \rightarrow \textit{exposure} \rightarrow \textit{dose} \rightarrow \textit{response}$$

The proposed framework takes a different approach. In the epidemiological studies that it relies on, the total effect size  $\beta$  has been estimated directly, using ambient concentrations as the independent variable, and mortality as the dependent variable.<sup>1</sup> Thus, although databases and models of human time-activity patterns (US EPA 2017) might be used in an attempt to decompose  $\beta$  into more specific factors, those factors have not been left out. Factors in the TAC  $\rightarrow$  Cancer pathway do include margins of safety, which are not covered by epidemiologically-derived response functions. We discuss margins of safety in Section 4.11.

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<sup>1</sup>By way of analogy,  $\beta$  can thought of as a composite of all the intermediate factors along the entire pathway, from ambient concentration to response.

## 4.4 Linearity

Conventional response functions for  $\text{PM}_{2.5} \rightarrow \text{Mortality}$  (Eqs (2.2) and (2.3)) are non-linear. This is not unique to mortality; any statistical approach used by epidemiologists to estimate a risk *ratio* for any endpoint will effectively be fitting an equation of the same log-linear form as Eq (2.1).

In Eq (2.3), the term driving the nonlinearity is  $\beta \Delta x$ . The smaller this term is, the more closely Eqs (2.2) and (2.3) will approximate a linear function. In Section 2.2, we characterized the average annual ambient  $\text{PM}_{2.5}$  in West Oakland as being on the order of  $\sim 10 \mu\text{g}/\text{m}^3$  (as opposed to  $1 \mu\text{g}/\text{m}^3$  or  $100 \mu\text{g}/\text{m}^3$ ). In our case studies, and in our envisioned applications, a modeled  $\Delta x$  will rarely exceed  $10 \mu\text{g}/\text{m}^3$ , even at the most impacted residential blocks (see Table 3.4). Therefore, for any relative effect size that is close to the one used in our case studies, the shape of Eqs (2.2) and (2.3) will be approximately linear over the range with which we are concerned. See Appendix A for figures depicting the magnitude of the non-linearity, given our assumptions, across a policy-relevant range.

The question of whether the true effect of  $\text{PM}_{2.5}$  on mortality is *exactly* linear, within the range of  $\text{PM}_{2.5}$  concentrations we are considering, cannot be answered directly. This problem is not unique to  $\text{PM}_{2.5}$  (May and Bigelow 2005). However, the scientific evidence is consistent with a linear concentration-response relationship within the range, centered on typical ambient concentrations, that we have here characterized as “policy-relevant” (Section 2.2; (US EPA 2019, 2021b, 2021a).)

Adopting a linear approximation of (2.2) and (2.3) would sidestep a number of the issues described below. It would also be more consistent with the TAC  $\rightarrow$  Cancer framework, which does assume linearity. However, exactly how to linearize—and how to linearize group-specific effect sizes, which have larger estimated exponents for at-risk populations—would be an important question. Another important question

would be how to reconcile differences with established tools and frameworks (e.g., BenMAP) that rely on log-linear functions for calculating mortality.

## 4.5 Dependence on Population Characteristics

Some of the metrics we have calculated require data on population characteristics, while others do not. We divide these characteristics into two kinds, according to their relevant properties for the selection of appropriate metric(s) by the risk assessor: first, the spatial distribution, extent, and composition of the local population; and second, its baseline incidence rate(s).<sup>2</sup>

Contributions to ambient PM<sub>2.5</sub> concentrations, as we have modeled them, are independent of the local population. The population-average excess *relative risk* can also be calculated independently of the local population density, assuming a constant effect size, as in the results presented in Section 3.3.<sup>3</sup> In contrast, exposure and burden are dependent (by definition) on population counts and their spatial distributions.

### 4.5.1 Risk Differences *vs* Relative Risks

If this approach were to be embedded in a decision tool, a key metric—alone, or one of several—could be based on thresholds in relative risk(s), rather than risk differences(s). As an example: rather than drawing a line at a *risk difference* for premature mortality of +6/M, a line could instead be drawn at a *relative risk* of +0.07%. As demonstrated in the Results, with our assumptions, those two contours are essentially the same (to one digit of precision).

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<sup>2</sup>By composition we primarily mean demographics (age, sex, race/ethnicity, etc.). In this whitepaper, we are concerned only with the baseline incidence of mortality, but future work (Section 4.12) could consider the extent to which our considerations apply to baseline rates for additional endpoints.

<sup>3</sup>All else being equal, we can expect that a relative-risk estimate will be more accurate insofar as the composition of the population matches the cohort(s) that formed the basis of effect-size estimates.

An advantage of setting thresholds in terms of relative risk is that this would remove the dependence on baseline conditions. Relative risk contours for specific at-risk populations could be evaluated independently and, if desired, the most health-protective could be evaluated on its own. This would be functionally equivalent to adding a margin of safety to the population average (see Section 4.11). However, to combine group-specific estimates, and arrive at an estimate for the population overall, one must still weight intermediate results by population. At that point, one is effectively calculating a risk difference.<sup>4</sup>

In this  $PM_{2.5} \rightarrow$  Mortality framework, maps of risk differences can be compromised to the degree that they depend on outdated or otherwise inaccurate data on population characteristics. Some potential disadvantages of relying on impact metrics that depend on such data are listed and discussed below.

First, reliance on population data brings up the same “when-to-update” challenge that any reliance on baseline conditions does (Section 4.5.3). Extrapolations from Decennial base years may miss the net effects of migration, as well as urban or rural development. For example, the construction of a new housing project will not be captured in assessments of exposure or burden based on such an extrapolation. Predictive errors such as these are discussed further in Section 4.5.2.

Second, at smaller spatial scales, residential surveys become less reliable predictors of out-of-sample and post-survey populations. This issue is exacerbated when the sample size is smaller relative to the target population (as with the American Community Survey, which is a primary source of population estimates for inter-decennial years, and especially for years just preceding the Decennial Census.)

Third, in a large-scale survey like the Census, hard-to-reach populations may be undercounted to an extent that compromises local risk assessment.

Fourth, while the basis for most conventional population-density estimates (and the

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<sup>4</sup>Technically, one is performing all of the calculations needed to generate burden or exposure estimates as well.

basis for most health-impact functions derived from epidemiological studies) is the Census, it is worth noting that a modeled spatial distribution based on residential locations can be quite different than the actual population distribution during the day (consider, for example: schools, workplaces, and commercial districts).

Finally, Census data are intentionally imperfect measures of residential density: some noise is deliberately added to protect individuals from identification.

### **4.5.2 Prospective Risk Management *vs* Retrospective Impact Assessment**

The objective of risk management is to intervene on a potential future, rather than to describe an actual past. Accountability studies conducted using BenMAP may be similar in appearance to the case studies we have conducted, but they are generally concerned with describing actual pasts. Such retrospective assessments can include statistical uncertainties, but they do not include predictive uncertainties.

Like sampling error, predictive error is exacerbated at small spatial scales. It can be mitigated by more-frequent updates, but in practice, the frequency of updating may be limited by the factors described in the preceding section. We recommend that risk assessors establish or consider an appropriate tolerance for predictive error when selecting between metrics and statistics for use within a prospective risk-management process (see sections 4.6 and 4.7).

### **4.5.3 Baseline Rates**

In developing this whitepaper, we also considered limitations of baseline mortality-rate estimates. Many of these are shared with the limitations of population estimates listed above, so we do not repeat them here. However, we note that the magnitudes of these limitations are greater, since mortality rates involve smaller counts. In ad-



dition, rates are ratios, meaning that they also propagate the uncertainties of the denominator (i.e., population counts).

Dependence on baseline rates challenges a fundamental assumption common to many risk-assessment frameworks, including the TAC  $\rightarrow$  Cancer framework. This assumption is that the same modeled concentrations would have the same impact on any population.<sup>5</sup> In our proposed framework (PM<sub>2.5</sub>  $\rightarrow$  mortality), the risk difference *depends on*, and is a multiple of, the existing mortality rate. The form of this model dictates that the estimated risk difference for a population with higher baseline mortality rates will be greater than for an average population. Besides age, many factors are known to be associated with higher mortality rates (sex, poverty, racism, education, healthcare access, etc.); some of these factors can vary considerably over small spatial scales and over time.

As with population-count data, the question also arises of how often—or under what circumstances—to update estimates. This can pose logistical challenges if the need for updates exceeds the capacity of the risk assessor(s) and manager(s) to generate and process risk-assessment products. Since risk assessments are part of a larger social process that unfolds over time, updates can also create challenges in comparing, standardizing, and settling agreement among products.

When risk-driving factors are under the control or jurisdiction of permit-issuing agencies, it has typically been the practice that risk assessments are only updated when those factors change (e.g. in response to a change in emissions); such changes are foreseeable, and can be managed accordingly. Generally speaking, mortality rates in developed countries are declining over time, but they are not under the direct control of any regulatory agency. The downward trend has short-term fluctuations, which are reasonably dampened and/or foreseeable at regional, state, and national scales. County and city rates may be affected on shorter timescales by demographic trends

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<sup>5</sup>Age-specific sensitivity factors have been added to OEHHA's guidelines for cancer risk assessment. However, if we think of the resulting risk as being estimated for a statistical person, that person always has the same exposure window.

(e.g. migration and aging). However, unusual events may cause even state-level or national rates to rise temporarily.

We currently recommend against constructing and using “hyper-local” baseline rate estimates (as small as Census blocks) to generate mortality-risk estimates at the same hyper-local scale. This is mathematically possible, but it introduces considerable statistical and predictive uncertainty, to a degree that we consider inadvisable for prospective local risk management.

Further discussion, examples, and illustrations concerning mortality rates may be found in Appendix A.

## 4.6 Selection of Statistic(s)

Maxima exhibit higher variance than sums or averages, which means that all of the above sources of uncertainty (including predictive error) will be exacerbated if the risk-assessment method overall focuses on a predicted maximum impact, rather than an area-wide impact.

Area-wide statistics—such as the burden, exposure, and average risk differences reported in Table 3.3—require that the extent of the area be defined. In our case studies, we adopted an area that had been previously defined. If this option were not available, the risk assessor could construct an area defined in terms of the impact itself—for example, the set of Census blocks for which the predicted  $PM_{2.5}$  increment exceeded some threshold. The risk assessor could also construct an area, starting from the location of the source, that proceeded outward until some other limit were reached—for example, until the number of residents in the area reached some predetermined count, or until the total population exposure reached some amount.

Our present position is that the modeled metric that is most acceptable depends on whether a larger risk-assessment framework is designed to operate on the basis of

(a) maxima and/or (b) area-wide summaries (for some definition of the local area), as well as the tolerance (of the risk assessors) of different types and magnitudes of predictive error, which are grounded in the nature of population-dependent estimates (counts and rates). In our future work (Section 4.12), we aim to continue to resolve these tradeoffs, and to work with risk assessors and additional case studies to ensure feasibility and fitness-for-purpose.

## 4.7 Selection of Metric(s)

If population-dependence is acceptable, and if risk differences are a preferred metric, then for risk-management purposes attuned to individual facilities, we currently recommend the use of a baseline rate at a spatial scale that covers at least  $1 \times 10^5$  people. This is larger than the scale of our case studies, and considerably mitigates the compromises enumerated above.

Above, we recommended against using hyper-local (e.g., block-level) estimates of baseline risk to generate and report results—whether single numbers, tables, or maps—at a hyper-local scale. In particular, we are not persuaded that mortality-rate estimates at a hyper-local scale are stable or reliable enough to adequately support the decisions that we would expect to follow. However, if hyper-local calculations were to be re-aggregated to a larger extent before reporting (as with the community-wide total excess mortality reported in Table 3.3), the uncertainty would be considerably mitigated. A risk-management protocol based on such an area-wide measure could be adequately robust, and would meet calls by scientists to integrate the consideration of exposure into modern risk-management protocols. It is, however, reasonable to anticipate calls for “the underlying data,” and the subsequent use of those fine-scale intermediate calculations in ways that we expect would lead to inadvisable inferences and/or decisions. See Section 4.7 for additional discussion of area-wide statistics versus local maxima, and Section 4.12 concerning integration and uptake by communities

of practice.

For the purposes of the entity conducting risk assessments, and the other stakeholders in those assessments, it may be most appropriate to use a community-specific rate, a county-specific rate, or a regional rate. We note that, compared to other parameters in the implementation, sensitivity to this choice (i.e., regional *vs* county *vs* community-level) appears relatively low: the values in Table 3.1 are all within  $\pm 3\%$  of each other. For calculating risk differences and mortality burdens, we have used a regional rate. An advantage of using a regional rate is that no discontinuities will be generated at county lines. (See Figure A.1 in Appendix A for a comparison of county-specific rates.)

In calculating exposures and burdens, we have assumed that block-level variation in residential population is a satisfactory predictor of variations in exposure. As discussed in the preceding sections, this approach has limitations and known deficiencies. There may be options available to mitigate some of these deficiencies, which we regard as potential future work (Section 4.12). However, an exposure or burden metric does reveal a meaningful difference between the two facilities in our case study: although their  $PM_{2.5}$  contours are quite similar, the different siting of the facilities (relative to the residential population) creates a significant difference in the exposures and burdens attributed to each (Table 3.3; Figure 3.3; Figure 3.4).

## 4.8 Commensurability

To put “+10/M” (as in the TAC -> Cancer framework) and “+10/M” (as in this PM25 -> Mortality framework) on the same scale, at least four adjustments could conceivably be attempted. Making such adjustments is outside the scope of the current work, but we list them here for the sake of discussion.

- **Margin of Safety.** A “+10/M” cancer risk value is typically derived from

published slope factors or unit risk factors that incorporate margins of safety. For some pollutants, these margins of safety may represent factors of 3, 10, or more. See Section 4.11 for further discussion.

- **Exposure window and time at risk.** We estimated changes in *annual* mortality rates for adults 30+ years of age. In the TAC → Cancer framework, the exposure window is the third trimester through 30 years of age, and the time at risk is 70 years (Table 2.1), leading to an estimate of “lifetime” cancer risk. Future epidemiological studies might support estimates of impacts on mortality rates for younger adults and children.<sup>6</sup>
- **Maximum point of impact vs weighted average.** In the HRA process that the District follows, which the TAC → Cancer framework supports, the cancer-risk metric is calculated for a “maximum exposed individual” (MEI) receptor, typically the closest residential location outside the facility boundary. We generated results averaged across Census blocks, which can be aggregated at any level to produce area-weighted or population-weighted estimates of impact. We did not attempt to identify a maximally exposed individual (MEI) in terms of a single receptor location. It is practically certain, however, that the estimated MEI impact within the 16 blocks subject to “over +10/M” impacts from Facility A would be greater than +10/M.<sup>7</sup>
- **Valuation.** Using conventional metrics of loss, cost, and/or preference, mortality is typically weighted more heavily than cancer. BenMAP-CE provides a library of conventional valuation functions for mortality. Such valuations can be problematic, however. See Section 4.9 for a brief discussion.

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<sup>6</sup>There are studies available to support infant-mortality impact estimates, which we did not leverage. In the United States, typically, the population baseline mortality and hence most of the calculated risk difference accrues at ages 30 and up.

<sup>7</sup>The likelihood that 665 residents all live on the downwind side (of their block centroids) is, intuitively, very small.

## 4.9 Managing Multi-Dimensional Impacts

It is worth noting that TAC impacts are assessed and regulated not only in terms of cancer risk, but on the basis of two other metrics as well. These are *chronic hazard* and *acute hazard*, both of which are evaluated using a different metric: the hazard index, or HI (Strum, Eyth, and Vukovich 2017).

Thus, for several decades, there have actually been three metrics in use for regulation of impacts from TAC-emitting sources at local scale. A particular source triggers concern and/or action when any one of these metrics reaches its respective threshold. The methodology we propose here for assessing impacts from  $PM_{2.5}$  could similarly support mechanisms that would trigger concern and action.

The logical-composition method described above ( $Y_1 > A \mid Y_2 > B \mid Y_3 > C$ ) is also applied in other contexts, such as NAAQS attainment, or the identification of over-burdened communities. Other approaches to dimensionality reduction are possible. For example, it is possible to normalize scores and then combine them: this is the approach taken to assemble the Hazard Index itself, which is actually a sum of ratios. The Healthy Places Index (Maizlish et al. 2019) is also a sum, but of z-scored transformed data. The CalEnviroScreen tool uses both sums and products of rank-transformed data. Valuation on a currency-based scale is another approach. US EPA typically provides such valuations, although the appropriateness of combining or comparing willingness-to-pay (WTP) and cost-based valuations is debated, and willingness-to-pay is subjective in ways that may differ for at-risk populations.

Many other variations are possible, and some methods may be more desirable in a particular context. To the extent that the simultaneous reduction of multiple health endpoints—rather than just mortality—is a goal, the methods above offer some possibilities.

Another possibility is to manage risk on the basis of modeled exposure, without

attempting to model health endpoints or pathways directly. Exposure requires information on population density, but it does not require an estimate of effect size, nor an estimate of baseline conditions, nor the selection of a set of endpoints. Exposure can also be calculated for all age groups, whereas we have had to restrict mortality estimates to the population aged  $\geq 30$ . (Approximately 39% of the modeled population of West Oakland is younger than age 30.) Modeled exposure could be thought of as offering more general coverage of impacts—compared to a metric based on a single health endpoint or a finite set of endpoints—but in a manner that is not as precisely articulated, nor weighted toward any particular endpoint or sub-population (although exposures can be assessed for specific groups).

Here we have considered only a metric of long-term exposure. If it were deemed appropriate to consider a shorter-term exposure metric as well, it could be combined with the long-term exposure metric via logical composition, as above.

## 4.10 Representativeness

The class of facilities we are interested in characterizing (via these case studies) is comprised of those that are both (a) sited generally upwind of, and close to, residential populations, and (b) emitting  $\text{PM}_{2.5}$  at rates from one to three orders of magnitude below that of the largest emitters (Table 4.2). The facilities we simulated are a convenience sample, in that they were selected from modeling that had already been conducted (BAAQMD and WOEIP 2019). We believe they are reasonable examples of the *emission rates* and *exposure factors* (Bennett et al. 2002; Roumasset and Smith 1990) encountered among this class of facilities.

**Emission rates.** As modeled, the emission rates of the facilities in our case studies (Table 2.2) fall within the first two rows of Table 4.2. We can quantify the sensitivity of our results to uncertainties in  $\text{PM}_{2.5}$  emissions; it is very close to linear (Appendix C). So, if the true emissions were actually three times larger—holding the siting and

meteorology constant—then the impacts would be approximately three times larger as well. Likewise, if the emissions were three times smaller, so would the impacts. A three-fold adjustment in either direction would still place these facilities within the class that we are focused on here (Table 4.2).

Table 4.2: Count of Bay Area facilities by magnitude of inventoried PM<sub>2.5</sub> emissions, circa 2016. Fewer than ten facilities in BAAQMD’s jurisdiction emit more than 100 ton/yr PM<sub>2.5</sub>. Several hundred facilities emit PM<sub>2.5</sub> at rates that are one to three orders of magnitude lower (0.1 to 10 ton/yr).

PM <sub>2.5</sub> Emission Rate	Facilities ( <i>n</i> )
10 to 100 ton/yr	43
1 to 10 ton/yr	146
0.1 to 1 ton/yr	241

**Exposure factors.** In combination with local meteorology, siting arrangements drive the *exposure factors*, or the impact per ton of emissions from a given source (Bennett et al. 2002; Roumasset and Smith 1990). Siting and meteorology involve many parameters that are difficult to simulate convincingly in the abstract. Until more data are available to characterize this part of the exposure pathway for a broad class of facilities, convenience sampling from available results is our best approximation strategy.

## 4.11 Margins of Safety

Incorporating margins of safety within risk assessments is a well-established principle and practice (NRC 2009; US EPA 2005). However, health-protective margins of safety are not built in to the approach described thus far.

Published estimates of the effect ( $\beta$ ) of PM<sub>2.5</sub> on mortality express some uncertainty in the form of statistical confidence intervals (CIs). This uncertainty can be carried



forward into risk evaluations, but it is a subset of total uncertainty. The effects of exposure-assignment error, model selection error, and predictive error may also be of interest, especially when the intent is to estimate an upper bound or quantile. For the sake of illustration within this document, we focus on the case where the central estimate of  $(\beta)$  alone is evaluated, but a margin of safety may be desirable in risk management contexts.

In cancer-risk assessments, margins of safety are found within *slope* or *unit risk* factors (NRC 2009; US EPA 2005). Margins of safety address many different dimensions of uncertainty and vulnerability.<sup>8</sup> Where effect sizes have been estimated from toxicological studies, for example, safety factors may be introduced to account for animal-to-human extrapolations. In assessments based on human studies, safety factors may account for (a) other uncertainties (e.g. in exposure-dose and dose-response relationships), and for (b) vulnerabilities among the exposed population (stemming from genetics, predisposing exposures, physiology, lifestage, and/or other factors). An excerpt from *Science and Decisions* (NRC 2009) is illustrative:

Consideration of the most exposed receptors (individuals) is accomplished by estimating chronic exposures at the Census block level ... [while] consideration of sensitive subpopulations is considered in so far as it is explicitly built into the dose-response metrics that EPA uses to estimate risk (i.e., where data supporting such distinctions are available). Unit risk estimates typically incorporate protective low-dose extrapolation assumptions and are based on statistical upper confidence limits. (NRC 2009)

The effect size  $(\beta)$  we have discussed was estimated directly for humans (as opposed to animal species), but it is a population-average effect. Characterizing effect modification for subgroups can require epidemiological studies of very large size, which

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<sup>8</sup>Some “upstream” uncertainties are typically excluded from margins of safety: for example, uncertainties in emission rates.

then necessitates tradeoffs in terms of specificity—geographic, demographic, or otherwise. Di et al. (2017) relied on a Medicare population of over 60 million people, larger than the current total population of the state of California, to estimate the effect sizes for subgroups listed in Table 2.4. For the purposes of health-protective decisionmaking, adopting an appropriate margin of safety could help to protect overburdened and/or vulnerable groups without requiring infeasible or impossible estimates of group-specific effects.

Typically, an overall margin of safety is composed of more than one factor. Usually these factors are not precisely estimable; multiples of 3 or 10 are common. The different dimensions of uncertainty and/or vulnerability captured by these factors may be independent, synergistic, or associated in positive or negative ways, but the ultimate goal is for the relevant set of safety factors to be adequately protective when multiplied together.

A margin of safety could also potentially account for uncertainty in the composition, and therefore the toxicity, of modeled  $\text{PM}_{2.5}$  emissions.

## 4.12 Future Work

Future work will generally have two aims: (1) improving the inputs and methods; and (2) expanding the scope of the work.

### Improving Inputs

**$\text{PM}_{2.5}$  Emissions.** For facilities that may impose higher health risks in a local-scale  $\text{PM}_{2.5}$  risk assessment, BAAQMD will work to reduce the uncertainty in the emissions estimates. Larger sources tend to have the benefit of direct testing, which can help to improve the precision and accuracy of  $\text{PM}_{2.5}$  emission estimates. Fugitive sources of  $\text{PM}_{2.5}$  are more difficult to quantify with comparable certainty. If this

methodology were to lead to additional facility-level requirements, then it is possible that requirements for demonstrating compliance, such as stack testing, could be used in a systematic way to constrain some of the relevant uncertainties.<sup>9</sup> A general discussion of uncertainties in inventoried PM<sub>2.5</sub> emission estimates is outside the scope of this report.<sup>10</sup>

**Emissions → Concentrations.** Non-steady-state models, such as CALPUFF and SCICHEM, are being explored by BAAQMD staff. Comparing results from different models may help to better understand the uncertainty associated with simulated ambient PM<sub>2.5</sub> concentrations.

**Baseline mortality.** Collaboration between BAAQMD and OEHHA may improve estimates of baseline mortality rates ( $\Delta y_0$ ). We may also evaluate newly available tools for producing smoothed and/or age-adjusted small-area estimates (Quick et al. 2019). As illustrated in Appendix A, overall regional and county-specific estimates will probably not vary by more than  $\pm 50\%$ .<sup>11</sup> This may be smaller in magnitude than the uncertainty in our modeled estimates of  $\Delta PM_{2.5}$ , at least for the class of facilities considered in our case studies.

## Expanding Scope

**Health endpoints.** This whitepaper has focused on all-cause adult mortality. Other outcomes are associated with both long- and short-term exposures to PM<sub>2.5</sub>, and some of these outcomes have been studied in younger populations (US EPA 2019). There are ongoing efforts between the Air District and OEHHA to develop estimates of effect sizes for other outcomes that might be estimated for communities similar to the one in our case studies.

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<sup>9</sup>See <https://www.epa.gov/sites/production/files/2013-09/documents/cmspolicy.pdf>.

<sup>10</sup>For an overview, see NRC (2009), p. 114.

<sup>11</sup>Within a given county, baseline mortality rates for different race/ethnicities may vary by a factor of two or more.

**Case studies.** We limited our case studies to stationary sources in West Oakland, but there is no technical reason why the methodology could not also be applied to mobile sources, nor to sources in other communities. For the West Oakland Action Plan (BAAQMD and WOEIP 2019), AERMOD was also applied to generate 20×20m estimates of  $\Delta\text{PM}_{2.5}$  from mobile sources in and around West Oakland. The resulting data were archived and are readily available. Results for stationary and non-stationary sources in another community, Richmond-North Richmond-San Pablo, are also being developed in parallel with this whitepaper, and could potentially be used to improve and expand our set of case studies.

**Cumulative risks.** In principle, the methodology described and illustrated here can be applied to any number of sources. As mentioned above, for the West Oakland Action Plan (BAAQMD and WOEIP 2019), AERMOD was also applied to generate 20×20m estimates of  $\Delta\text{PM}_{2.5}$  for many non-stationary sources. We plan to conduct future case studies that will incorporate more of this data at the same time.

**Uncertainties.** In future work, we intend to further characterize the magnitude and form of the predictive and statistical uncertainties described above. We plan to use a combination of case studies based on historical data (e.g., 2010 vs 2020 populations), simulations, and (if possible) consultation with demographers and/or statisticians with relevant expertise. This will support additional future work aimed at improving integration with risk management practices.

**Integration with risk assessment and management.** Our work to date has been scoped to the development of model-based products that offer spatially-resolved predictions. These products are intended to be nested within a risk-management protocol, which itself is nested within larger social processes. The refinement of such a protocol will be supported by consultations with risk assessors and risk managers.

ADVISORY COUNCIL MEETING  
OF 02/14/2022  
DRAFT

# A Baseline Mortality

This appendix illustrates and explains several issues related to the selection, use, and reporting of baseline mortality rates in the Bay Area, with an emphasis on estimates for specific racial/ethnic populations.

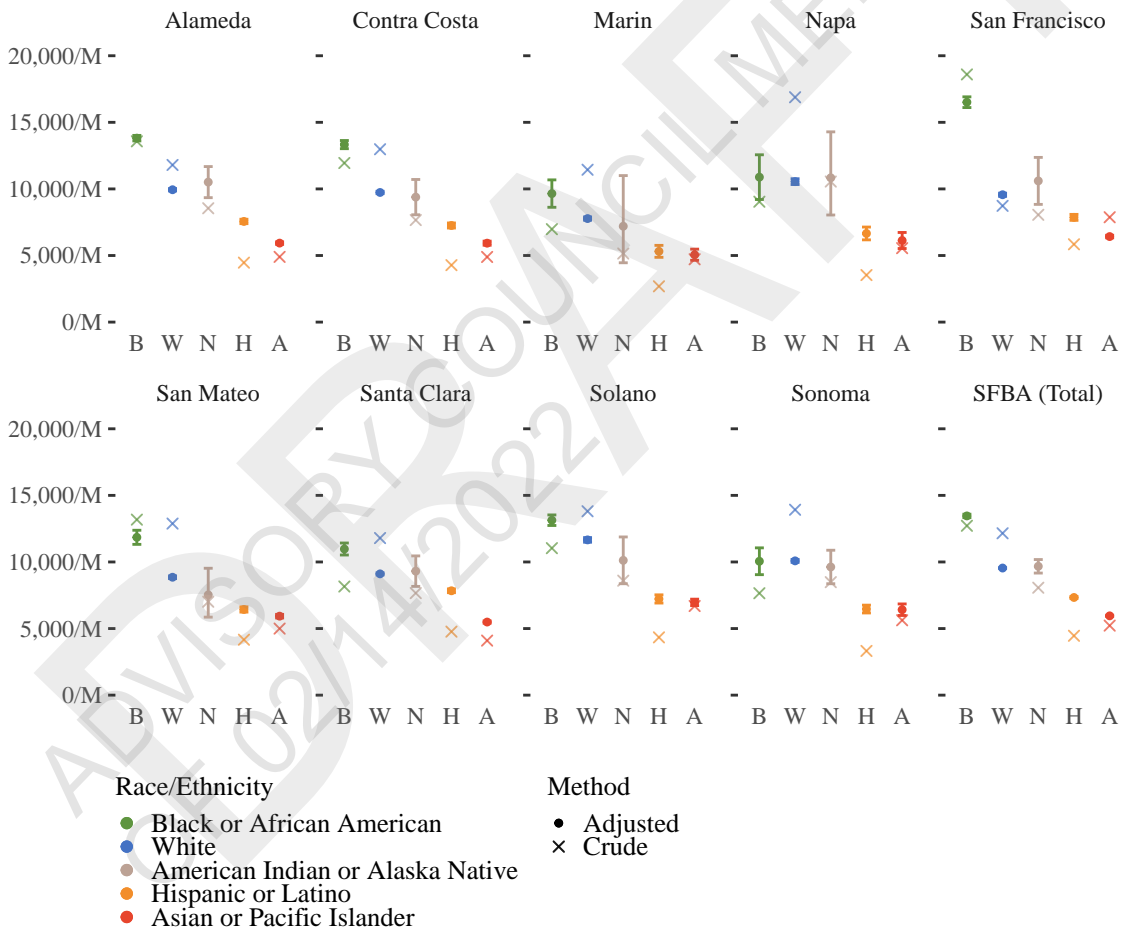


Figure A.1: Adult (age 25+) all-cause mortality, 2007-2016. Error bars are 95% confidence intervals. When the crude rate (×) is higher than the age-adjusted rate (.), the population is older. Adjusting for age brings other factors, like race/ethnicity, into sharper focus.

Figure A.1 depicts 2007-2016 (ten-year average) adult<sup>1</sup> mortality rate data from the Wide-ranging Online Data for Epidemiologic Research (WONDER) database operated by the U.S. Centers for Disease Control and Prevention (CDC). Tables A.1 and A.2 show the same data. The CDC’s WONDER database is a primary source of mortality data for many applications, analyses, and tools, including BenMAP-CE.

## Small Counts

In Figure A.1, the error bars vary in size.<sup>2</sup> When the error bars for two groups overlap, as they do for Black adults and White Adults in Sonoma County, a general rule is to avoid drawing the conclusion that the two rates are different, and rather to conclude that there is simply not enough evidence to tell either way. The error bars are largest for racial/ethnic subgroups that are smaller relative to others in the Bay Area (like Native American adults), especially in counties with fewer people in total (like Marin County).<sup>3</sup> They are smallest for the Bay Area as a whole (bottom right panel). At a regional scale, there are simply many more people, and many more events (i.e., deaths) to observe. CDC-WONDER does not provide estimates for geographic areas smaller than counties, but any source or calculation method that yields such estimates would—or should—naturally frame them with larger error bars.

A second thing to note is that these are ten-year averages, based on the most recent data available. We could obtain five-year averages for 2012-2016 instead, three-year averages for 2014-2016, or even one-year averages for 2016. Since mortality rates change over time, these would perhaps be better estimates of current rates. However, they would also be based on increasingly smaller counts of observed deaths, and thus

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<sup>1</sup>“Adult” here means the 25 to 34 age bracket and above.

<sup>2</sup>For the sake of legibility, error bars are shown only for age-adjusted rates.

<sup>3</sup>Among Native American adults in Marin County, from 2007 to 2016 there were a total of 28 deaths, or an average of approximately 3 per year. The average size of the adult population in any given year was 544, according to same data source (CDC-WONDER). The corresponding crude rate estimate, over that ten-year period, would then be  $28 \div 5,440 \approx 5,147/M$  with a 95% confidence interval of (3,420/M–7,439/M).

the error bars would grow larger.

## Coding Race/Ethnicity

CDC-WONDER data, like Census data, can be downloaded with race and ethnicity split in several ways. “Hispanic or Latino Origin” is coded as true or false. “Race” is independently coded. Often, “Race” and “Hispanic or Latino Origin” (hereafter, “Hispanic”) are consolidated into a single variable, with one category for “Hispanic” (of every race combined), and several more categories for non-Hispanic persons, segmented by race. (Labels for these categories do not always include an explicit “non-Hispanic” qualifier, as it is usually assumed/implied by the existence of a “Hispanic” category). This is the approach taken in Figure A.1 and the accompanying tables.

We cannot here report data separately for populations that self-identified in the Census as multi-racial. The CDC applies a technique called *race bridging* (Ingram 2007) to WONDER data, which essentially re-distributes multi-racial populations into single-race categories. This is “to make multiple-race and single-race data collection systems sufficiently comparable to permit estimation and analysis of race-specific statistics.”<sup>4</sup>

BenMAP-CE, although it relies on the same underlying CDC-WONDER data, will only export data grouped into two categories: **WHITE** and **Non-WHITE**. These are coded by BenMAP strictly according to race, and not ethnicity, meaning that **WHITE** includes white Hispanic adults (which, in California, constitute over 90% of the Hispanic adult population). In this Appendix, we use the term **WHITE** (all caps) when referring to BenMAP’s categorization, to help avoid confusion with “White” as understood in many other contexts.

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<sup>4</sup>[https://www.cdc.gov/nchs/nvss/bridged\\_race.htm](https://www.cdc.gov/nchs/nvss/bridged_race.htm)



Table A.1: Age-adjusted adult all-cause mortality rates in the Bay Area (2007-2016), by county and race/ethnicity.

County	Black	White	NatAmer	Hispanic	Asian
Alameda	13,812/M	9,938/M	10,511/M	7,558/M	5,931/M
Contra Costa	13,328/M	9,733/M	9,384/M	7,254/M	5,927/M
Marin	9,649/M	7,774/M	7,197/M	5,311/M	5,058/M
Napa	10,884/M	10,547/M	10,835/M	6,656/M	6,128/M
San Francisco	16,511/M	9,563/M	10,602/M	7,865/M	6,423/M
San Mateo	11,851/M	8,853/M	7,528/M	6,432/M	5,930/M
Santa Clara	10,973/M	9,107/M	9,310/M	7,836/M	5,488/M
Solano	13,135/M	11,658/M	10,122/M	7,223/M	6,966/M
Sonoma	10,053/M	10,083/M	9,623/M	6,464/M	6,414/M

## Age-Adjustment

Two kinds of estimates are shown in Figure A.1: *crude* rates and *age-adjusted* rates. Crude rates are simply the actual, unadjusted data: deaths divided by population. Age-adjustment answers the question “if this population had the same age distribution as a reference population, what would its mortality rate look like?”<sup>5</sup>

Crude rates are less often reported by public-health agencies. This does not mean that the crude rates are wrong or in need of correction. Age is not something that can be changed, so in many epidemiological contexts, age is not a factor of primary interest. However, it is a dominant predictor of mortality risk. The effects of other factors, which are of interest, may appear to be washed out (or artificially enhanced) when they are correlated with age. So, adjusting for age usually helps to bring them into focus.<sup>6</sup> This is a critical tool in public health practice, both for highlighting disparities and for identifying factors on which we can intervene. For estimating actual mortalities, however, crude rates can be a more appropriate tool.

<sup>5</sup>CDC WONDER’s default reference population is the 2000 U.S. Census.

<sup>6</sup>Old age is associated with declining health; it is also generally associated with lower income, which we are not adjusting for here. So, even age-adjustment does not always tell the whole story.

Table A.2: Crude adult all-cause mortality rates in the Bay Area (2007-2016), by county and race/ethnicity.

County	Black	White	NatAmer	Hispanic	Asian
Alameda	13,574/M	11,800/M	8,548/M	4,464/M	4,896/M
Contra Costa	11,945/M	12,979/M	7,662/M	4,277/M	4,890/M
Marin	6,978/M	11,441/M	5,147/M	2,687/M	4,717/M
Napa	9,040/M	16,883/M	10,553/M	3,531/M	5,551/M
San Francisco	18,596/M	8,729/M	8,057/M	5,842/M	7,872/M
San Mateo	13,180/M	12,883/M	7,015/M	4,162/M	4,998/M
Santa Clara	8,157/M	11,795/M	7,663/M	4,769/M	4,096/M
Solano	11,036/M	13,808/M	8,596/M	4,337/M	6,693/M
Sonoma	7,652/M	13,921/M	8,484/M	3,319/M	5,621/M

Age-adjustment can cause apparent relationships to reverse. For example, in Contra Costa County (Figure A.1, Table A.2), the crude rate (x) among Black adults is lower than among White adults. However, adjusting for age reverses the relationship: the age-adjusted rate ( $\bullet$ ) among Black adults is higher than among White adults. The same thing happens with Marin, Napa, Santa Clara, Solano, and Sonoma. In these counties, the rate of mortality for Black adults is higher than that of White adults *of the same age*. However, the Black adult populations in these counties are younger than the corresponding White adult populations, and younger adults have much lower mortality rates.

## Small Counts Revisited

In Section 2.2, we explained how we could “downscale” county-level mortality rates to the level of West Oakland. First we converted rates (death/person/yr) to mortalities (death/yr), using age-specific population data, and then converted back to mortality rates using total population data. This is not possible with age-adjusted data, but it is possible with age-stratified data.

Table A.3 shows crude rates, stratified by age, for Alameda County. When they are

Table A.3: Crude adult all-cause mortality rates in Alameda County (2007-2016), by age bracket and race/ethnicity.

Age	Black	White	NatAmer	Hispanic	Asian
25 to 34	1,985/M	627/M	—	603/M	358/M
35 to 44	2,981/M	1,245/M	2,294/M	990/M	642/M
45 to 54	6,431/M	3,037/M	5,710/M	2,428/M	1,566/M
55 to 64	14,415/M	6,912/M	8,355/M	5,591/M	3,603/M
65 to 74	25,597/M	15,574/M	15,786/M	12,448/M	8,953/M
75 to 84	53,909/M	44,491/M	39,482/M	32,959/M	25,461/M
85 and up	125,414/M	135,618/M	128,333/M	98,615/M	91,831/M

stratified by age, the available data (deaths) are again apportioned among many table cells. This leads to the same small-counts problems identified above, except that we are now *also* trying to spend the “data budget” on slicing by age bracket, in addition to slicing by time, geography, and race/ethnicity. And, in Table A.3, we hit a wall: the death count for Native Americans ages 25 to 34 in Alameda County is too low, and has been suppressed. For reasons of confidentiality, CDC-WONDER will not provide data when the number of deaths is less than 10.<sup>7</sup>

## Downscaling to West Oakland

In Section 2.2, we described how we combined county-level mortality-rate estimates with (b) block-level population estimates to obtain a “downscaled” estimate of adult all-cause mortality covering the extent of West Oakland.

For illustration’s sake only, Table A.4 shows, in addition to the rates themselves, the numerator (deaths) and denominator (persons) within each computed cell. Following the guideline that any rate with a numerator smaller than 10 should not be reported or relied upon, we can see that half of the cells in this table are, on their own, unreliable

<sup>7</sup>This also guards against drawing inferences based on data that are statistically unreliable. To work around this, BenMAP *imputes* (“fills in”) suppressed county-level rates by borrowing estimates from larger geographies (e.g. state averages).

Table A.4: Mortality rates for West Oakland, derived from block-level estimates. Units = deaths per million persons.

Age	WHITE	Non-WHITE	(all)
30 to 34	646/ <i>M</i> (1÷1,489)	752/ <i>M</i> (1÷1,549)	700/ <i>M</i> (2÷3,039)
35 to 44	1,190/ <i>M</i> (2÷2,099)	1,193/ <i>M</i> (3÷2,787)	1,192/ <i>M</i> (6÷4,886)
45 to 54	2,936/ <i>M</i> (4÷1,205)	2,982/ <i>M</i> (8÷2,751)	2,968/ <i>M</i> (12÷3,955)
55 to 64	6,769/ <i>M</i> (6÷915)	7,000/ <i>M</i> (20÷2,861)	6,944/ <i>M</i> (26÷3,776)
65 to 74	15,245/ <i>M</i> (7÷474)	14,027/ <i>M</i> (31÷2,189)	14,244/ <i>M</i> (38÷2,663)
75 to 84	42,846/ <i>M</i> (8÷181)	33,339/ <i>M</i> (36÷1,074)	34,711/ <i>M</i> (44÷1,255)
85 and up	131,625/ <i>M</i> (8÷57)	102,106/ <i>M</i> (42÷409)	105,740/ <i>M</i> (49÷466)
(all)	5,565/ <i>M</i> (36÷6,421)	10,349/ <i>M</i> (141÷13,619)	8,817/ <i>M</i> (177÷20,040)

and should be suppressed. We can see, however, that when aggregated to the level of West Oakland (bottom right), the calculated result has a numerator larger than 10.

In the bottom row of Table A.4, the (crude) rate among the Non-WHITE population is fully twice the rate among the WHITE population. Recalling that the rates for Non-WHITE are actually slightly smaller than those for WHITE in the older age brackets, and that older populations drive the overall mortality rate, we can see that this is not because WHITE adults in West Oakland are longer-lived, but because Non-WHITE adults in West Oakland are considerably older, whereas WHITE adults are younger.

Superficially, this yields an intuitive comparison of crude rates by race/ethnicity—things seem to be in the right direction, with WHITE adult rates being lower. But, the effect is too large, and the reason for it is not what we are expecting.

Consider what would happen if we applied the same calculation to the populations of Contra Costa, Marin, Napa, Santa Clara, Solano, and Sonoma counties. In those

Table A.5: Projected 2018 population estimates for West Oakland, exported from BenMAP and then aggregated to match strata for BenMAP-exported mortality rates. Estimates are displayed to the nearest whole number. Total = 20,040.

Age	WHITE	Non-WHITE
30 to 34	1,489	1,549
35 to 39	1,235	1,527
40 to 44	864	1,260
45 to 49	682	1,360
50 to 54	523	1,391
55 to 59	521	1,501
60 to 64	395	1,360
65 to 69	263	1,212
70 to 74	211	977
75 to 79	124	682
80 to 84	57	392
85 and up	57	409

counties, the crude mortality rates are highest among **White** adults, but again, this is because they are older. The same **WHITE/Non-WHITE** comparison in those counties would lead to the opposite result—**WHITE** being higher—even though we have seen that **WHITE** adults in those counties do not have the highest mortality rates, once age is taken into account.

Table A.4 is based in part on BenMAP-exported mortality rates for Alameda County, consistent with CDC-WONDER data (Table A.3). The remainder is based on the population estimates shown in Table A.5, which consolidates BenMAP-exported estimates for adult (age  $\geq 30$ ) populations in West Oakland (projected to 2018) into the same strata as Table A.3. The estimates are originally stratified into 19 brackets for **Age**, 4 categories for **Race**, 2 categories for **Ethnicity**, and 2 categories for **Gender** (sex)<sup>8</sup>.

Table A.4 shows a combination of the population counts from Table A.5 and the

<sup>8</sup>**Gender**, rather than **Sex**, is the term used by BenMAP and CDC-WONDER. It is coded as M or F.

mortality rates from Table A.3. In a smaller font are shown both the corresponding population, and the calculated deaths (mortality rate  $\times$  population), in the format (deaths  $\div$  population). In combining these, we have made a few small but noteworthy assumptions:

- The estimated baseline mortality rate ( $y$ ) for the 25 to 34 bracket is an unbiased estimate of  $y$  for the 30 to 34 bracket<sup>9</sup>;
- Estimates of  $y$  provided for the 10-year brackets 35 to 44, 45 to 54, et cetera are unbiased estimates of  $y$  for the corresponding 5-year brackets (35 to 39, 40 to 44), (45 to 49, 50 to 54), etc.; and
- Performing these calculations without also stratifying by Sex is acceptable.

Aggregating the population and death counts across both rows and columns, and then dividing the total deaths by the total population, should<sup>10</sup> yield the same result reported in Section 3.3 ( $y_0 = 8,982/M$ , bottom right cell). Aggregating across rows, and then dividing, yields crude (unadjusted) estimates for the WHITE and Non-WHITE subgroups (bottom row).

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<sup>9</sup>It will probably be biased; ages 25-29 typically have lower mortality rates than ages 30-34.

<sup>10</sup>The result is not exactly the same. This could be because BenMAP is internally performing calculations using more and/or finer-grained strata than it will export. We are reaching out to BenMAP experts about this issue.

## Non-Stratified Rates

For reference, Table A.6 shows adult all-cause mortality rates, obtained from CDC-WONDER, for all race/ethnicities combined (2007-2016). The corresponding crude regional rate (for all nine counties combined) is 8,896/M, and the age-adjusted regional rate is 8,733/M.

Table A.6: Crude and age-adjusted adult all-cause mortality rates, 2007-2016.

County	Age-Adjusted	Crude
Alameda	9,102/M	8,608/M
Contra Costa	9,228/M	9,753/M
Marin	7,570/M	9,801/M
Napa	9,808/M	12,414/M
San Francisco	8,621/M	8,664/M
San Mateo	7,984/M	8,757/M
Santa Clara	7,944/M	7,429/M
Solano	10,501/M	10,243/M
Sonoma	9,636/M	11,363/M

## **B TAC Framework**

Risk assessments conducted by the Bay Area Air Quality Management District (BAAQMD) for toxic air contaminants (TACs) follow guidelines from Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) and the risk management guidance for stationary sources adopted by the California Air Resources Board (CARB) and the California Air Pollution Control Officers Association (CAPCOA). (OEHHA 2015; ARB/CAPCOA 2015) In this framework, some TACs (here, "pollutants") are specific chemicals; others may be classes of compounds (e.g. PAHs or DPM). Two types of endpoints are covered by the OEHHA/CARB/CAPCOA guidance: (a) cancer outcomes; and (b) non-cancer outcomes (both chronic and acute). For brevity's sake, we focus here on cancer.

### **Cancer-Risk Calculations**

Cancer risks are calculated by multiplying annual average pollutant concentrations, estimated using an air dispersion model, by the pollutant intakes and the pollutant-specific potency factors (CPFs). Pollutant concentrations are modeled utilizing site-specific release parameters, from the point of release to the point of exposure at downwind locations. The pollutant intake or dose describing the frequency and duration of the exposure is estimated using receptor's breathing rates, exposure duration, and exposure frequency. In accordance with OEHHA's revised health risk assessment guidelines, California Air Districts have adopted more stringent intake methodology that addresses children's greater sensitivity and health impacts from early exposure to carcinogenic compounds. The updated calculation procedures include the use of



age-specific weighting factors, breathing rates, fraction of time at home, and reduced exposure durations.

The cancer risk is equal to the dose multiplied by the pollutant-specific CPF. CPF is specific to the pathway whereby individuals are exposed to the pollution via inhalation, ingestion, or dermal contact. To account for exposure through all pathways, multi-pathway CPFs are available from OEHHA. Contributions from all significant sources including stationary and mobile sources are aggregated to determine the cumulative risks. Risks are not estimated for pollutants lacking OEHHA approved toxicity values.

The pollutant intake or dose describes the frequency and duration of the exposure, estimated using the breathing rates, exposure durations, and exposure frequencies. In accordance with OEHHA's revised health risk assessment guidelines (OEHHA 2015; ARB/CAPCOA 2015), the intake methodology was updated to address children's greater sensitivity and health impacts from early exposure to carcinogenic compounds.

## Dose Equation (Inhalation-Only)

The equation used to calculate the dose for the *inhalation pathway* is as follows:

$$\text{Dose}_i = \text{CF} \times \text{EF} \times \sum_j (C_{i,j} \times \text{DBR}_j \times \text{FAH}_j \times \text{ED}_j \times \text{ASF}_j) \div \text{AT} \quad (\text{B.1})$$

where:

- $\text{Dose}_i$  = Accumulated dose for an individual breathing carcinogen  $i$  from the 3rd trimester through the 30<sup>th</sup> year of life ( $\frac{\text{mg}}{\text{kg}\cdot\text{day}}$ );
- CF = Conversion factor ( $10^{-6} \frac{\text{mg}\cdot\text{m}^3}{\text{g}\cdot\text{L}}$ );
- EF = Exposure frequency (350 *day/yr*);
- $\text{DBR}_j$  = Daily breathing rate ( $\frac{\text{L}}{\text{kg}\cdot\text{day}}$ ) for year  $j$ ;

- $FAH_j$  = Fraction of time at home (unitless) for year  $j$ ;
- $ED_j$  = Exposure duration ( $yr$ ) for year  $j$ ;
- $C_{i,j}$  = Annual average concentration ( $\frac{g}{m^3}$ ) of pollutant  $i$  for year  $j$ ;
- $ASF_j$  = Age sensitivity factor (unitless) for year  $j$ ; and
- AT = Averaging time (25,550 days, equivalent to 70 year lifespan)

## Key Factors

The updated procedures in OEHHA (2015) include the use of age-specific weighting factors, breathing rates, fraction of time at home, and reduced exposure durations.

**Age Sensitivity Factors (ASFs)** account for the heightened sensitivity of children to carcinogens during fetal development and early childhood. Consistent with OEHHA (2015), BAAQMD uses ASF values as listed in Table B.1. BAAQMD has incorporated ASFs in its air permits since 2010.

**Daily Breathing Rate (DBR)** is the age-specific daily air intake. OEHHA developed a range of rates for four age groups: last trimester to newborn, newborn to two years of age, two years to 16 years of age, and older than 16 years of age. CAPCOA and CARB recently recommended the use of 95<sup>th</sup> percentile breathing rates for the most sensitive age group (less than two years of age) and 80<sup>th</sup> percentile for all other age groups (ARB/CAPCOA 2015).

**Fraction of Time at Home (FAH)** refers to the estimated amount of time residents stay at home. In past HRAs, BAAQMD assumed that residents are home 24 hours per day, 7 days per week. In (OEHHA 2015), OEHHA recommends less than 100% of time to be used as a FAH based on population and activity statistics. Consistent with (OEHHA 2015), this analysis incorporates a FAH of 0.73 for individuals  $\geq 16$  years old and 1.0 for individuals  $< 16$  years old to address exposures at local schools in close proximity to emitting facilities (Table B.1).

Table B.1: Factors used to calculate dose. (OEHHA)

Factor	Description	Units	3rd Trimesters	0-2 yrs	2-16 yrs	16-30 yrs
DBR	Daily breathing rate	L/kg-day	361	1090	572	261
ASF	Age sensitivity factor	—	10	10	3	1
FAH	Fraction of time at home	—	1	1	1	.73
ED	Exposure duration	years	.25	2	14	14

**Exposure Duration (ED)** is the length of time an individual is continuously exposed to air toxics. Previously, BAAQMD used a 70-year lifetime exposure duration for residents over a 70-year lifespan. Based on updated demographic data, BAAQMD now follows the OEHHA recommendation of a 30-year exposure duration, consistent with US EPA, for residents.

The values of these factors are summarized in Table B.1.

## C Response Function

### Background

In the literature, we find two distinct functions that yield estimates of the change in mortality rate, given some change in exposure. Both are nonlinear.

One such delta-response function looks like this:

$$\Delta y = y_0 (e^{\beta \Delta x} - 1) \tag{C.1}$$

The other looks like this:

$$\Delta y = y_0 (1 - e^{-\beta \Delta x}) \tag{C.2}$$

### Explanation

From a mathematical perspective, the two equations are easy to reconcile. If we supply Eq (C.1) with a change in exposure, *putting a negative sign on that change*, we will obtain a change in mortality that is also negative. The magnitude of that result will be exactly the same as the magnitude of the result that we get if we plug in the same change in exposure — but *without* a negative sign — into Eq (C.2). So, the two equations do express the same relationship between  $x$  and  $y$ . The difference is simply due to a flipping of of sign on  $\Delta x$  and  $\Delta y$  in Eq (C.2).

From an applied perspective, the key difference is that Eq (C.1) yields a (**negative**)

Table C.1: Which equation to use depends on the meaning of the sign on  $\Delta x$ .

Input	Using	Interpretation	Comment
$\Delta x > 0$ meaning "increase"	$y_0 (e^{\beta \Delta x} - 1)$	$\Delta y > 0$ is "harmful"	As in TAC HRAs
$\Delta x > 0$ meaning "reduction"	$y_0 (1 - e^{-\beta \Delta x})$	$\Delta y > 0$ is "beneficial"	As in BenMAP

Table C.2: Using the wrong equation results in an error.

Intent	Using	Result
$\Delta x > 0$ meaning "increase"	$y_0 (1 - e^{-\beta \Delta x})$	Error
$\Delta x > 0$ meaning "reduction"	$y_0 (e^{\beta \Delta x} - 1)$	Error

estimated *decrease* in mortality from a (**negative**) hypothetical *decrease* in exposure, as would be obtained by abating an existing source. Thus, in the world of Eq (C.1), a negative  $\Delta y$  is beneficial. This is also interpretable as the existing mortality attributable to an existing source (which would not exist if the source did not exist). If we supply Eq (C.1) instead with a (**positive**) hypothetical *increase* in exposure, we obtain an estimated *increase* in mortality. This is interpretable as the increase in mortality that would be due to the introduction of a source that does not yet exist. For Eq (C.2), on the other hand, "reductions" have a positive sign. Eq (C.2) yields a (**positive**) estimated *reduction* in mortality from a (**positive**) hypothetical *reduction* in exposure, as would be obtained by abating an existing source. This is how we frame "benefit" in the world of Eq (C.2).

## Practical Concerns

An inexperienced or hurried user might make one of the errors listed in Table C.2.

This is not so much a problem in a linear framework, because of the ease of detection and repair. If a user of the linear equation  $\Delta y = \beta \Delta x$  obtains but was not expecting a negative  $\Delta y$ , they can reasonably just "flip the sign" on  $\Delta y$  and it will be exactly as if they had flipped the sign on  $\Delta x$  when providing  $\Delta x$  as input.

In our nonlinear framework, this does not yield a correct  $\Delta y$ . It is true that, for small values of  $\beta$  and small values of  $\Delta x$ , the result of simply flipping the sign on  $\Delta y$  will be *approximately* correct. However, to obtain a correct result, one must follow Table C.1 and not Table C.2.

We illustrate this, providing a rough idea of the magnitude of potential errors, with figures and exact calculations below.

## Illustration

To make things more concrete, assume  $RR$  (the multiplicative risk ratio) for a “unit increment” ( $\Delta x$ ) equal to  $+10 \mu\text{g}/\text{m}^3 \text{ PM}_{2.5}$  to be 1.07; then  $\beta = \ln(1.07) \approx 0.0677$ . Assume a population at risk (Pop) of **1 million** ( $1 \times 10^6$ ) persons, and assume a baseline mortality rate ( $y_0$ ) of **1% per year**.

Figure C.1 illustrates the different results we obtain by employing Eq (C.1) or Eq (C.2). Two domains are shown. The  $0\text{-}3 \mu\text{g}/\text{m}^3$  domain (inset) represents a “plausible” domain of potential changes. The  $0\text{-}30 \mu\text{g}/\text{m}^3$  domain (main figure) highlights the divergence. Because this is a practical example, we are scaling the y-axis by Pop, thereby converting from a change in the annual *mortality rate* to a change in annual *mortality*.

Looking at the curve for Eq (C.1), when  $\Delta x$  is  $3 \mu\text{g}/\text{m}^3$ ,  $\Delta y$  is 205 death/yr. The correct interpretation here is that an *increase* of  $3 \mu\text{g}/\text{m}^3$ , starting from baseline conditions, will *induce* an estimated 205 death/yr.

Looking at the curve for Eq (C.2), when  $\Delta x$  is  $3 \mu\text{g}/\text{m}^3$ ,  $\Delta y$  is 201 death/yr. In this case, the correct interpretation is that a *reduction* of  $3 \mu\text{g}/\text{m}^3$ , starting from baseline conditions, will *avert* an estimated 201 death/yr.

If we expand the domain of  $\Delta x$  to include negative values (Figure C.2), we can see that the two curves are symmetric. This makes it clear that they are identical if we

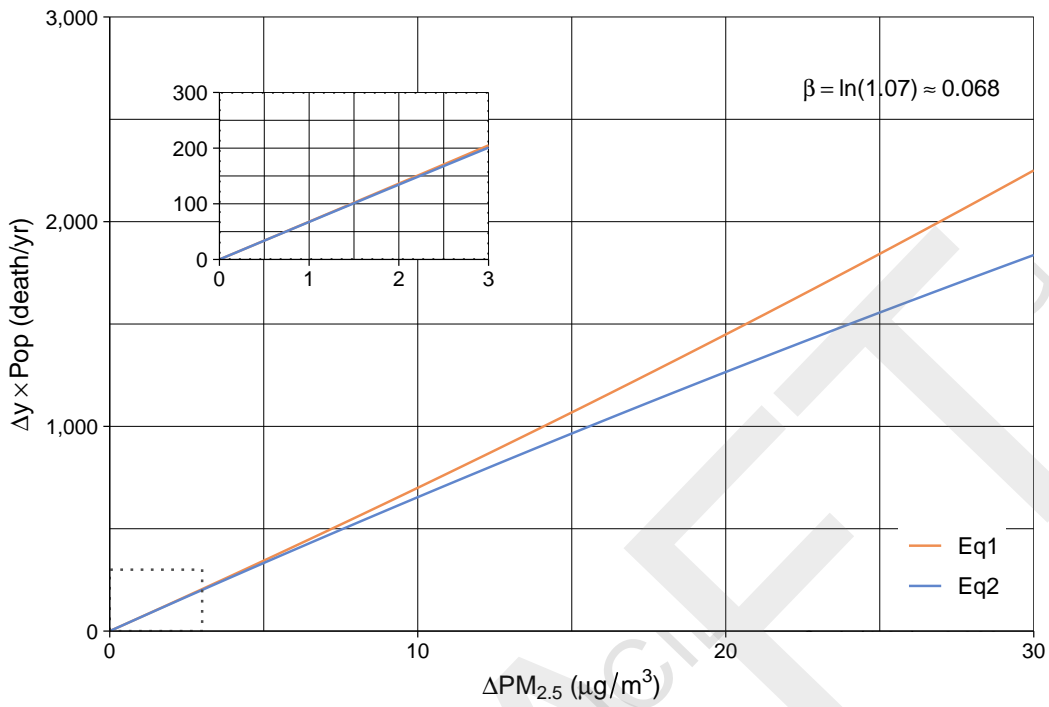


Figure C.1: Comparison of two delta-response functions.

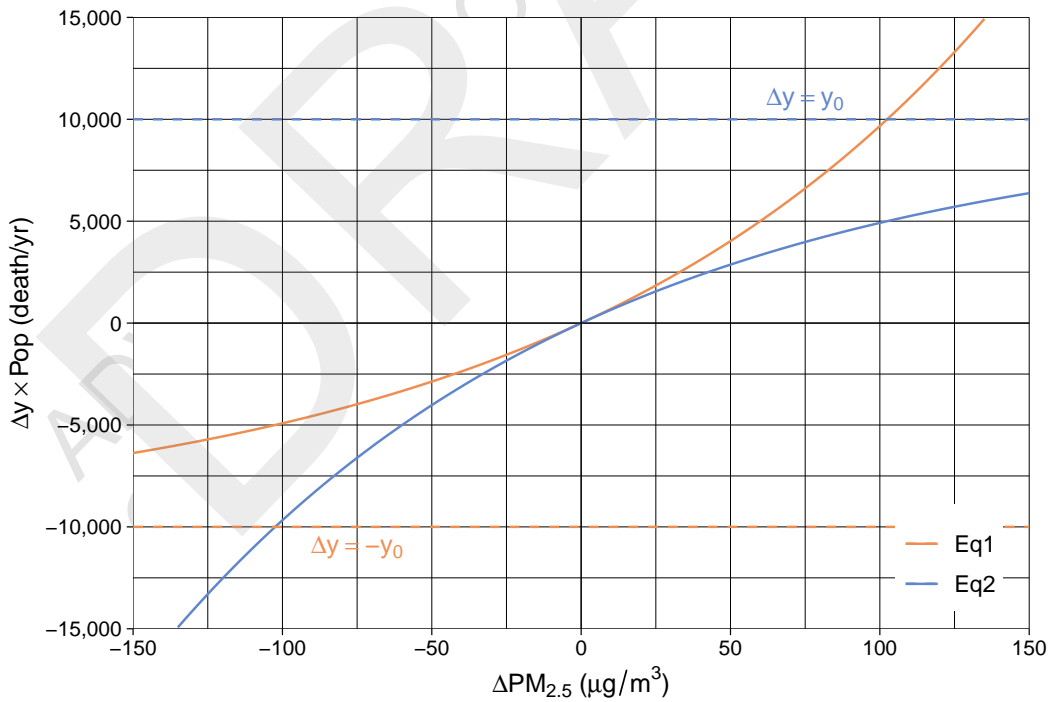


Figure C.2: Expansion to include negative values and asymptotes, demonstrating symmetry.

substitute  $-\Delta x$  for  $\Delta x$  and  $-\Delta y$  for  $\Delta y$  in one or the other.

A useful double-check is to inspect the limits as  $\Delta x$  approaches infinity. We could never avert more deaths than are already occurring in the population. This should hold true — and it does — for both Eq (C.1) and Eq (C.2).

The R code we used to implement these two equations, and generate the figures above, is available at <https://github.com/BAAQMD/PM25-HIA-methodology/>.

## Direct Calculations (PM<sub>2.5</sub> → Mortality)

This section demonstrates direct calculations with  $x$  and  $y$ , instead of with  $\Delta x$  and  $\Delta y$ . In this log-linear framework, the exposure  $x$  is related to the mortality rate  $y$  like so:

$$\begin{aligned}\ln(y) &= \beta x + C \\ y &= \exp(\beta x + C)\end{aligned}$$

As above, let  $\beta = \ln(RR) = \ln(1.060) \approx 0.058269$ , and  $y_0 = 0.01 \times 10^6$  (deaths per million persons per year).

Assume the baseline PM<sub>2.5</sub> is **9  $\mu\text{g}/\text{m}^3$** , comparable to the West Oakland estimate provided in Section 2.2. The unit increment for  $x$  is  $10 \mu\text{g}/\text{m}^3$ , so the baseline  $x$  is then 0.9. Call this  $x_0$ . Now we can work out  $C$ :

$$\begin{aligned}\ln(y_0) &= \beta x_0 + C \\ C &= \ln(y_0) - \beta x_0 \\ C &\approx \ln(0.01) - (0.058269 \times 0.9) \\ C &\approx -4.6576\end{aligned}$$

Substituting  $x = \frac{\text{PM}_{2.5}}{10}$ ,  $\beta \approx 0.058269$ ,  $C \approx -4.6576$ , and  $\text{Pop} = 10^6$  into  $\text{Mort} =$

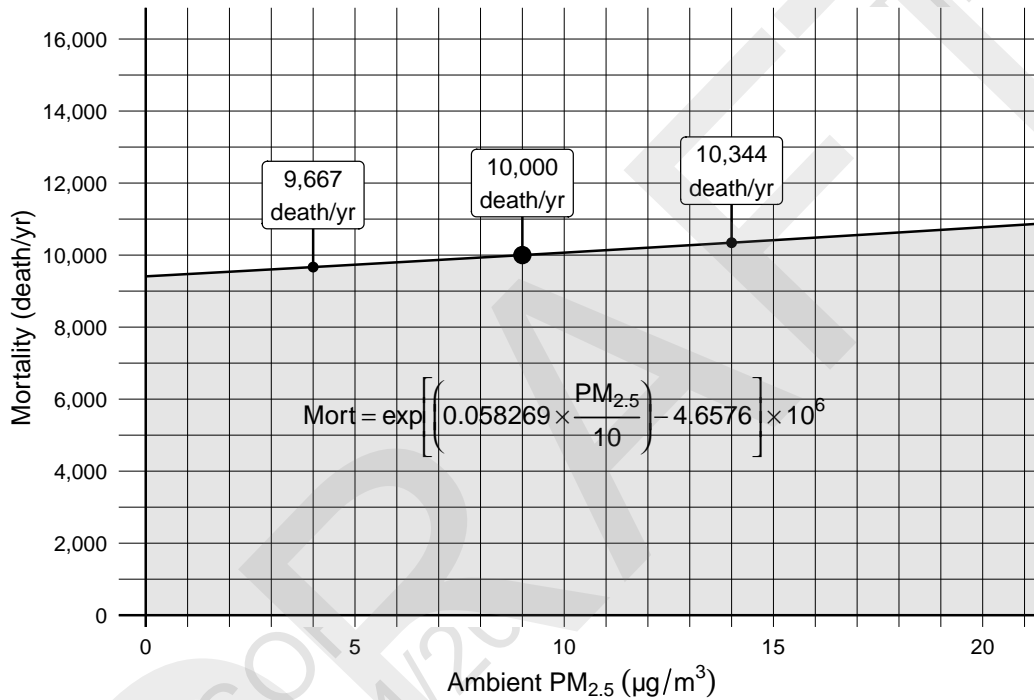


$y \times \text{Pop}$ , we have:

$$\text{Mort} = \exp(\beta x + C) \times \text{Pop}$$

$$\text{Mort} \approx \exp \left[ \left( 0.058269 \times \frac{\text{PM}_{2.5}}{10} \right) - 4.6576 \right] \times 10^6$$

Now we can explore both specific calculations, and the general form of the response function, in a more visual way:



As we can see from this figure:

- When the exposure is **9 µg/m<sup>3</sup>**, we have 10,000 death/yr. These are baseline conditions.
- When the exposure is **14 µg/m<sup>3</sup>**, we have 10,296 death/yr. This is an additive change of +5 µg/m<sup>3</sup> (*vs* baseline). It results in a multiplicative change in the response:  $1 * 1.0296 = 102.96\%$  as many deaths. Or, on an additive scale, **296** more deaths.
- When the exposure is **4 µg/m<sup>3</sup>**, we have 9,713 death/yr. This is an additive

change of  $-5 \mu\text{g}/\text{m}^3$  (*vs* baseline). It results in a multiplicative change in the response:  $1 / 1.0296 = 97.13\%$  as many deaths. Or, on an additive scale, **287** fewer deaths. Note that this is less than **296**.

Because the relationship between  $x$  and  $y$  is supralinear, in this framework, when we start from the same baseline conditions, the increased mortality due to an increase of  $\text{PM}_{2.5}$  will *always* be larger in magnitude than the decrease in mortality due to a reduction of the same magnitude.

The potential error (in using the wrong equation) would be most salient in a risk-assessment framework whose chief metric(s) were based on maximum impacts, as opposed to means or totals. Our model-based case studies suggest that maximum impacts could be on the order of  $+1 \mu\text{g}/\text{m}^3$  or more for certain sources at short distances. The error would then be on the order of 1%—not large, but enough to be noticeable if the results were reported to two or more significant digits.

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OF 02/14/2022  
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ADVISORY COUNCIL MEETING  
OF 02/14/2022

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairpersons Linda Rudolph and Gina Solomon, and Members  
of the Advisory Council

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 14, 2022

Re: 2022 Advisory Council Work Plan Discussion

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

In 2021, the Advisory Council received presentations and information on a variety of subjects and in December 2021 the Councilmembers discussed which topics the Council might research further.

DISCUSSION

Advisory Councilmembers will receive an overview of the 2022 Advisory Council work plan for discussion.

The workplan proposed to focus on four key elements:

- Working with Air District staff and other external experts to develop a standard methodology to assess the impacts of fine particulate matter (PM2.5) exposure.
- Developing a strategy to address combustion sources culminating in a report to the Board of Directors by the end of the year.
- Addressing questions raised by the Community Advisory Council about air pollution and health.
- Reviewing and commenting on other Air District staff work developed to support key decisions by the Board of Directors.

Staff will present an initial plan based on these elements for discussion with the Advisory Council including expected agenda items for the next few meetings.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Sonam Shah-Paul

Reviewed by: Greg Nudd

ATTACHMENTS:

None.

ADVISORY COUNCIL MEETING  
OF 02/14/2022

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Report of the Legislative Committee Meeting of February 14, 2022

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

None.

DISCUSSION

The Legislative Committee met on Monday, February 14, 2022, and approved the minutes of December 9, 2021. This meeting was conducted under procedures in accordance with Assembly Bill 361. Members of the Committee participated by teleconference.

The Committee then received the staff presentation *State Legislative Budget Update*, which provided an overview of proposed budgets for programs significant to the Air District within the Governor's proposed budget for Fiscal Year 2022-23.

The Committee then received and discussed an oral presentation from Alan Abbs, Legislative Officer, summarizing bills that are being sponsored by the Air District. These bills' topics included:

- Raising penalty limits for air quality violations at refineries;
- Changes to environmental review of new school siting; and
- Revising Air District Board member compensation limits to include active transportation compensation.

The Committee then received and discussed an oral presentation regarding the Air District's consideration of new bills being introduced in the California Legislature. Thus far, the Air District is monitoring:

- Assembly Bill 1717 (Aguiar-Curry) - This bill would expand the definition of “public works” to include fuel reduction work paid for in whole or in part out of public funds performed as part of a fire mitigation project.
- Assembly Bill 1749 (C. Garcia) - This bill would require the California Air Resources Board to identify in each statewide strategy update measures to reduce criteria air pollutants and toxic air contaminants in disadvantaged communities. The bill would also prohibit a government agency, as defined, from approving a project or permit impacting a disadvantaged community if it would increase criteria pollutants or air toxics, without making specified findings related to public health impacts.
- Assembly Bill 1944 (Lee) - This bill would require all open and public meetings of a legislative body that elects to use teleconferencing to provide a video stream accessible to members of the public and an option for members of the public to address the body remotely during the public comment period through an audio-visual or call-in option.
- The Air District is aware of a new bill that will be introduced regarding Community Emission Reduction Plan Steering Committee timelines and funding within California's Community Air Protection Program (formerly Assembly Bill 617).

Staff will continue presenting bills of interest to the Committee and recommend that the Board of Directors take positions on high priority bills where appropriate.

Finally, the Committee received the staff presentation *2022 Legislative Platform*, regarding issues of interest to the Air District from the California Budget, California Legislation, and federal legislation.

The next meeting of this Committee will be held on Monday, March 14, 2022, at 1:00 p.m., via webcast, pursuant to procedures authorized by Assembly Bill 361. This concludes the Chair's Report of the Legislative Committee.

#### BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Marcy Hiratzka  
Reviewed by: Vanessa Johnson

ATTACHMENTS:

1. Legislative Committee February 14, 2022 Meeting Memorandums



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Pauline Russo Cutter and Members  
of the Legislative Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 14, 2022

Re: State Legislative Budget Update

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

On January 10, 2022, Governor Newsom released his initial proposal for the fiscal year (FY) 2022-23 Budget.

DISCUSSION

Staff will provide an update to the Legislative Committee (Committee) on activities related to the budget.

On January 10, 2022, Governor Newsom released his draft budget proposal for FY 2022-23. The initial budget starts with an assumption of roughly a \$29 billion budget surplus.

Attached is a table of programs significant to the Air District, along with budget data from the previous year. Compared to previous years, there is significant new funding for zero-emission vehicle and infrastructure programs, as well as new funding for various building decarbonization initiatives.

The Senate and Assembly have started budget hearings that will continue for several months. Air District staff will participate and comment as appropriate. In May, the Governor will release a budget revision (the "May Revise"), and the remainder of May and most of June will be spent reconciling priorities and funding of the Administration, Senate, and Assembly. The budget must be signed by the Governor by July 1, 2022.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Alan Abbs  
Reviewed by: Jack P. Broadbent

ATTACHMENTS:

1. State Budget Table - Current vs. Previous Year
2. Air District Letter to Governor Regarding 2022-2023 Budget - Dated 11/29/2021

LEGISLATIVE COMMITTEE  
MEETING OF 02/14/2022

**2022-23 State Budget vs. Previous Year  
Statewide Funding Amounts**

<b>Program</b>	<b>FY 21/22 Proposed Budget Plus Early Action</b>	<b>FY 21/22 Approved Budget</b>	<b>FY 22/23 Proposed Budget (January)</b>
<b>AB 617 – Implementation</b>	\$50M	\$50M	\$50M
<b>AB 617 – Incentives</b>	\$265M	\$260M	\$180M
<b>AB 617 – Community Grants</b>	\$10M	\$10M	\$10M
<b>Clean Vehicle Rebate</b>	\$0	\$525M	\$0
<b>Clean Truck &amp; Bus</b>	\$315M	\$315M	\$600M
<b>Ag Diesel Engine Replacement</b>	\$170M	\$213M	\$150M
<b>Clean Cars For All/ School Bus/Equity</b>	\$150M	\$150M	\$125M
<b>AB 836 – Clean Air Centers</b>	\$0	\$25M*	\$0
<b>Prescribed Fire</b>	\$2M	\$2M	\$2M
<b>Carl Moyer Program</b>	\$247M	\$247M	\$130M
<b>Zero-Emission Lawn and Garden</b>	\$0	\$30M	\$0
<b>Woodstove Replacement</b>	\$0	\$5M	\$0
<b>Port and Freight Goods Movement Infrastructure</b>			\$1.2B
<b>ZEV Port Equipment</b>			\$875M
<b>ZEV Drayage and School Bus</b>			\$935M
<b>Long Duration Energy Storage</b>			\$380M
<b>Low-Income Residential Decarbonization</b>			\$622M
<b>Consumer Rebates for Residential Decarbonization</b>			\$300M

*\* Overall Budget for  
"Resilience Centers"*



**BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT**

November 29, 2021

The Honorable Gavin Newsom  
Governor, State of California  
State Capitol, First Floor  
Sacramento, CA 95814

**Re: 2022-23 State Budget Funding Priorities**

Dear Governor Newsom:

**ALAMEDA COUNTY**

John J. Bauters  
(Secretary)  
Pauline Russo Cutter  
David Haubert  
Nate Miley

**CONTRA COSTA COUNTY**

John Gioia  
David Hudson  
Karen Mitchoff  
(Vice Chair)  
Mark Ross

**MARIN COUNTY**

Katie Rice

**NAPA COUNTY**

Brad Wagenknecht

**SAN FRANCISCO COUNTY**

Tyrone Jue  
(SF Mayor's Appointee)  
Myrna Melgar  
Shamann Walton

**SAN MATEO COUNTY**

David J. Canepa  
Carole Groom  
Davina Hurt

**SANTA CLARA COUNTY**

Margaret Abe-Koga  
Cindy Chavez  
(Chair)  
Rich Constantine  
Rob Rennie

**SOLANO COUNTY**

Erin Hannigan  
Lori Wilson

**SONOMA COUNTY**

Teresa Barrett  
Lynda Hopkins

Jack P. Broadbent  
EXECUTIVE OFFICER/APCO

Connect with the  
Bay Area Air District:



The Bay Area Air Quality Management District (Bay Area AQMD) and other local air districts play a pivotal role in ensuring the State's air quality goals are met. These goals include attaining the health-protective national and state ambient air quality standards, working closely with the California Air Resources Board (CARB) to implement the State's climate change programs, and ensuring community health is protected from the effects of air pollution. Many of California's disadvantaged communities are in areas impacted by localized air pollutants, making expedient emissions reductions a critical need if we are to protect human health in all communities. In addition, COVID-19 infection rates have correlated with areas of worse air pollution and in areas with greater disadvantaged populations, making many air district programs highly important in protecting public health during the COVID-19 pandemic.

Therefore, we respectfully request your support for funding in the 2022-23 State budget for the following programs:

**AB 617 Community Air Protection Program Local Air District Implementation Funding**

The Bay Area AQMD has played a central role in implementing this important program that will provide significant public health benefits by identifying and reducing air pollution's impacts on communities disproportionately impacted by air pollution. AB 617 (C. Garcia; Chapter 136, Statutes of 2017) was signed into law with the Cap-and-Trade extension bill AB 398 (E. Garcia; Chapter 135, Statutes of 2017) to ensure our most burdened communities in the State received the health benefits promised by Cap-and-Trade. The Bay Area AQMD has been working aggressively to make the program a success in two communities, West Oakland and Richmond/San Pablo. In addition, we will be requesting that CARB add East Oakland as a new AB 617 community in 2023. Vallejo, San Francisco, San Jose, the Tri-Valley area, and Eastern Contra Costa are also high on our priority list, pending available resources.

AB 617 envisions a long-term focus on air pollution reductions and improved community health, all of which require dedicated equipment and staffing over many years. This is especially true as new communities are identified for

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action alongside the existing 15 communities. If the Community Air Protection Program is to be successful as the Legislature intends, and perhaps serve as a model for a federal environmental justice program, then adequate, ongoing statewide funding supporting the Bay Area AQMD, and other air districts' efforts is essential. These communities have long suffered from government neglect and discriminatory policies. Establishing AB 617 and then failing to fund it would be a continuation of that pattern.

Recognizing the significant ongoing air district costs related to implementation of AB 617 mandates, the last four fiscal year budgets included \$50 million for local air district implementation costs. The Bay Area AQMD receives approximately \$9 million per year of this funding. While we appreciate the funding, our experience with the implementation of this program over the last four years is showing that statewide implementation costs are significantly higher than \$50 million, and the Bay Area AQMD's costs are significantly higher than \$9 million. This will be exacerbated by adding East Oakland. Although the AB 617 activities are mandated, the uncertainty surrounding annual funding makes it extremely difficult to maintain staff levels, provide adequate community support, and purchase equipment. We strongly urge you and the Legislature to identify long-term funding of at least \$75 million per year through a continuous appropriation for ongoing implementation and, as communities are added, future increases to support this important program.

### **AB 617 Incentive Funding and Other Mobile Source Incentive Funding**

The Bay Area AQMD believes that incentive funding is the most cost-effective and expeditious way to bring emission reductions and public health benefits to our most impacted communities. Because transportation and goods movement air pollutant emissions continue to be the largest contributor to poor air quality and adverse human health effects, it is important to continue programs that accelerate the turnover and elimination of older diesel vehicles and diesel-powered equipment. In addition to immediate reductions in diesel exhaust, benefits include a reduction of ozone precursor gases such as oxides of nitrogen (NO<sub>x</sub>), a reduction of fine particulate matter (PM<sub>2.5</sub>), and reductions of greenhouse gases (GHGs). These are very positive outcomes for air quality, climate change, public health and our quality of life, and we respectfully request continued funding for these critical programs.

In the 2021-22 budget, air districts were provided \$260 million from the Greenhouse Gas Reduction Fund (GGRF) for AB 617 Community Air Protection Program incentives. This funding allows local air districts to fund early emissions reduction projects that cut both stationary and mobile source emissions of, and exposure to, criteria air pollutants and toxic air contaminant emissions in the communities disproportionately impacted by air pollution. Like the implementation funding, the incentive funding is critical to the success of

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the AB 617 program, and the State should continue committing funding to reduce emissions and exposure in our most burdened communities.

The 2021-22 budget also provided funding for several successful and cost-effective statewide emission reduction programs from the GGRF, Air Pollution Control Fund, and General Fund that should receive continued funding, including Clean Trucks, Buses, and Offroad Freight Equipment; Clean Cars for All, and Clean School Buses; Commercial Lawn and Garden Equipment; and the FARMER Agricultural Replacement Program. The 2021-22 budget process provided commitments for future funding in many of these programs, and we urge you to continue prioritizing them. These incentives reduce greenhouse gas, criteria pollutant, and toxic air contaminant emissions from light-duty vehicles, agricultural tractors and harvesting equipment, heavy-duty trucks, school and transit buses, and port equipment. Locally, they have contributed to our efforts to expand electric vehicle usage, clean local transit fleets, and reduce emissions in the freight sector. Because the goal of reducing the air quality impacts in these areas is a multiyear effort, it is important to ensure these programs are well-funded into the future.

### **Commercial Harbor Craft Incentive Program**

In addition to programs listed above, the Bay Area AQMD urges you to create a new incentive program specifically for commercial harbor craft, including tugboats, dredges, ferries, commercial fishing boats, and sportfishing boats. One third of the state's commercial harbor craft fleet operates out of the Bay Area region, and in 2022, CARB will be completing a regulatory process that will require much of the commercial harbor craft fleet to either upgrade existing diesel engines or change to zero emission propulsion. The new requirements will assist in lowering cancer risks and other health issues caused by exposure to diesel particulate matter in shoreline neighborhoods, will help the Bay Area reach and maintain the Federal and State ambient air quality standards, and continue moving us in the right direction for achieving needed GHG reductions. Meeting these requirements, however, will entail significant expense, especially for small owner-operators. A new incentive program of at least \$100 million targeting commercial harbor craft will better ensure future success of the CARB regulation, lower exposure to diesel particulate matter, and assistance to harbor craft businesses.

### **Wildfire Smoke Public Health Response**

The Bay Area AQMD is dedicating significant effort to improving wildfire smoke public health response capabilities in the Bay Area Region in the coming years. As in many parts of the State, wildfire smoke from several of the catastrophic fires in recent years blanketed the region with smoke for weeks at a time, erasing public health gains made over many years through district programs to reduce emissions from mobile and stationary sources.

Pursuant to AB 836 (Wicks; Chapter 393, Statutes of 2019), the Bay Area AQMD has been working with regional stakeholders to identify public locations that can serve as “clean air centers” during wildfire smoke or other times of high particulate exposure. These clean air centers would provide a healthy space for our vulnerable population during emergency events. While some of these potential locations such as schools, community centers, and libraries may be equipped with high-efficiency filtration to provide a clean indoor environment, some will require filtration system retrofitting and maintenance, or use of portable air filtration units. This program received \$5 million in the 2020-21 budget, but unfortunately was not funded in the 2021-22 budget, and we ask that this program again receive funding in the 2022-23 budget.

The Bay Area AQMD has also recently begun a small-scale program to assist low-income homeowners and renters in improving their indoor air quality with portable filtration units or HVAC filter upgrades, by working with local public health providers. Innovative programs like this that directly target residents where they live can make a huge improvement in their quality of life, but expansion throughout the Bay Area and the rest of California would require a state funding source. We would welcome the opportunity to showcase this new program and its potential for state funding to expand it within the Bay Area and the rest of California.

The Bay Area AQMD appreciates the opportunity to provide our funding request for the upcoming fiscal year. We are committed to reducing air pollution in California and ensuring that every one of the region’s nearly 8 million residents can breathe clean, healthful air. We are also committed to ensuring that the State’s most disproportionately affected populations realize emissions reductions as expeditiously as possible. If you should have any questions, please do not hesitate to contact me at (415) 749-5052, or our Legislative Officer, Mr. Alan Abbs at (916) 769-7769.

Sincerely,



Jack P. Broadbent  
Executive Officer/APCO

JPB:AA

cc: The Honorable Toni Atkins, President Pro Tempore, California State Senate  
The Honorable Anthony Rendon, Speaker, California State Assembly  
The Honorable Nancy Skinner, Chair, Senate Committee on Budget and Fiscal Review

The Honorable Phil Ting, Chair, Assembly Committee on Budget  
The Honorable Bob Wieckowski, Chair, Senate Committee on Budget  
and Fiscal Review Subcommittee No. 2 on Resources, Environmental  
Protection and Energy

The Honorable Richard Bloom, Chair, Assembly Budget  
Subcommittee No. 3 on Climate Crisis, Resources, Energy, and  
Transportation

Jared Blumenfeld, Secretary for Environmental Protection

Liane M. Randolph, Chair, California Air Resources Board

Christine Hironaka, Deputy Cabinet Secretary, Office of Governor  
Newsom

Lauren Sanchez, Senior Climate Advisor, Office of Governor Newsom

Keely Martin Bosler, Director, Department of Finance

Matt Almy, Program Budget Manager—Natural Resources,  
Environment, and Capital Outlay, Department of Finance

LEGISLATIVE COMMITTEE  
MEETING OF 02/14/2021



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Pauline Russo Cutter and Members  
of the Legislative Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 14, 2022

Re: Air District-Sponsored Bills

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

Potential bills will need to be introduced by February 18, 2022.

DISCUSSION

Staff has been working on the following three bill proposals for potential introduction in 2022:

- Raising penalty limits for air quality violations at refineries.
- Changes to environmental review of new school siting.
- Revising Air District boardmember compensation limits to include active transportation compensation.

Staff will provide updates on each bill, and the introduced bill language, if available.

Staff will also update the Legislative Committee on the proposed process to consider changes to Board of Directors composition.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Alan Abbs  
Reviewed by: Jack P. Broadbent

ATTACHMENTS:

None.

LEGISLATIVE COMMITTEE  
MEETING OF 02/14/2022

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Pauline Russo Cutter and Members  
of the Legislative Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 14, 2022

Re: State Legislative Update and Consideration of New Bills

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

This is the second year of the two-year 2021-2022 Legislative Session. January 31, 2022 was the last day for two-year bills to get voted out of their house of origin. February 18, 2022 is the last day for new bills to be introduced. Bills can be heard in committee 31 days after being introduced, with most bills being heard in committee beginning in mid-March.

As a result of redistricting, upcoming elections, and other factors, at least 28 legislators have opted to leave the Legislature at the end of the current term or earlier, creating several vacancies. This may affect the total number of bills introduced and may also affect how individual legislators vote on certain issues.

DISCUSSION

Staff will provide the Legislative Committee (Committee) with a summary and status of bills on the attached list and will review other bills that may be of interest to the Committee.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Alan Abbs  
Reviewed by: Jack P. Broadbent

ATTACHMENTS:

1. Bills of Interest Matrix - As of February 4, 2022

LEGISLATIVE COMMITTEE  
MEETING OF 02/14/2022

Bill #	Author	Subject	Last Amended	Last Status - As of 2/4/2022	Location	Notes	Position	Priority (Low/Medium/High)	Category
<a href="#">AB 1749</a>	Garcia, Cristina	Community Air Protection Blueprint: community emissions reduction programs: toxic air contaminants and criteria air pollutants.		2/2/2022-From printer. May be heard in committee March 4.	2/1/2022-A. PRINT			Medium	AB 617
<a href="#">AB 284</a>	Rivas, Robert	California Global Warming Solutions Act of 2006: climate goal: natural and working lands.	7/14/2021	9/10/2021-Failed Deadline pursuant to Rule 61(a)(15). (Last location was INACTIVE FILE on 9/2/2021)(May be acted upon Jan 2022)	9/10/2021-S. 2 YEAR			Low	Climate Change
<a href="#">AB 1369</a>	Bennett	Buy Clean California Act: eligible materials: product-specific global warming potential emissions.	1/12/2022	2/1/2022-In Senate. Read first time. To Com. on RLS. for assignment.	2/1/2022-S. RLS.			Low	Climate Change
<a href="#">AB 1395</a>	Muratsuchi	The California Climate Crisis Act.	9/3/2021	9/10/2021-Failed Deadline pursuant to Rule 61(a)(15). (Last location was INACTIVE FILE on 9/10/2021)(May be acted upon Jan 2022)	9/10/2021-S. 2 YEAR			Low	Climate Change
<a href="#">AB 1676</a>	Burke	Greenhouse gases: carbon capture, utilization, and sequestration.		1/21/2022-From printer. May be heard in committee February 20.	1/20/2022-A. PRINT			Low	Climate Change
<a href="#">SB 260</a>	Wiener	Climate Corporate Accountability Act.	1/3/2022	1/26/2022-Read third time. Passed. (Ayes 23. Noes 7.) Ordered to the Assembly. In Assembly. Read first time. Held at Desk.	1/26/2022-A. DESK			Medium	Climate Change
<a href="#">SB 852</a>	Dodd	Climate resilience districts: formation: funding mechanisms.		1/26/2022-Referred to Coms. on GOV. & F. and N.R. & W.	1/26/2022-S. GOV. & F.			Low	Climate Change
<a href="#">AB 1001</a>	Garcia, Cristina	Environment: mitigation measures for air and water quality impacts: environmental justice.	1/24/2022	2/1/2022-In Senate. Read first time. To Com. on RLS. for assignment.	2/1/2022-S. RLS.			Medium	Environmental Justice
<a href="#">AB 363</a>	Medina	Carl Moyer Memorial Air Quality Standards Attainment Program.	7/5/2021	7/14/2021-Failed Deadline pursuant to Rule 61(a)(11). (Last location was TRANS. on 6/28/2021)(May be acted upon Jan 2022)	7/14/2021-S. 2 YEAR			Medium	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">AB 965</a>	Levine	Building standards: electric vehicle charging infrastructure.	6/29/2021	9/10/2021-Failed Deadline pursuant to Rule 61(a)(15). (Last location was INACTIVE FILE on 9/10/2021)(May be acted upon Jan 2022)	9/10/2021-S. 2 YEAR			Low	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">AB 1389</a>	Reyes	Alternative and Renewable Fuel and Vehicle Technology Program.	9/3/2021	9/10/2021-Failed Deadline pursuant to Rule 61(a)(15). (Last location was INACTIVE FILE on 9/7/2021)(May be acted upon Jan 2022)	9/10/2021-S. 2 YEAR			Low	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">AB 1738</a>	Boerner Horvath	Building standards: installation of electric vehicle charging stations: existing buildings.		2/1/2022-From printer. May be heard in committee March 3.	1/31/2022-A. PRINT			Low	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">AB 1771</a>	Ward	Zero-emission vehicles: grants.		2/3/2022-From printer. May be heard in committee March 5.	2/2/2022-A. PRINT			Low	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">SB 45</a>	Portantino	Short-lived climate pollutants: organic waste reduction goals: local jurisdiction assistance.	1/3/2022	1/24/2022-Read third time. Passed. (Ayes 36. Noes 0.) Ordered to the Assembly. In Assembly. Read first time. Held at Desk.	1/24/2022-A. DESK			Medium	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">SB 542</a>	Limón	Sales and use taxes: exemption: medium- or heavy-duty zero-emission trucks.	5/25/2021	1/18/2022-Read third time. Passed. (Ayes 33. Noes 0.) Ordered to the Assembly. In Assembly. Read first time. Held at Desk.	1/18/2022-A. DESK			Low	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">SB 726</a>	Gonzalez	Alternative fuel and vehicle technologies: sustainable transportation.	8/30/2021	9/10/2021-Failed Deadline pursuant to Rule 61(a)(15). (Last location was INACTIVE FILE on 9/7/2021)(May be acted upon Jan 2022)	9/10/2021-A. 2 YEAR			Medium	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">SB 771</a>	Becker	Sales and Use Tax Law: zero emissions vehicle exemption.	5/11/2021	9/10/2021-Failed Deadline pursuant to Rule 61(a)(15). (Last location was DESK on 5/26/2021)(May be acted upon Jan 2022)	9/10/2021-A. 2 YEAR		Propose Support	Medium	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">SB 894</a>	Jones	Off-highway vehicles.		2/1/2022-From printer. May be acted upon on or after March 3.	1/31/2022-S. RLS.			Low	GGRF, Incentive Programs, Mobile Source, Cap and Trade
<a href="#">AB 983</a>	Garcia, Eduardo	Public contracts: construction projects: community workforce agreements: battery manufacturing and lithium-based technology.	6/15/2021	7/14/2021-Failed Deadline pursuant to Rule 61(a)(11). (Last location was GOV. & F. on 6/22/2021)(May be acted upon Jan 2022)	7/14/2021-S. 2 YEAR			Low	Other
<a href="#">AB 1240</a>	Ting	Indoor air pollution.	1/24/2022	2/1/2022-In Senate. Read first time. To Com. on RLS. for assignment.	2/1/2022-S. RLS.			Medium	Other
<a href="#">AB 1624</a>	Ting	Budget Act of 2022.		1/20/2022-Referred to Com. on BUDGET.	1/20/2022-A. BUDGET			High	Other
<a href="#">AB 1717</a>	Aguar-Curry	Public works: definition.		2/3/2022-Referred to Com. on L. & E.	2/3/2022-A. L. & E.			Low	Other
<a href="#">SB 560</a>	Rubio	Climate Pollution Reduction in Homes Initiative: grants.	5/20/2021	1/24/2022-Read third time. Passed. (Ayes 33. Noes 1.) Ordered to the Assembly. In Assembly. Read first time. Held at Desk.	1/24/2022-A. DESK			Medium	Other
<a href="#">SB 778</a>	Becker	Buy Clean California Act: Environmental Product Declarations: concrete.	6/21/2021	7/14/2021-Failed Deadline pursuant to Rule 61(a)(11). (Last location was A. & A.R. on 6/24/2021)(May be acted upon Jan 2022)	7/14/2021-A. 2 YEAR			Low	Other
<a href="#">SB 833</a>	Dodd	Community Energy Resilience Act of 2022.		1/19/2022-Referred to Com. on E., U. & C.	1/19/2022-S. E. U., & C.			Low	Other
<a href="#">SB 840</a>	Skinner	Budget Act of 2022.		1/11/2022-From printer.	1/10/2022-S. BUDGET & F.R.			High	Other
<b>Total Active Bills</b>	<b>26</b>							Low: 15 Medium: 9 High: 2	

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Pauline Russo Cutter and Members  
of the Legislative Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 14, 2022

Re: Review of the Draft Legislative Platform for 2022

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The Legislative Platform is an attempt to provide overall advocacy principles to the Legislative Committee (Committee) and Board of Directors, as well as provide guidance to Air District staff for this legislative year.

DISCUSSION

The platform is divided into three sections – state budget, state legislation, and federal legislation. The platform does not commit the Air District to positions on every legislative proposal in the listed categories but does provide a metric for use in bringing proposals to the Committee for discussion. A draft was reviewed by the previous Committee. After feedback from the current Committee, staff will provide a revised version for review and approval at the next Committee meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Alan Abbs  
Reviewed by: Jack P. Broadbent

ATTACHMENTS:

1. Draft Legislative Platform for 2022

LEGISLATIVE COMMITTEE  
MEETING OF 02/14/2022



## Legislative Platform (2022)

### State Budget

1. **State Funding for Clean Air Projects:** Advocate for new and continued funding for investment in projects that reduce air pollution and exposure in the Bay Area. The Air District will pursue funding to support programs in the Bay Area Region from all available sources, including Carl Moyer, the Greenhouse Gas Revenue Fund, Assembly Bill (AB) 118, and the Air Pollution Control Fund.
2. **AB 617 Community Air Protection Implementation and Incentive Funding:** Advocate for adequate and continuous funding to support the Air District's AB 617 Community Air Protection Program. The state should provide necessary resources to fund the emissions inventory, regulatory, administrative, air monitoring, and community outreach activities necessary to effectively implement AB 617 requirements. The 2021/22 budget includes \$50 million (M) and \$260M statewide for implementation and incentives, respectively. When possible, the Air District will advocate support for continued funding and/or increases to funding.
3. **Carl Moyer/Mobile Source Incentive Fund/AB 118 Reauthorization:** The Carl Moyer Memorial Air Quality Standards Program, the AB 923 Program (also known as the Air District's Mobile Source Incentive Fund [MSIF]), and the California Energy Commission's AB 118 Program currently sunset at the end of 2023. The Air District will strongly advocate for extension of Moyer and 923 as part of the state budget process or through a separate policy bill.
4. **Wildfire Smoke Public Health Response:** The Air District sponsored AB 836 Wildfire Smoke Clean Air Centers Pilot Program by Assemblymember Wicks in 2019, which received funding in the state budget for 2020/21 for \$5M. The Air District will strongly advocate for continued funding.
5. **Support for Air District Activities Related to Wildfire Mitigation:** The passage of Senate Bill (SB) 1260 in 2018 has provided funding for air districts to support prescribed fire and other forest health activities by land managers. The Air District will continue to advocate for this funding.
6. **Clean Tech Financing:** Support proposals to provide financing assistance to clean technology projects, and if possible, funding for the Air District's Climate Tech Finance Program.
7. **Low-Carbon Transportation Incentives:** Support proposals for mobile source incentive programs that accelerate the turnover of older and more polluting diesel engines with cleaner alternatives, including zero emission alternatives, that reduce emissions of greenhouse gases, criteria pollutants and precursors, and toxic air contaminants.
8. **Commercial Harbor Craft Funding:** Advocate for new dedicated incentive funding for commercial harbor craft in order to meet requirements of CARB regulations to reduce diesel particulate matter.





## Legislative Platform (2022)

### State Legislation

1. **Vehicle Emissions and Congestion Relief:** Support legislative proposals that encourage active transportation, reduce vehicle miles traveled, and reduce emissions in the transportation sector. Oppose legislative proposals that roll back existing smog check and vehicle maintenance requirements.
2. **Climate Change:** Support legislative proposals that align with the Air District's 2017 Bay Area Clean Air Plan, including limiting fossil fuel combustion, stopping methane leaks, advancing zero-emission vehicle usage, advancing clean fuel adoption, accelerate low carbon buildings, supporting Community Choice Aggregation programs, and building energy efficiency in both new and existing buildings.
3. **AB 617 Community Air Protection Program:** Support legislative proposals that seek to reduce emissions and exposure in overburdened communities consistent with the framework of the Federal Clean Air Act and California Clean Air Act.
4. **Wildfire Smoke Public Health Response:** Support legislative proposals that would improve indoor air quality in public and non-public spaces through improved filtration or weatherization, especially in vulnerable and disadvantaged communities.
5. **Emergency Backup Generation:** Support legislative proposals that seek to reduce diesel particulate emissions in backup generation through use of cleaner generation. Oppose legislative proposals that restrict air district regulatory authority of diesel backup generators.
6. **Toxic Air Emissions:** Support legislative proposals to reduce emissions and exposure of air toxics. Oppose legislation that would potentially result in increases of exposure to air toxic emissions in the Bay Area Region.
7. **Wildfire Smoke Mitigation/Prescribed Fire:** Support legislative proposals to proactively reduce smoke from catastrophic wildfires through responsible fuel management policies, including the use of prescribed fire.
8. **Stationary Source Greenhouse Gas Authority:** Support legislative proposals to allow local air district the authority to establish stationary source greenhouse gas limits.
9. **Land Use:** Monitor legislative proposals that have the potential to directly affect local and regional air quality goals.



## Legislative Platform (2022)

### Federal Legislation

1. **Federal Funding for Air District Clean Air Programs:** Advocate for continuous and increased funding for Air District programs that reduce emissions and exposure, or that support monitoring and planning efforts in the Bay Area Region, including federal 103 and 105 grants, Diesel Emission Reduction Act grants, and Targeted Airshed Grants.
2. **Wildfire Smoke Public Health Response:** Support federal level efforts, including legislative efforts, to improve wildfire smoke public health response and indoor air quality in the Bay Area Region.
3. **Clean Transportation Programs:** Support efforts to secure funding for clean transportation infrastructure in the Bay Area in federal transportation bills and economic stimulus bills.
4. **Clean Energy Programs:** Support efforts to promote clean energy technology through incentive funding or tax credits, especially in disadvantaged communities in the Bay Area. Support proposals to provide financing assistance to clean technology projects, and if possible, funding for the Air District's Climate Tech Finance Program.
5. **Particulate Matter Standards:** Support efforts to review EPA's 2020 decision to leave federal PM<sub>2.5</sub> unchanged, per recommendations of Air District Board and Advisory Committee.
6. **Vehicle Emission Standards:** Support efforts to develop more stringent vehicle emission standards that align with current California standards for light duty, medium duty, and heavy-duty vehicles. Support efforts to retain California vehicle emission standard authority.
7. **Climate Change:** Support federal level efforts, including legislative efforts, that align with the Air District's 2017 Bay Area Clean Air Plan, including limiting fossil fuel combustion, stopping methane leaks, advancing zero-emission vehicle usage, advancing clean fuel adoption, accelerate low carbon buildings, supporting Community Choice Aggregation programs, and building energy efficiency in both new and existing buildings.
8. **Leaded Aviation Gas:** Support efforts to cause EPA to adopt an endangerment finding for leaded aviation gas. Support additional regulatory and incentive programs to promote use of lower lead and no-lead alternatives.

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Report of the Administration Committee Meeting of February 16, 2022

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

None.

DISCUSSION

The Administration Committee met on Wednesday, February 16, 2022, approved the minutes of December 1, 2021, and accepted the Hearing Board Quarterly Report for October through December 2021. This meeting was conducted under procedures authorized by Assembly Bill 361. Members of the Committee participated by teleconference.

The Committee then received and discussed the staff presentation *Management Audit Update*. George Skiles from Sjoberg Evashenk, the contractor hired by the Air District to conduct the audit, was on hand to address the Committee members' questions.

The Committee then received an update from Air District staff on potential changes to the composition of the Board. Although this was not an action item, the Committee requested that Air District staff provide to the Board the history of the Air District's composition, explain how county population dictates Air District Board appointments, the history of the seat on the Air District Board that is reserved specifically for the Mayor of San Francisco, and whether other California air districts that have made legislative changes affecting their Boards' composition have Advisory Councils.

The Committee then received and discussed the staff presentation *Update on the Air District's Recruitment and Selection Plan*. The co-founders of Making Education Better (MEB) Consulting Group, the contractor hired by the Air District to assist the Air District's Diversity, Equity & Inclusion Office with improving the Air District's recruitment, hiring, and retention practices, presented their review and initial findings.

Finally, the Committee received and discussed the staff presentation *Update on Hearing Board Efforts*, regarding upcoming Hearing Board activity and current recruitment efforts.

The next meeting of the Administration Committee will be on Wednesday, March 16, 2022, (time uncertain), via webcast, pursuant to procedures in accordance with Assembly Bill 361. This concludes the Chair Report of the Administration Committee.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Marcy Hiratzka  
Reviewed by: Vanessa Johnson

ATTACHMENTS:

1. Administration Committee February 16, 2022 Meeting Memorandums

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Administration Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 16, 2022

Re: Management Audit Update

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

On June 16, 2021, the Board of Directors (Board) approved a workplan to initiate a management audit and the scope of work to procure services for a management audit, acknowledging the following priorities: evaluating the Air District's current hiring process, analyzing Air District divisions that are asking for the greatest numbers of new staffing positions, including a performance audit and risk evaluation. The vendor selection team for the auditor included Board Members Carole Groom and Margaret Abe-Koga, as well as one community member appointed by the Community Equity, Health, and Justice Committee, another appointed by the Stationary Source and Climate Impacts Committee, and a subject matter expert in management audits.

On June 30, 2021, the Air District issued a Request for Qualifications for Management Audit Services which closed on July 21, 2021. During the open period, the Air District received six proposals from various vendors.

On December 15, 2021, the Board reviewed the scores attributed to each vendor by the selection panel and authorized the execution of a contract with the highest scoring vendor, Sjoberg Evashenk, for management audit services, in an amount, not to exceed \$250,000.

DISCUSSION

The Management Audit contract with Sjoberg Evashenk calls for a first report to be delivered in March 2022 to inform staffing level decisions, and a second report delivered in May 2022, which will provide information regarding Air District-wide risk and rank the Air District’s divisions for further audit priority.

Sjoberg Evashenk began work on the staffing recommendation and risk assessment deliverables in January 2022. To date, they have completed 24 interviews with senior management staff, and are reviewing performance metrics, policies, and procedures from each of the Air District’s programs.

Sjoberg Evashenk is currently on schedule and expects to deliver the reports on-time in March 2022 and May 2022 as specified in the contract.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: John Chiladakis  
Reviewed by: Jack P. Broadbent  
George Skiles, Sjoberg Evashenk

ATTACHMENTS:

None.

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Administration Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 16, 2022

Re: Proposed Timeline to Discuss and Provide Direction Regarding Board Composition

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

At the January 19, 2022, Board of Directors Special Meeting/Retreat, Board members requested further discussion of the current composition of the Air District Board and whether the Board should consider the addition of one or more non-elected appointees. During previous Board discussions, Board members expressed varying ideas about the size of the Board, whether or not to add non-elected appointees, and desired backgrounds of potential appointees. As the Board understands, making changes to the composition of the Board would require a change in statute through legislation.

DISCUSSION

Below is a proposed timeline for further discussion of issue that would allow the Administrative Committee, Board of Directors, and Legislative Committee to prepare for a potential bill introduction in 2023, should the Board choose to direct staff to move forward with a bill. Schedule permitting, the Administrative Committee may want staff to conduct additional meetings with the Community Equity, Health, and Justice Committee and the Community Advisory Council.

**February 16, 2022**

Administrative Committee: Overview of proposed timeline.

**April 2022**

Administrative Committee: Background, history, and questions. This meeting would review the existing Health and Safety Code statute related to Bay Area Air Quality Management District Board composition, the formula used to allocate board members between cities and counties, and questions that the Committee(s) and Board may want to address regarding Board composition, including potential number of new appointees, appointing authority, eligibility criteria, and whether to change the formula for establishing elected official representation. This meeting would also provide a background on the most recent bill changing the composition of the San Diego Air Pollution Control District Board - Assembly Bill (AB) 423 (Gloria; Chapter 744, Statutes of 2019) - and the current status of a bill proposing to change the composition of the South Coast Air Quality Management District Board - Senate Bill (SB) 342 (Gonzalez). This meeting could be used to provide some initial direction related to the above questions, but primarily be used to set up the discussion for the following meeting.

**May 2022**

Administrative Committee: Discussion and consensus regarding proposal to bring to Board of Directors for consideration.

**Month TBD 2022**

Board of Directors: Receive presentation, discuss, and provide direction to staff if necessary.

**Month TBD 2022**

Legislative Committee: Receive presentation on proposed legislative language and provide direction to staff if necessary.

**Month TBD 2022**

Board of Directors: Receive presentation on proposed legislative language and provide direction to staff if necessary.

**January/February 2023**

Bill introduction, if necessary.

**BUDGET CONSIDERATION/FINANCIAL IMPACT**

None.



Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Alan Abbs  
Reviewed by: Jack P. Broadbent

ATTACHMENTS:

None.

ADMINISTRATION COMMITTEE  
MEETING OF 02/16/2022

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Administration Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 16, 2022

Re: Update on the Air District's Recruitment and Selection Plan

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

On June 16, 2021, the Board of Directors approved 26 new positions for the Fiscal Year Ending (FYE) 2022 budget. The Board of Directors requested Air District staff provide a recruitment plan to highlight the Human Resources Office's diversity recruitment efforts. At the October 20, 2021 Administration Committee meeting, Air District staff presented the recruitment plan and discussed the selection of MEB Consulting to evaluate the Air District's recruitment processes with an equity lens. The Board members requested staff to report back on the work of MEB Consulting and their recommendations.

DISCUSSION

The Air District's Human Resources Office, in coordination with hiring managers, oversees recruitment efforts for positions throughout the Agency. These efforts include outreach, education, and processing of applications to maximize the opportunity to recruit and retain a highly diverse employee pool.

The Air District has historically been successful in its outreach efforts to solicit applications from a wide diversity of applicants and is consistently seeking opportunities to reduce any barriers to employment. As part of that effort, the Human Resources Office audited the Air District's recruitment processes in order to identify and rectify any barriers for diverse candidates as they progress through the merit-based recruitment and employment plan.

The Air District's efforts and MEB Consulting's assessment and recommendations will be discussed as part of the presentation on this item.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None. Funding for this effort is included in the FYE 2022 budget.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Terri Levels

Reviewed by: Rex Sanders

ATTACHMENTS:

1. MEB Consulting Group Executive Summary & Recommendations

ADMINISTRATION COMMITTEE  
MEETING OF 02/16/2022



## Executive Summary & Recommendations

MEB Consulting Group (MEBCG or *the firm*) was contracted to provide strategy and recommendations in the creation and implementation of policies, procedures, programs and resources in collaboration with the Bay Area Air Quality Management District's (Air District) to incorporate into the daily operations to address issues of equity in the workplace. The Air District's definition of equity states: Equity is the creation of equal access to opportunities that closes demographic disparities within all areas of the organization and society at large. To execute a successful external review of the of the Air District's recruitment, hiring, and retention practices the firm reviewed assets and conducted interviews with the following:

- Review all digital documents and assets (website and online portals) related to recruiting, reviewing, and hiring applicants
- Meet with key stakeholders involved in the Air District's hiring process

The goal of the review process was to:

- Understand the support role of the central Human Resources team.
- Understand the role and responsibilities of The Air District's hiring managers and panelists
- Understand the overall structure of the hiring process
- Review digital materials provided by the HR Department
- Identify successes, challenges and opportunities in the Air District's hiring process
- Provide recommendations for review and hiring process to the Air District's Human Resources (HR) Department

In this report, we lay out themes, findings, and recommendations, based on the Air District materials, meetings, and focus group sessions. Furthermore, we have included possible recommendations for a continued partnership between MEBCG and Air District in a multi-phase process that encompasses this external review, along with training and development opportunities.



## Theme Equity of Hiring Practices

*“If you really want to solve the DEI issues within, we have to get out of our own way.”  
- focus group attendee*

### Theme in Review

Ensuring that equity is at the forefront of an organization's hiring practices is essential to its growth and sustainability. It is important to recognize that working towards equity is a process and that requires challenging and questioning what practices currently exist and whether equal access to opportunities exist. Upon initial review of the website, with specific focus on the human resources and hiring portals, the firm saw evidence of intentional efforts on DEI information throughout those two areas. The DEI statement and commitment to a positive work environment in the job descriptions on the website showed a commitment to ensure potential employees were welcomed.

### Findings and Recommendations

- ❖ *Finding:* During the initial *Discovery Call* with the HR team, communication around accessibility and those needing reasonable accommodations was discussed at length and identified as a gap in their job postings online.
  - *Recommendation*
    - Provide MEBCG access to the employee portal to review additional gaps in programs and resources provided to hiring managers and employees resulting in a comprehensive list of recommendations for this asset.
  
- ❖ *Finding:* Job requirements often limit the number of potential candidates. For example, a focus group participant mentioned a master's degree and/or minimum years of experience for *entry level* positions, which could inadvertently or overtly eliminate qualified candidates who don't meet the educational requirements for the job. MEBCG was informed that the Environmental Planner series holds the only class that requires a master's degree.
  - *Recommendation*
    - Create a systematic plan for reviewing the Environmental Planner series position descriptions using an internal or externally developed rubric to ensure minimum requirements correlate to the job being performed. Consistency of descriptions and abilities should also be taken into account for all Air District positions.
      - *For example:* Can experience gained in graduate school or during an internship be applied to minimum years experience?



- ❖ *Finding:* Hiring Managers did not feel fully aware or able to affect where the positions were posted online and in what capacity.
  - *Recommendation*
    - Provide continual educational opportunities for Hiring Managers on the job posting process. Highlight opportunities to solicit their input and feedback on where and how jobs are posted. HR should also work closely with the DEI staff to reexamine job boards for diversity and whether they align with the job descriptions.
  
- ❖ *Finding:* DEI is available for Hiring Managers, but not mandatory, therefore the hiring process is not consistent. Not all panelists assisting in the interview and selection process are required to attend DEI training.
  - *Recommendation*
    - The Air District should host general training for anyone participating in the interview and selection process around DEI initiatives like mitigating unconscious bias.
  
- ❖ *Finding:* Hiring managers expressed that interviewees should be better prepared for the interview process, as the interview panel would only receive candidate documents at the panel itself (not prior), which would leave the interviewee with the incorrect assumption their materials were already reviewed by the interview panel.
  - *Recommendations*
    - HR should invest in determining the best way to set candidates up for success by ensuring they are aware of the entire hiring process, including the interview panel (which is the first time many on the panel have ever seen the candidate's resume).
    - Candidate materials should be provided to interview panels in advance.



## Theme Staff Retention and Satisfaction

*“In the [#] years I’ve been with the Air District, I feel like it’s been continuous transitions.”  
- focus group attendee*

### Overview of the Theme

Retaining staff is a prime indicator of workplace success, staff engagement and employees feeling valued. However when employees start to feel burnout, there is higher turnover, lower productivity and higher healthcare costs, according to the [American Psychological Association](#).

It was stated by many Hiring Managers that their HR contact was easy to work with and they expressed an appreciation for their work together. This included ensuring postings were happening with timelines, and walking hiring managers through the interview, selection and hiring process itself. A pain point for hiring managers seemed to be the continuous turnover, coupled with the need to conduct a job search process to fill vacancies and onboard new hires. All of which is time consuming and stressful while performance expectations are still being met. Several times focus group attendees stated they or their teams felt experience with burnout.

### Findings and Recommendations

- ❖ *Finding:* Hiring managers expressed dissatisfaction with the timeline of the job posting process, having to wait until a position is fully vacant before posting.
  - *Recommendation*
    - Allow departments to create a process for streamlined recruiting, onboarding and training practices based on upcoming anticipated position vacancies.
- ❖ *Finding:* There was collective appreciation for the transition to DocuSign for the various hiring forms, assisting in the streamlining of paperwork and signatures, cutting down on lost or misplaced paperwork. While this process was lauded, it also came with some frustrations, as the quantity of signatures needed (seven) seemed excessive, especially as one or two specific individuals were the bottleneck for ensuring timely processing.
  - *Recommendation*
    - Consider requiring fewer signatures, limiting it to the hiring manager, HR and direct report or senior staff member of that respective area.
- ❖ *Finding:* Vacancies were not allowed to be filled, once a vacancy is identified, yet current staff are still expected to perform at the required level plus the responsibilities of the vacant position.
  - *Recommendation*



- This practice should be evaluated to ensure work is distributed equitably among staff while the vacancy is being filled. When a vacancy occurs, hiring managers should be allowed to start the interview processes to minimize the length of time staff are covering the vacant position's roles and responsibilities.

ADMINISTRATION COMMITTEE  
MEETING OF 02/16/2022



## Theme

### Updating and Reviewing Job Descriptions & Qualifications

*“Our current job descriptions are lengthy, dated and do not always articulate the needs of the Air District.”*  
- focus group attendee

#### Overview of the Theme

The discussion around current job descriptions and qualifications came up at various points throughout the focus groups and follow-up meetings. Several hiring managers appreciated that HR recently created new “job flyers,” which have been helpful in aesthetically appealing to a new demographic and broadened the audience receptive to position needs. Meanwhile, a significant portion of focus group attendees felt challenged by the inability to affect change with regards to job descriptions.

#### Findings and Recommendations

- ❖ *Finding:* Participants shared challenges around the ability to provide input on the job description and qualifications needed for specific positions, as some positions have not been updated in years. This was specifically referenced when positions list “ability to fax” as part of the description, with no mention of social media or current technology trends. Upon review of the MOU, the procedures section 16.01 Review of Job Assignment(s) and Description outlines that there are opportunities to make changes or add additional duties in bold within the current classification and job announcement.
  - *Recommendations*
    - Consistent review of job descriptions should be completed, with input from hiring managers to ensure more accurate job performance needs are reflected. This should be conducted on an annual basis.
    - It was mentioned this might be a current practice of HR, however there was no known update from any hiring manager. If a review of job descriptions is being conducted, updates should be provided to hiring managers on the progress.
- ❖ *Finding:* The various classifications used for job descriptions (“Staff Specialist”, STAFF1, STAFF2, etc.) are too broad or general, and difficult to solicit for, especially if there are no specific job titles.
  - *Recommendation*
    - Consider updating job titles to be more reflective of the position, or find ways to be more specific in the job posting listing the functional area and responsibilities.
- ❖ *Finding:* It seems difficult to make job announcements interesting and appeal to the right candidate, both in how the description is listed and how it appears posted visually.



➤ *Recommendation*

- Work with hiring managers to know which type of promotion materials would be most successful in their potential posting areas.

## Conclusion & Next Steps

### Initial Phase: Review of Information and Initial Findings Report

- Conduct review of digital materials, online hiring portal and website
- Conduct focus groups of key stakeholders, discerning where BAAQMD is regarding DEI in their hiring practices, processes and procedures
- Conduct a review of the hiring process and timelines
- Report findings and recommendations

### Phase 2: Systems and Next Steps

*(Ideal timeframe: February through April, 2022)*

- Given that performance reviews are mandatory, BAAQMD only has a 25% completion rate, special attention should be given to this area moving forward. Specific attention to the performance review portal, mitigating unconscious bias and execution of the process for all Air District employees.
- Utilizing information gathered from Phase One and the start of Phase Two, review the BAAQMD MOU and make recommendations for updated language, processes, etc.
- Design customized 21 Day Challenge based on Air District needs. Perhaps this is where we reference laying groundwork and customizing 21 day challenge modules to fit the needs of the air district?
- It's already being discussed by hiring managers/department heads - but perhaps some sort of mentorship program?

### Phase Three: In-Depth Training and Development *(Ideal timeframe: May through July, 2022)*

- Referencing all data and information gathered to date, begin various training modules for BAAQMD, including:
  - Launching the 21 Day Challenge for all BAAQMD employees
  - Conducting Anti-Racist Facilitator Training for interested employees
  - Performing in-depth training and development specifically for BAAQMD Board members, then administering trainings for the various BAAQMD departments, eventually having a touch point with every BAAQMD employee
- Conduct an assessment at the end of the phase to provide feedback and additional recommendations for BAAQMD

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Administration Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 16, 2022

Re: Update on Hearing Board Efforts

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The Hearing Board is a quasi-judicial body that rules on particular cases that affect only individual facilities. The Hearing Board is authorized to hear requests for variance relief, permit revocation, abatement orders, and appeals by permit applicants, or by interested third parties, concerning the issuance or denial of permits.

The Hearing Board is established by state law and consists of five members and their alternates - an attorney, a professional engineer, a member from the medical profession and two members of the public.

DISCUSSION

Staff will update the Committee on recent Hearing Board efforts, including the recruitment of Hearing Board Members, currently underway.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Erica Trask  
Reviewed by: Jack P. Broadbent

ATTACHMENTS:

None.

ADMINISTRATION COMMITTEE  
MEETING OF 02/16/2022

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Report of the Budget and Finance Committee Meeting of February 23, 2022

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

None.

DISCUSSION

The Budget and Finance Committee (reinstated, since becoming inactive in January 2021) met on Wednesday, February 23, 2022. This meeting was conducted under procedures authorized by Assembly Bill 361. Members of the Committee participated by teleconference.

The Committee reviewed and discussed the staff presentation *Second Quarter Financial Report Fiscal Year Ending 2022*.

The Committee then reviewed and discussed the staff presentation *Air District Financial Plan Overview*.

Finally, the Committee then reviewed and discussed the staff presentation *Additional Information on Investment Advisor for Section 115 Trust*.

The next meeting of the Budget and Finance Committee will be held on Wednesday, March 23, 2022, at 9:30 a.m., via webcast, pursuant to procedures authorized by Assembly Bill 361. This concludes the Chair Report of the Budget and Finance Committee.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Marcy Hiratzka  
Reviewed by: Vanessa Johnson

ATTACHMENTS:

1. Budget and Finance Committee February 23, 2022 Meeting Memorandums

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Carole Groom and Members  
of the Budget and Finance Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 23, 2022

Re: Second Quarter Financial Report - Fiscal Year Ending (FYE) 2022

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

None.

DISCUSSION

Staff will present an update on the Air District's financial results for the second quarter of the 2021-2022 Fiscal Year.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Stephanie Osaze

Reviewed by: Jeff McKay

ATTACHMENTS:

1. Attachment A 2nd Qtr Financial Report FYE 2022

The following information summarizes the financial results of the second quarter of the fiscal year ending 2022.

**GENERAL FUND: STATEMENT OF REVENUES – Comparison of Prior Year Quarter Actual and Current Year Budget to Actual**

REVENUE TYPE	2 <sup>nd</sup> QTR FY 2021	2 <sup>nd</sup> QTR FY 2022	FY 2022 - % of BUDGETED REVENUE
County Receipts	\$9,707,872	\$12,212,622	31%
Permit Fee Receipts	\$25,539,368	\$28,026,678	71%
Title V Permit Fees	\$5,342,282	\$5,632,916	90%
Asbestos Fees	\$2,091,026	\$2,098,968	52%
Toxic Inventory Fees	\$2,275,097	\$1,682,159	230%
Community Health Impact	\$0	\$1,027,362	112%
Criteria Pollutant Toxic	\$0	\$735,678	57%
Penalties and Settlements	\$1,025,884	\$3,664,428	133%
Interest Income	\$500,669	\$367,528	23%
<b>Total Revenue</b>	<b>\$46,482,197</b>	<b>\$55,448,339</b>	<b>57%</b>

**GENERAL FUND: STATEMENT OF EXPENDITURES - Comparison of Prior Year Quarter Actual and Current Year Budget to Actual**

EXPENDITURE TYPE	2 <sup>nd</sup> QTR FY 2021	2 <sup>nd</sup> QTR FY 2022	FY 2022 - % of BUDGETED EXPENDITURES
Personnel - Salaries*	\$24,222,686	\$25,290,051	45%
Personnel - Benefits*	\$14,476,235	\$19,782,719	67%
Operational Services / Supplies	\$11,073,347	\$11,676,480	36%
Capital Outlay	\$24,222,686	\$25,290,051	45%
<b>Total Expenditures</b>	<b>\$51,434,659</b>	<b>\$58,158,838</b>	<b>47%</b>
* Consolidated (includes Special Funds)			

**CASH INVESTMENTS IN COUNTY TREASURY – Account Balances as of Second Quarter**

CASH/INVESTMENTS	2 <sup>nd</sup> QTR FY 2021	2 <sup>nd</sup> QTR FY 2022
General Fund	\$63,496,674	\$108,094,498
TFCA	\$122,234,438	\$125,602,098
MSIF	\$49,217,388	\$53,376,272
Carl Moyer	\$79,081,580	\$70,537,271
CA Goods Movement	\$21,134,331	\$21,286,051
AQ Projects	\$1,600,145	\$1,362,240
Vehicles Mitigation	\$2,478,540	\$6,688,291
<b>Total</b>	<b>\$339,243,094</b>	<b>\$386,946,721</b>



FUND BALANCES	6/30/2020	6/30/2021	6/30/2022
	Audited	Projected	Projected
<b>DESIGNATED: *</b>			
Community Benefits			\$3,000,000
Economic Contingency	\$20,082,966	\$21,294,922	\$23,303,025
Pension Liability	\$3,000,000	\$4,000,000	\$4,000,000
Technology Implementation Office	\$3,350,000	\$3,350,000	\$3,350,000
Wildfire Mitigation	\$1,000,000	\$1,000,000	\$2,000,000
AB617 Staffing Contingency			\$6,000,000
Pandemic Contingency			\$7,000,000
<b>Total Designated Reserves</b>	<b>\$27,432,966</b>	<b>\$29,644,922</b>	<b>\$48,653,025</b>
Undesignated Fund Balance	\$26,401,581	\$34,385,565	\$14,877,462
<b>TOTAL DESIGNATED &amp; UNDESIGNATED</b>	<b>\$53,834,547</b>	<b>\$64,030,487</b>	<b>\$63,530,487</b>
<b>TOTAL FUND BALANCE</b>	<b>\$53,834,547</b>	<b>\$64,030,487</b>	<b>\$63,530,487</b>
* Designated Fund Balances are subject to change at Board's discretion.			
<b>OUTSTANDING LIABILITIES</b>			
CalPERS Pension Retirement			\$101,305,734
Other Post-Employment Benefits			\$18,368,386
Certificate of Participation Notes			\$21,173,770
<b>TOTAL OUTSTANDING LIABILITIES</b>			<b>\$140,847,890</b>

## VENDOR PAYMENTS

In accordance with provisions of the Administrative Code, Division II Fiscal Policies and Procedures - Section 4 Purchasing Procedures: 4.3 Contract Limitations, the staff is required to present recurring payments for routine business needs such as utilities, licenses, office supplies and the like, more than, or accumulating to more than \$100,000 for the fiscal year. In addition, this report includes all of the vendors receiving payments in excess of \$100,000 under contracts that have not been previously reviewed by the Board. In addition, staff will report on vendors that undertook work for the Air District on several projects that individuals were less than \$100,000, but cumulatively exceed \$100,000.

Below is a list of vendors with cumulative payments made through the second quarter of 2021-22 fiscal year that exceeded \$100,000 and meets the reporting criteria noted above. All expenditures have been appropriately budgeted as a part of the overall Air District budget for The fiscal Year 2021-22.

	<b>VENDOR NAME</b>	<b>AMOUNT PAID (July 2021 - Dec 2021)</b>	<b>Explanation</b>
1	Alliant Insurance Services	\$730,435	Various Business Insurance Policies
2	BAAQMD Employee Association	\$133,714	Employee Union Dues
3	Bay Area Headquarters Authority	\$521,185	Shared Services & Common Areas
4	Benefits Coordinators Corp.	\$568,060	Life Insurance Plan & LTD Insurance
5	CA Public Employee Retirement System	\$4,336,326	Health Insurance Plan
6	CA Public Employee Retirement System	\$3,405,610	Retirement Benefits & 457 Supplemental Plan
7	CAPCOA	\$618,475	Pass through EPA grants
8	Cubic Transportation Systems	\$239,301	Clipper Transit Subsidy
9	Enterprise Fleet Services	\$310,683	Fleet Leasing and Maintenance services
10	EPlus Technology	\$164,565	Cisco computer network equipment warranty
11	P&A Administrative Services	\$104,681	Flexible Spending & Cobra Benefit Services
12	Preferred Benefit Insurance AD	\$326,305	Dental Insurance Plan
13	Robert Half	\$248,931	Temporary Staffing Services
14	Sloan Sakai Yeung & Wong LLP	\$147,047	Human Resources Consulting Services
15	True North Research	\$118,800	Research and Analysis Services
16	Wang Brothers Investment LLC	\$253,007	Richmond Site Lease

BUDGET AND  
COMMITTEE MEETINGS  
01/13/2022

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Carole Groom and Members  
of the Budget and Finance Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 23, 2022

Re: Air District Financial Plan Overview

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

None.

DISCUSSION

Staff will present the Air District's annual Financial Plan. The plan is a prelude to the upcoming Fiscal Year 2023 budget and provides an overview of historical financial trends and describes key assumptions and policies. These inputs are used to develop a five-year financial forecast for the Plan.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Stephanie Osaze

Reviewed by: Jeff McKay

ATTACHMENTS:

1. Financial Plan 2022

BUDGET AND FINANCE  
COMMITTEE MEETING OF  
01/13/2022



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

2022 FINANCIAL PLAN

GENERAL FUND

FIVE YEAR FISCAL FORECAST: 2023-2027

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BUDGET AND FINANCE  
COMMITTEE MEETING OF  
01/13/2022

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BUDGET AND FINANCE  
COMMITTEE MEETING OF  
01/13/2022



## INTRODUCTION AND PURPOSE

The Financial Plan (the Plan) is provided as a prelude to the development of the Bay Area Air Quality Management District's (Air District's) annual budget. A key component of the Plan is a description of the current economic environment and its short and long-term anticipated impacts to the Air District's fiscal condition. The Plan provides an overview of historical financial trends and describes key assumptions and policies. These inputs are used to develop a five-year financial forecast. The forecast is not a budget, but rather, a projection of the Air District's financial health based on key assumptions and factors. The forecast can help to flag future challenges and opportunities allowing the Air District to be proactive in planning actions as it develops and adopts a budget for the coming year. Management of fiscal resources enables maintenance of service levels while achieving the Air District's priorities, goals and objectives.

## HISTORICAL FINANCIAL CONDITION/TRENDS

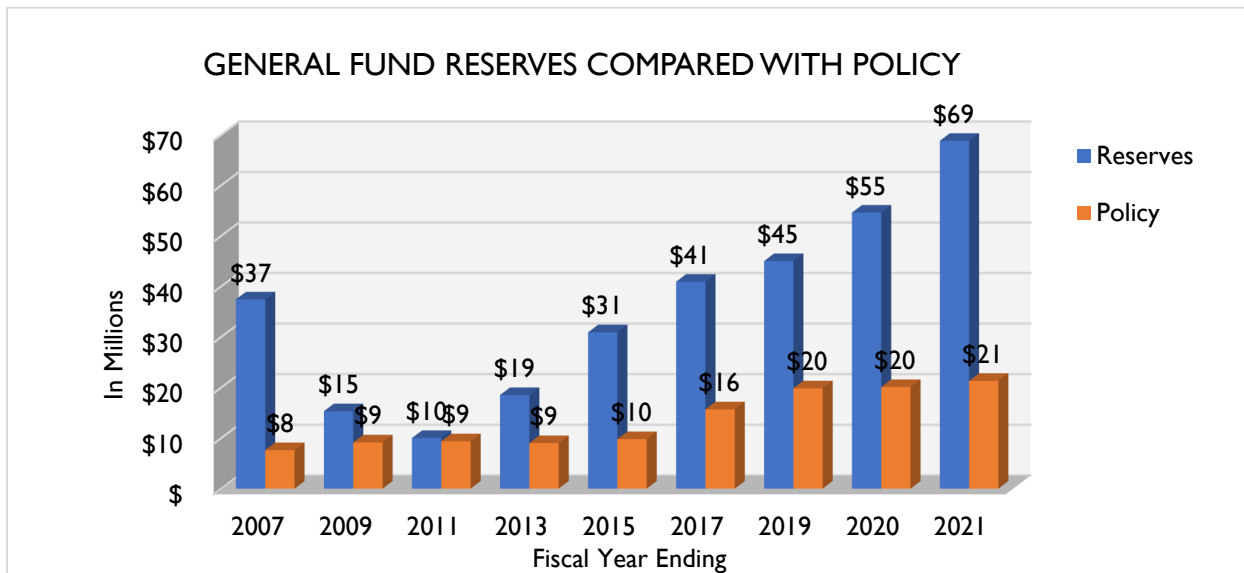
The General Fund is the primary operating fund used to sustain the business of the Air District. It accounts for revenues, expenditures, and reserves. This section provides an overview of the Air District's financial condition and actions taken to address financial challenges since the 2008 recession. The recession caused many local public agencies to lay-off a substantial portion of their work force and even drove some to file bankruptcy. However, through sound fiscal management and a combination of various measures, the Air District was able to minimize service impacts and avoid lay-offs. One measure used to temporarily meet operational needs was a draw down from the General Fund reserves.

## HISTORICAL RESERVES

Reserves set aside funds to weather unanticipated economic conditions or the impact of natural events. Reserves are an important measure of financial stability and provide flexibility to temporarily mitigate financial challenges.

Figure 1 illustrates the impact to the General Fund reserve when it was used to meet operational needs during the economic downturn. In 2007 before the economic downturn, reserves were \$37 million, substantially higher than the 2007 reserve policy of 15% of the General Fund Operation Budget. When reserves were used temporarily to meet operating needs, they dipped significantly, almost reaching the minimum reserve policy level of \$9 million in 2011. Since 2011, reserves have been replenished, meeting the current minimum reserve policy of 20% of General Fund Operating Budget. This experience illustrates that while the Air District has a minimum reserve policy, it is important to strive to remain above the policy level to weather events such as the 2008 Great Recession.

Figure 1 General Fund Reserves Compared with Policy



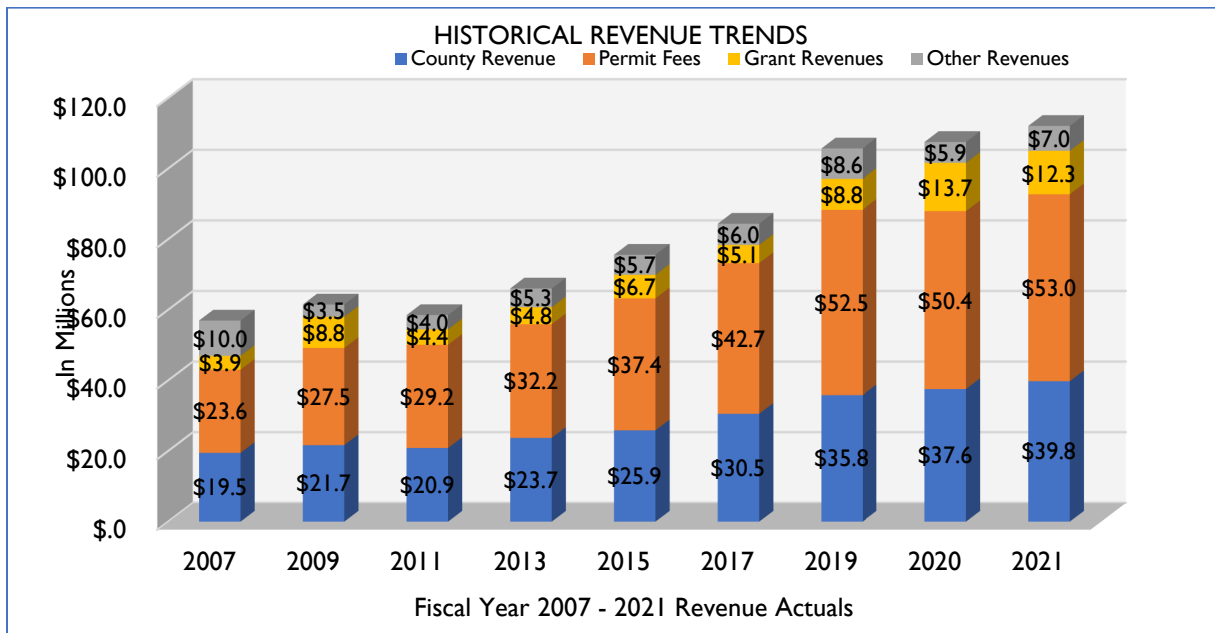
In addition to use of reserves, the following measures were utilized during the 2008 economic downturn:

1. Unfilled Vacancies
2. Postponed Expenditures
3. Deferred Capital Investment
4. Initiated Cost Recovery Policy for Permit Fees

#### HISTORICAL REVENUES

The General Fund's two major revenue sources are Property Tax and Permit Fees. These two sources generally reflect the Bay Area's changing economic conditions and largely dictate the Air District's ability to control and manage growth. **Figure 2** provides a historical trend of General Fund revenues in the period between 2007 to 2021.

**Figure 2 Historical Revenue Trends**



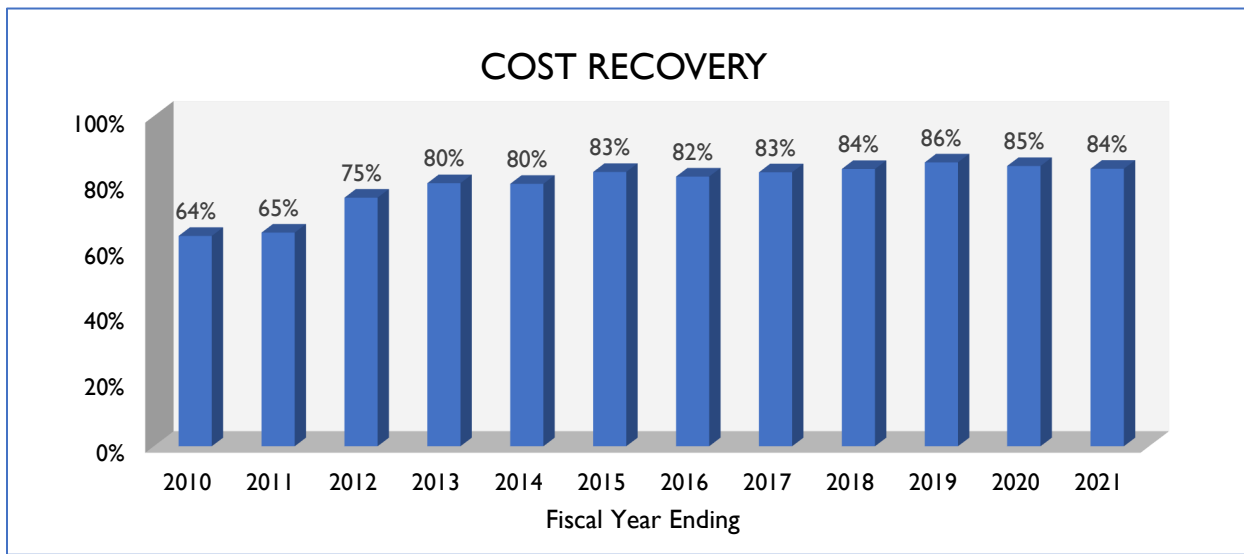
**Property Tax** is the second largest General Fund revenue source. This source is not controlled by the Air District but is rather administered by the nine Bay Area Counties. It is distributed annually to the Air District using a State law prescribed formula.

As Figure 2 illustrates, property tax revenue growth is relatively stable. Unlike permit fees, there is a lag in response to changing economic conditions in the real estate market. In 2009 and 2010 property tax was relatively stable, decreasing slightly in 2011 due to the 2008 recession, with a three-year lag.

**Permit Fees** are the largest General Fund revenue source and are sensitive to the level of economic activity in the Bay Area. In 2008, permit fees dipped slightly due to the economic downturn. Some of this impact was offset by amending the fee schedule through fee increases, resulting in higher permit fee revenues.

State law authorizes the Air District to assess fees to generate revenue to recover 100% of reasonable costs of regulatory program activities for stationary sources of air pollution. Annually, the Air District can review and amend fees to cover associated costs.

Figure 3 Cost Recovery



In 2010, the Air District was only recovering 64% of its costs. In 2021, the cost recovery level was 84%. This was accomplished using a prescribed formula to review and amend the fee schedule annually pursuant to the adoption of a Cost Recovery Policy. The policy established an 85% minimum cost recovery target. More favorable economic conditions, resulting in higher fees collected by the Air District, and the implementation of the cost recovery policy, permit fee revenue has experienced significant growth since 2010 as shown in **Figure 3**.

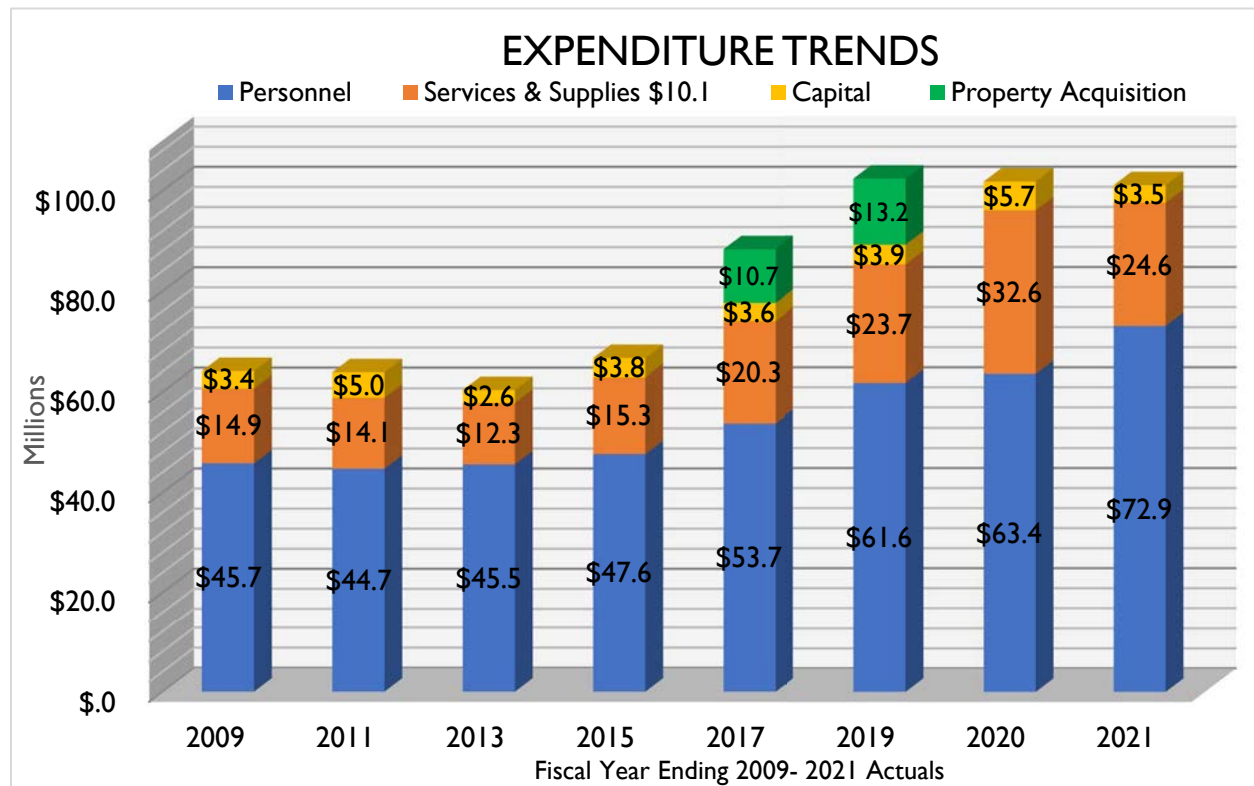
**Grant Revenues** represents various federal and state grants used to support the air monitoring program and public outreach. This category fluctuates based on available grant funding.

**Miscellaneous Revenues** include other state funding such as subvention, interest and penalties and settlements and one-time revenues. This category also fluctuates based primarily on the amount and timing of penalties and settlements.

#### HISTORICAL EXPENDITURES

The General Fund's two major expenditures are Personnel (includes benefits) and Services & Supplies. Figure 4 provides a historical trend of actual General Fund expenditures from 2007 to 2021.

Figure 4 Historical Expenditure Trends



**Personnel** costs include salaries, taxes and benefits. Benefits includes health premiums, pension and other post-employment benefit contributions. This category dipped slightly in 2011 and remained relatively steady until 2017, when the Air District experienced increased staffing levels and a steep rise in pension contributions to CalPERS. Since 2017, the Air District has been increase staffing levels to meet its demand for the implementation of Assembly Bill 617 and increased workload in other programs.

**Services and Supplies** costs are primarily contract services, with various office supplies representing the balance. This category fluctuates from year to year. It increased significantly between 2017 and 2019 due to several new and enhanced programs (such as the Clean Air Plan Implementation and Technology Improvement Office Programs); including one-time costs associated with the move to the Air District’s new headquarters. In 2020, the spike in this category resulted from one-time costs associated with a settlement payment and the Air District’s shared costs with Metropolitan Transit Commission (MTC) on the improvements to the first-floor retail space (Temescal) at the Beale Street Headquarters. The agreement will allow the two agencies to share any revenue generated from the retail space.

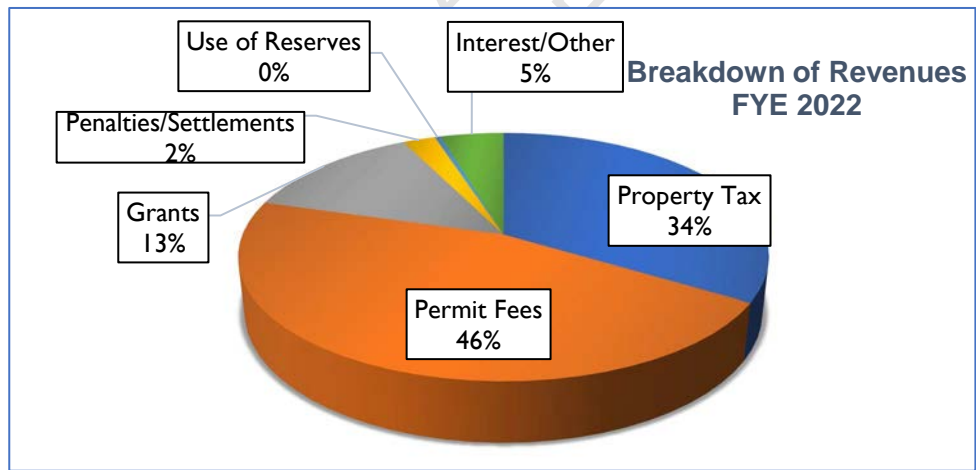
**Capital** costs fluctuate based on the timing of capital equipment purchase and replacement. Majority of the capital expenditures over the past years are related to the implementation of the Air District’s billing new billing system, New Production System (NPS).

**Property Acquisition** accounts for purchase of real estate. In 2017, a down payment of \$10.7 million went towards the purchase of the Air District’s Beale Street headquarters. The Air District will continue to make annual payments to pay down its remaining obligation of \$18.1 million. In 2019, the Air District purchased \$4M in additional space at its Beale Street location and acquired a new office building located in Richmond, California for approximately \$9.0M.

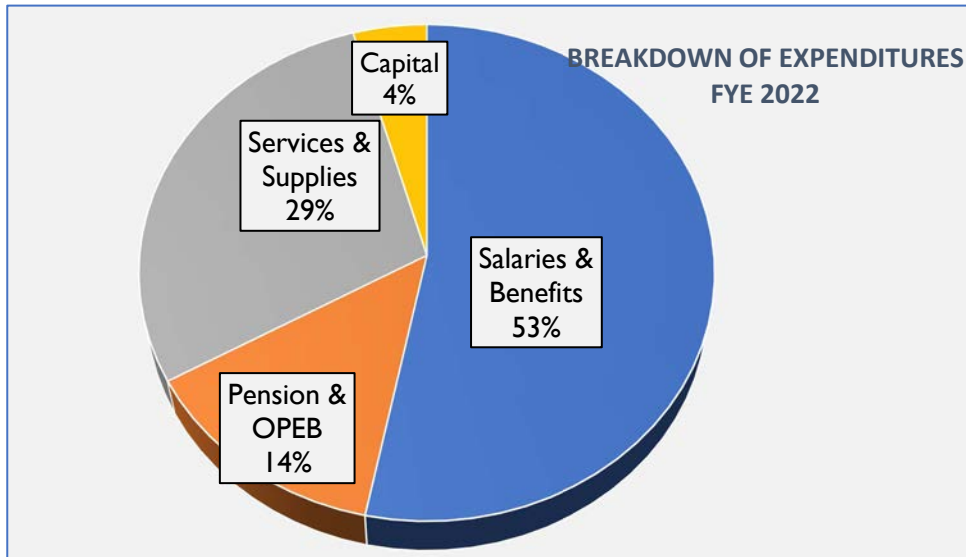
**CURRENT FINANCIAL OUTLOOK**

Currently, the Air District is in good financial health. The Air District has been able to adopt balanced annual budgets, while establishing and maintaining a healthy General Fund reserve by being fiscally prudent and establishing sound fiscal policies. Figure 5 provide a breakdown of the projected Revenues and Expenditures for the current fiscal year. The Fiscal Year 2022 General Fund Adopted Budget was \$117.0 million, which includes a one-time \$0.5 million transfer from reserves for Richmond Office capital improvements. As a service-driven agency, salaries and benefits (including Pension and Medical) are the largest components of expenditure, representing 65% of the total. The adopted budget increased staffing level from 415 to 441 FTEs, an increase of 26 FTEs over the prior year to address growing demands in grant and core programs. In December 2021, the Board approved 4 additional FTEs to improve the structure and operations of the Legal Department and the Executive Office; increasing the total authorized staffing level to 445 FTEs.

**Figure 5 Breakdown of Revenues and Expenditures in FYE 2022**



Permit Fees and Property Tax account for 80% of the FY 2022 General Fund Budget. *Current projection is expected to exceed to be on target with projections.*



The two major General Fund Expenditures are Salaries/Benefits and Services/Supplies totaling 82% of the projected budget for the fiscal year ending 2022. *The budget is expected to be on target with projections.*

## ECONOMIC OUTLOOK

### EXTERNAL TRENDS – UNITED STATES

The US economy finished 2020 with an overall annual decline of 3.4 percent of GDP. The US economy during 2020 was marked by a large and sudden decline due to the novel coronavirus (Covid-19) in Q1(-5.2 percent) and Q2 (-31.2 percent). But the recovery in Q3 and Q4 was similarly large and strong: growth in Q3 was registered at 33.8 percent, slowing in Q4 to 4.5 percent.

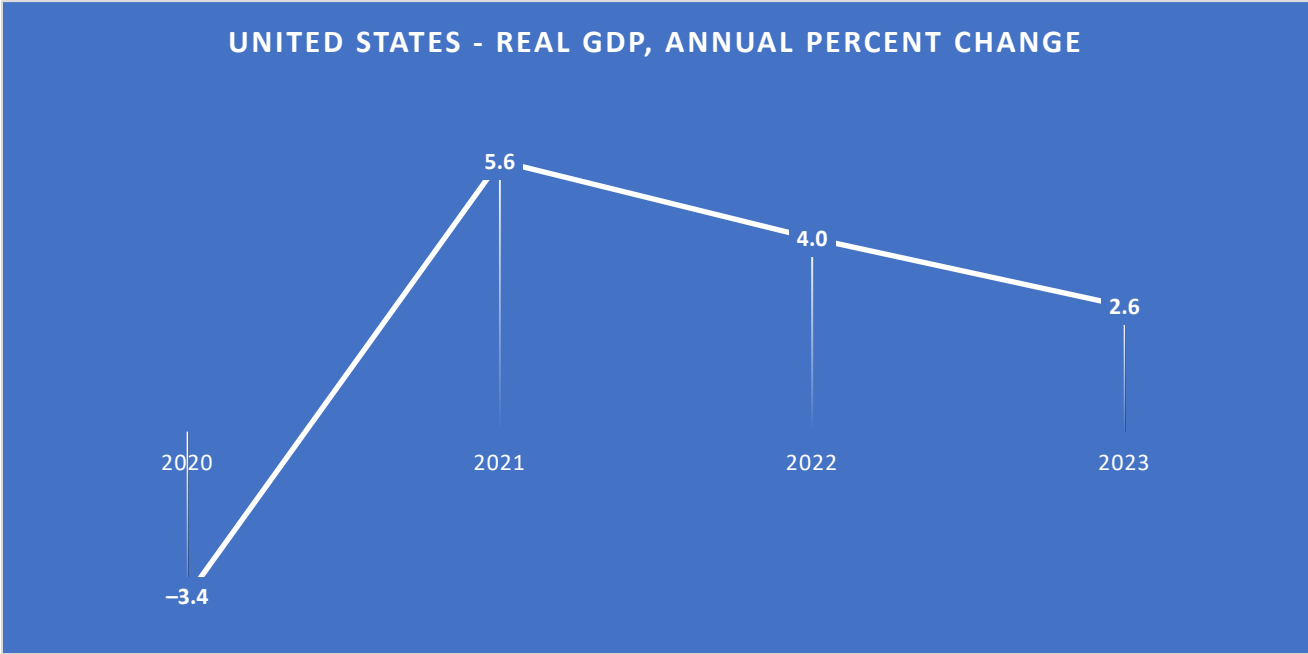
Continued robust pace of the economic recovery in the country during 2021 has been maintained owing both to the supportive fiscal and monetary measures, some of which have been in place since the beginning of the pandemic. Sizable cash transfers as well as generous and lasting unemployment benefits and other federal, state, and sometimes, local supports have led to increased demand for goods. In addition, US Federal Reserve has maintained interest rates at the 0 – 0.25% range, together with sizable asset purchases, which were adopted at the beginning of the pandemic. These measures (support on both fiscal and monetary fronts), while supporting economic activity, have unfortunately led to rapidly increasing inflation. Fears of sustained inflation still abound, as we head into 2022, and even as the Fed promises to hike interest rates by up to four times in 2022.

Overall, the US economy is projected to grow by 5.6 percent in 2021 (final data for 2021 Q4 to be released shortly). For 2022, forecasts of the US economy show a still robust, but somewhat slower economic growth, with GDP expanding by 4.0 percent, slowing further to 2.6 percent in 2023. Inflation and higher consumer prices in the US are expected to stay high for longer than what was initially expected to be few months by both US Fed and the federal Treasury Department. Inflation data in December 2021 registered at a historically high 7.0 percent, compared with December

2020, although average annual inflation was at 4.3 percent in 2021. For 2022, expect still elevated inflation readings, slowly declining in the second half of 2022 and into 2023.

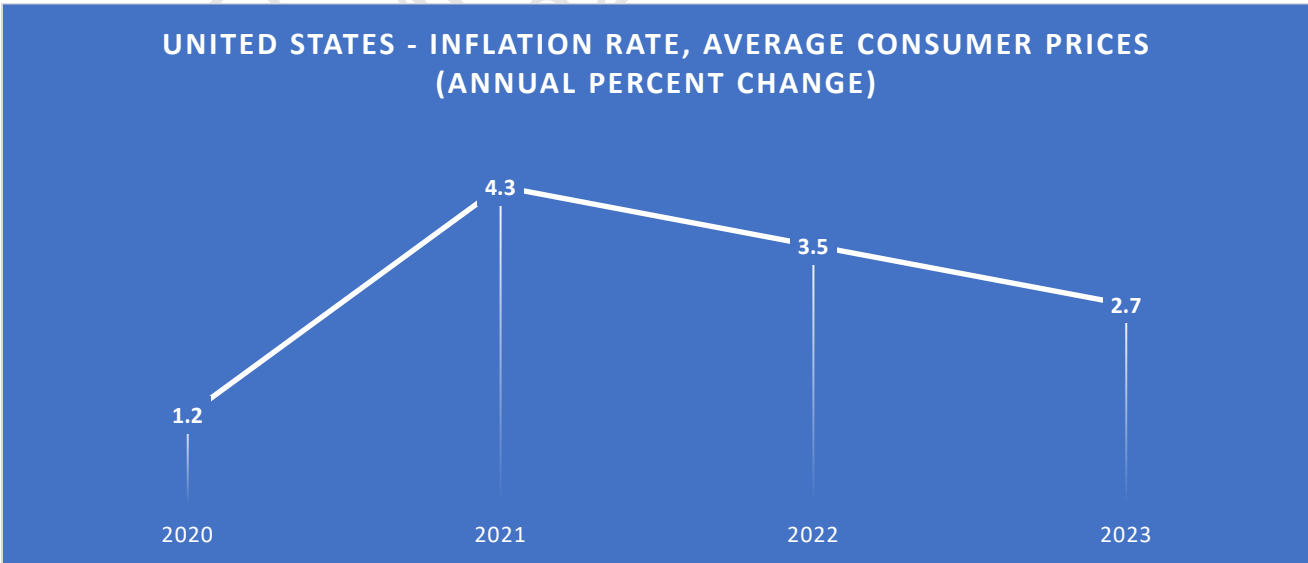
**Figure 6** shows US economic performance and inflation over the last couple of years and a forecast out to 2023.

**Figure 6 United States: Economic Growth is Expected to Stay Robust in 2022, slower in 2023...**



Source: International Monetary Fund, World Economic Outlook, January 2022 update

...even as consumer prices stay elevated for longer



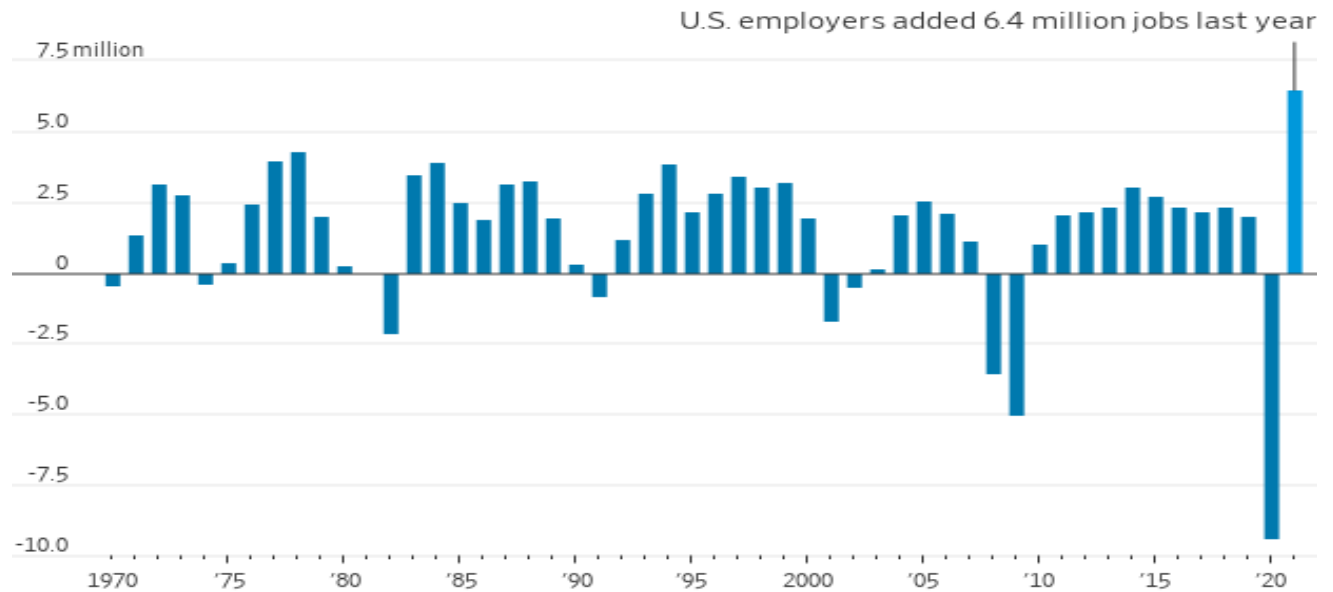
Source: International Monetary Fund, World Economic Outlook, January 2022 update



2021 was also a year of historic gains in the US labor market – US employers added 6.4 million jobs and the unemployment rate has declined to 3.9% of the labor force.

**Figure 7 US Labor Market**

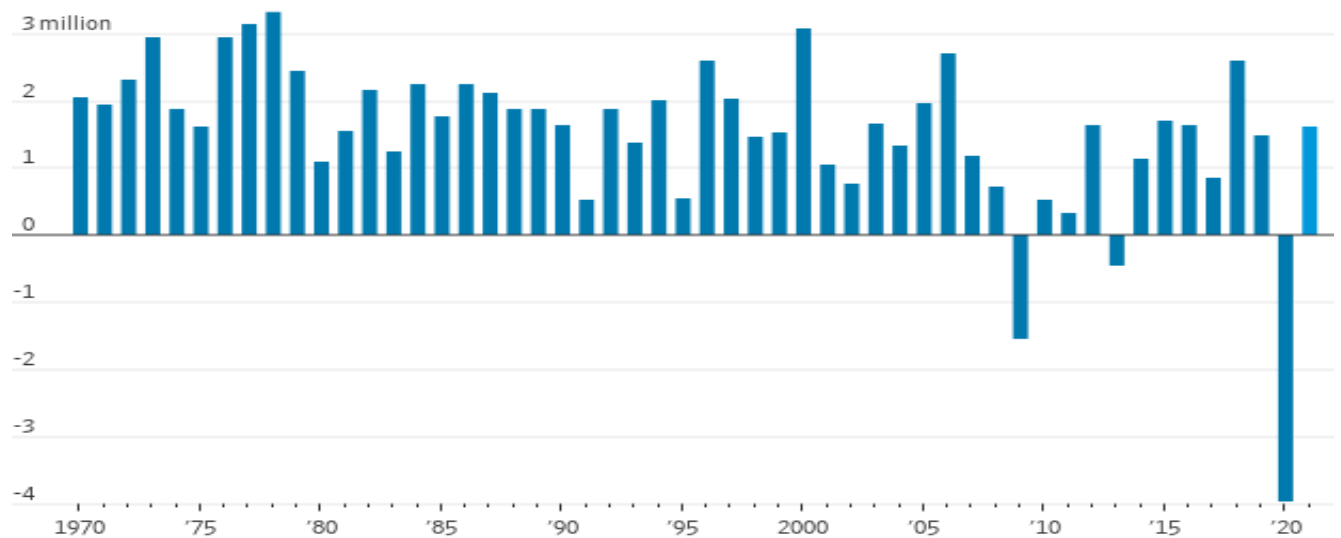
**Change in December payrolls from one year earlier**



Note: Seasonally adjusted  
Source: Labor Department

However, it is notable that total US labor force expanded only by 1.6 million workers in 2021, after losing nearly 5 million in 2020.

**Change in civilian labor force from one year earlier**



Note: Seasonally adjusted; measures change from December to December  
Source: Labor Department

The slower expansion in the US labor force has led to wage pressures and increases. Not only are jobs abundant, a record steep rise in wages, contributes to mounting fears of persistent inflation and the potential for the wage-inflation spiral, a phenomenon where higher inflation leads to higher wages, which in turn contribute to even higher inflation.

**Average hourly earnings for production and nonsupervisory workers, 12-month change**



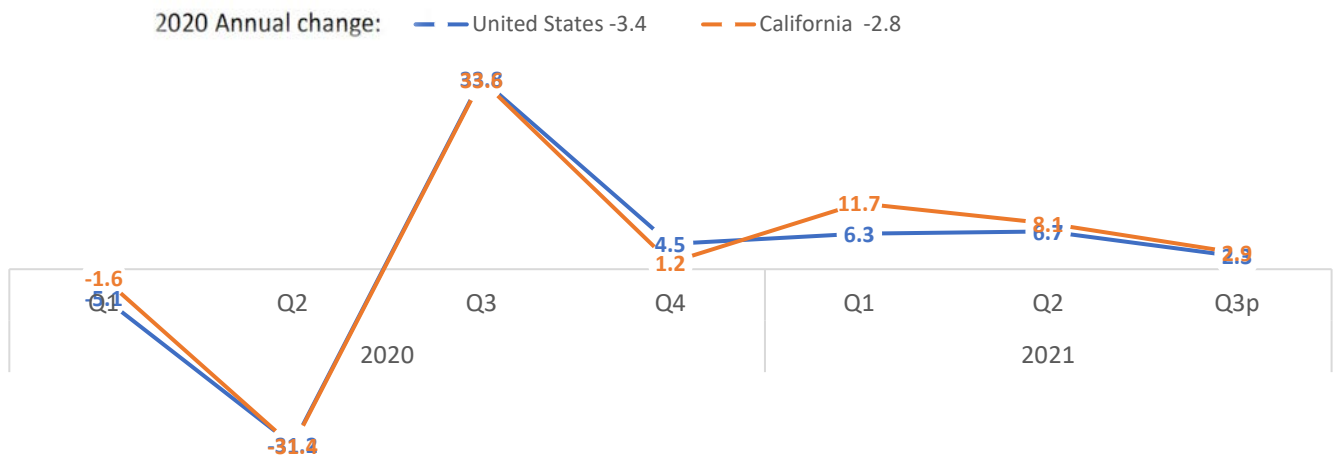
## EXTERNAL TRENDS – CALIFORNIA

Risks to the California Economy have been building up even before Covid-19 struck the state. Housing prices made living in California unaffordable for many, resulting in out-migration to cheaper areas of the country. Extended lockdowns have brought many sectors of the economy in California to a standstill. These lockdown measures have been in place longer than in other areas of the country, prompting some fears of California losing its edge and economic competitiveness.

However, as Figure 8 shows, California's economic performance largely mirrors US economic growth. This is true in part because California is by far the largest contributor state to the US economy, where the state's total economic output contributes about 14.4 percent of the US total GDP. But California's economic performance has been quite robust also due to the fact that the state is home to many companies in capital intensive industries, which have done very well financially during the pandemic and resulted in large budget surplus for the state.

There are growing risks to the economic outlook for the state in 2022, where many of the state's capital intensive companies may not do as well as they did in 2021 because of the shifting conditions and risk tolerance, as the US Federal Reserve raises interest rates.

**Figure 8 California’s Economy – Real GDP Change during the pandemic: annualized real GDP change from the preceding period, US and California**

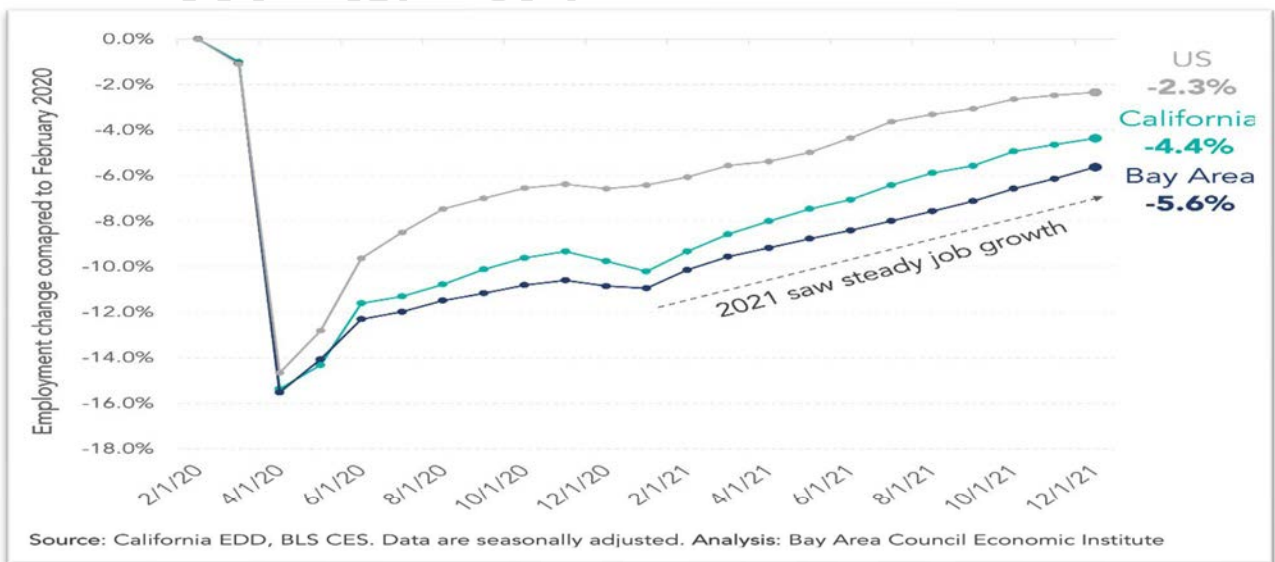


Source: Bureau of Economic Analysis, US Department of Commerce

### REGIONAL ECONOMY OF THE BAY AREA

Regional economy in the Bay Area has been slower than California, even though the job market has shown steady growth in 2021. In large part, owing to the work from home arrangements, area’s job market has been slower to recover, compared with other metro areas and the state’s average. As Figure 9 shows, Bay Area’s jobs market is still about 5.6 percent lower than it was pre-pandemic

**Figure 9 Comparison of Jobs Recovery in the Bay Area with California and US**



Most counties in the Bay Area benefitted from higher real property prices in 2021, both for commercial and residential properties.

As Figure 10 shows, real property assessments increased across the Bay Area at a higher pace than the typical long-run average of 2 percent per year. Although lower than the previous year’s assessment on average and in every county in the Bay Area, the increases are still higher than historical averages. Taking into account latent effects, which are typical with property assessments, and also considering large increases in the Bay Area’s real estate prices, next year’s assessment is likely to be similar or higher than 2020. Based also on recent trends and on expectations of slower, but steady economic growth over the next few years, most likely impact to the Air District’s budget from county property taxes next year will be an increase in the range of +4 percent to +6 percent.

**Figure 10 Bay Area County Property Assessments, 2021 – 2022**

<i>Aggregate Bay Area Counties Property Assessments</i>		
	<i>Percent Increase Over Prior Year</i>	
	<b>2020-21</b>	<b>2021-22</b>
<b>Alameda</b>	<b>6.8</b>	<b>4.3</b>
<b>Contra Costa</b>	<b>4.9</b>	<b>3.4</b>
<b>Marin</b>	<b>4.6</b>	<b>3.9</b>
<b>Napa</b>	<b>5.3</b>	<b>3.4</b>
<b>San Francisco</b>	<b>7.6</b>	<b>3.6</b>
<b>San Mateo</b>	<b>7.0</b>	<b>4.2</b>
<b>Santa Clara</b>	<b>6.9</b>	<b>4.6</b>
<b>Solano</b>	<b>4.9</b>	<b>3.0</b>
<b>Sonoma</b>	<b>4.6</b>	<b>3.2</b>
<b>Bay Area Average Increase</b>	<b>5.9</b>	<b>3.7</b>

Source: Santa Clara County Assessor’s Annual Report, 2021

## FINANCIAL FORECAST

The Air District prepares a Five-Year Financial Forecast for the General Fund to project its long-term financial health based on revenue and expenditure trends, policy decisions, assumptions and expectations. The Five-Year Forecast allows the Air District to assess the current environment and respond to changes.

**Table 1 Five-Year General Fund Financial Forecast**

<b>Five-Year General Fund Financial Forecast</b>	<b>FYE 2022 Budget</b>	<b>FYE 2023 Projected</b>	<b>FYE 2024 Projected</b>	<b>FYE 2025 Projected</b>	<b>FYE 2026 Projected</b>	<b>FYE 2027 Projected</b>
<b>REVENUES</b>						
Property Tax	\$39,335,284	\$40,897,180	\$42,124,095	\$43,387,818	\$44,689,453	\$46,030,136
Permits/Fees	\$53,678,690	\$56,729,634	\$58,431,523	\$60,184,468	\$61,990,002	\$63,849,413
Grant Revenues	\$6,394,112	\$4,601,447	\$4,637,462	\$4,673,838	\$4,710,577	\$4,747,682
AB 617 Funding	\$9,000,000	\$9,000,000	\$9,000,000	\$9,000,000	\$9,000,000	\$9,000,000
Other Revenues	\$6,745,848	\$6,241,279	\$6,330,128	\$6,420,745	\$6,513,163	\$6,607,418
	\$115,153,934	\$117,469,539	\$120,523,209	\$123,666,870	\$126,903,194	\$130,234,650
Transfer from Special Funds	\$1,361,189	\$1,200,886	\$1,224,904	\$1,249,402	\$1,274,390	\$1,299,878
Use of/(Transfer to) Fund Balance	\$500,000	\$ 1,769,628	\$ 2,123,149	\$ 1,820,689	\$ (100,284)	\$ (500,688)
<b>TOTAL REVENUES</b>	<b>\$117,015,123</b>	<b>\$120,440,053</b>	<b>\$123,871,262</b>	<b>\$126,736,961</b>	<b>\$128,077,300</b>	<b>\$131,033,839</b>
<b>EXPENDITURES</b>						
Personnel & Benefits (net Pension/OPEB)	\$59,173,076	\$63,624,754	\$65,513,307	\$67,377,197	\$69,295,205	\$71,293,179
Retirement Pension (Pension)	\$12,296,429	\$13,566,000	\$17,755,000	\$17,650,000	\$15,970,000	\$15,760,000
Other Post Employment Benefits (OPEB)	\$6,724,299	\$7,490,000	\$3,700,000	\$3,860,000	\$3,990,000	\$4,160,000
Services and Supplies	\$33,633,861	\$30,160,617	\$31,024,339	\$31,853,576	\$32,705,983	\$33,582,226
Capital Expenditures	\$5,187,458	\$5,598,682	\$5,878,616	\$5,996,188	\$6,116,112	\$6,238,434
<b>TOTAL EXPENDITURES</b>	<b>\$117,015,123</b>	<b>\$120,440,053</b>	<b>\$123,871,262</b>	<b>\$126,736,961</b>	<b>\$128,077,300</b>	<b>\$131,033,839</b>

Table 1 shows the projected 2022 Adopted General Fund Budget, with the projected budgets for the next five years. Overall, projected expenditures slightly exceed projected revenues for FYE 2022 to account for proposed use of \$0.5 million of reserves for Richmond Office Capital Improvements. The FYE 2023-2025 shows projected expenditures being higher than projected revenues; showing use of reserves to cover the projected gap of \$1.7M to \$2.1M during this period. The FYE 2026 and 2027 shows projected expenditures decreasing slightly in the retirement pension category, resulting in an operating surplus in those two years. All operating surplus are added to the General Fund Reserves projected balance. There are several key assumptions in developing the revenue and expenditure projections for the Five-Year Financial Forecast. *These assumptions are expected to change during the FYE 2023 budget process.*

### KEY REVENUE ASSUMPTIONS

1. **Property Tax** is expected to grow at a slower rate given the current economic conditions. The Bay Area housing market prices continues to grow which has led to higher property assessments in 2021. The five-year forecast assumes continued growth of approximately 3.4% in revenues for year 2023 and a 3% inflationary growth in years 2024 through 2027.
2. **Permit Fee** revenues may increase by approximately 5% in year 2023 mainly from the increased to existing fees schedules based on a 4.1% fee increase based on CPI index. The Air

District did not experience any negative impacts of permit revenues from COVID-19, permit revenues remain stable. The increase is projected to grow by 3% thereafter during the five-year forecast because of the Air District's Cost Recovery policy, which allows the Air District to increase its fee schedule to recover costs for permit related activities. The average cost recovery level of 85% is expected to slightly drop in the next year due in part to the new and enhanced program costs. Projections suggest attainment of the 85% cost recovery level to remain during the five-year forecast, however, these projections could change based on the results of the management audit and cost recovery study recommendations.

3. **Grant Revenues** are shown as stable through 2027. However, changes to this assumption would be unsurprising.
4. **Assembly Bill 617** funding of \$9.0 million from the State continues for the next 5 years.
5. **Other Revenues** mainly account for penalties, State subvention, and interest income. These revenues are expected to remain stable.

#### KEY EXPENDITURE ASSUMPTIONS

1. **Personnel** costs are projected to remain at current 445 authorized FTEs. *This is likely to change in the budget process as the Air District continues to address staffing needs for core programs.* A 3% annual cost of living adjustment is also projected for the five-year period to account for a slight increase in health premiums, and the filling of some open positions. This projection assumes a 3% vacancy rate through 2026, gradually decreasing to 2% by 2027.
2. **Retirement Pension** costs are rising due to recent discount rate reduction by CalPERS and escalating unfunded liability payments. The forecast assumes implementation of the Air District's approved policy to make discretionary payments to CalPERS to reduce the unfunded actuarial liability (UAL).
3. **Other Post-Employment Benefits (OPEB)** for retiree medical benefits are projected to reach District's 90% funded policy goal by FYE 2024. After that, the \$4.0 million in discretionary funding will shift towards the CalPERS Pension Plan to reduce the UAL.
4. **Services and Supplies** costs are projected to level off, assuming only an inflationary increase of approximately 2-3%.
5. **Capital Expenditures** are expected to remain level, with only an inflationary increase.
6. **General Fund Reserves** are used to fund one-time costs, and to cover temporary revenue shortfalls. Reserves are expected to stay above the minimum policy level ensuring continuation of the Air District's operations, should another economic downturn occur.

#### OUTSTANDING LIABILITIES

The Air District currently provides a retirement pension benefit plan through the California Public Employee Retirement Systems (CalPERS), and contracts with California Employers' Retiree Benefit Trust (CERBT) to prefund its OPEB obligations. As of the most recent valuation dates, the Air District's unfunded liabilities are as follows:

	Liability	Funded	Unfunded	% Funded
Pension	\$358 M	\$258 M	\$100 M	72%
OPEB	\$72 M	\$54 M	\$18 M	75%

## PENSION RETIREMENT BENEFITS

The Air District provides a defined benefit pension plan to eligible retirees and employees through the California Pension Employee Retirement System (CalPERS). There are two separate retirement formulas provided to employees:

1. Classic Employees. For its Classic employees, the Air District has a “2.5% at 55” plan; under which employees retiring at age 55 will receive 2.5% of their single highest year of “regular” pay for each year of service. Classic employees are those hired by a local agency before January 1, 2013 or were hired from another CalPERS agency with a break in service of six months or less. The plan receives both employer and employee normal cost contributions. As of date, the employee normal rate is 7% of the employee salary and the employer rate is 8.966% of employee salary.
2. PEPRA Employees. Effective January 1, 2013, the Public Employees’ Pension Reform Act (PEPRA) created a new retirement tier benefit formula to reduce costs and liabilities for state and local agency members in the CalPERS system. Employees hired after January 1, 2013 are considered PEPRA employees and does not meet the definition of a classic member have a “2.0% at 62” plan; under which employees retiring at age 62 will receive 2.0% of the average of their three highest years of regular pay for each year of service. As of date, the employee normal rate is 6.75% of the employee salary and the employer rate is 8.51% of employee salary.

Figure 11 CALPERS Funding History

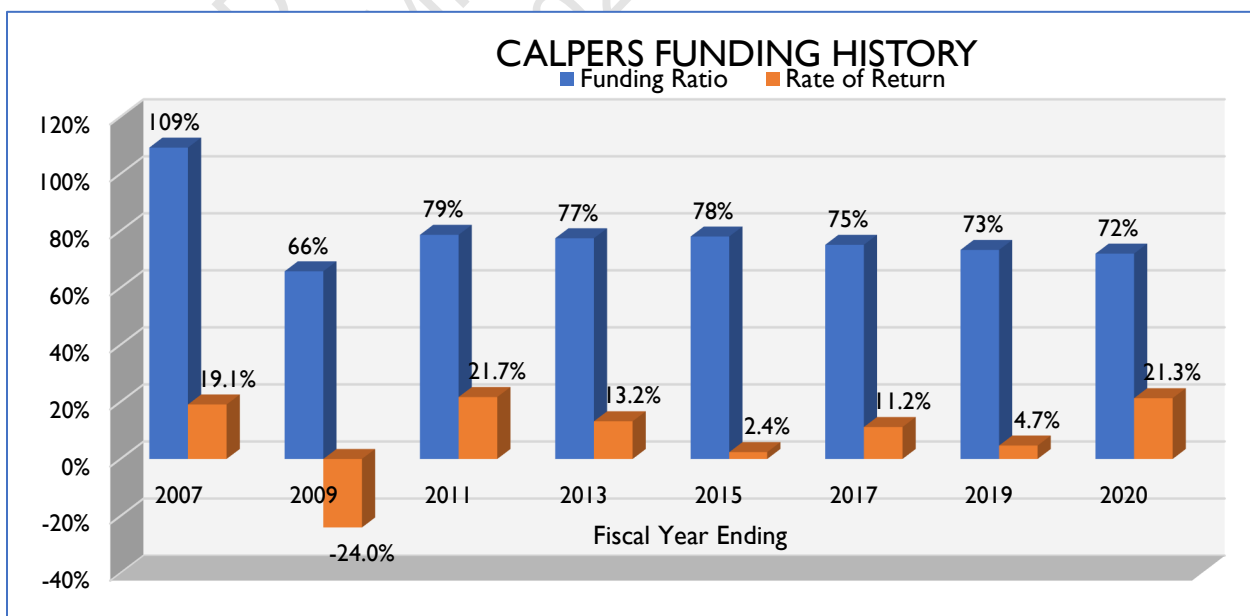
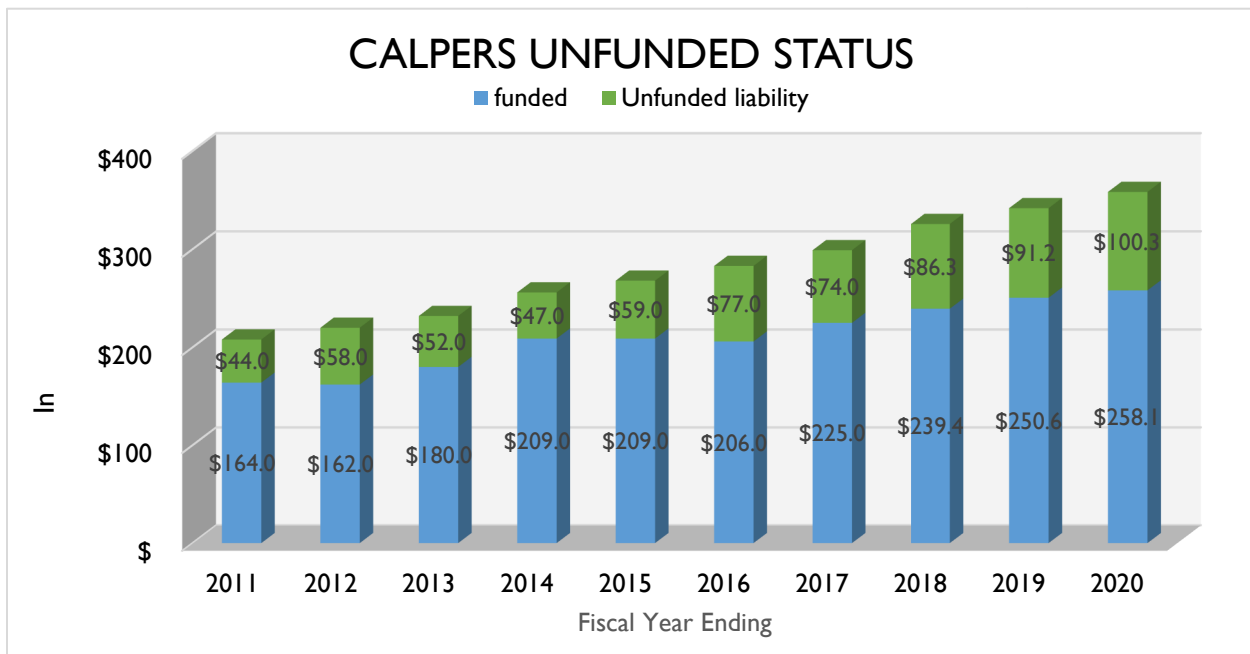


Figure 11 provides a historical rate of return and funding status of the Air District’s pension plan with CalPERS. In 2007, the plan was “super-funded” and required no employer or employee contributions. In 2008 and 2009, at the beginning of the economic downturn, the plan experienced negative returns which reduced the funded status to as low as 66%. As a result, the plan became underfunded and a large unfunded liability is now being recognized. Not only were the annual contributions for the Air District and employees normal cost reinstated, but the Air District as the employer must make additional contributions towards closing the gap for this significant unfunded liability. The 2020 rate of return was 21.3% and the Air District’s plan is 72% funded.

**Figure 12 CALPERS Unfunded Status**



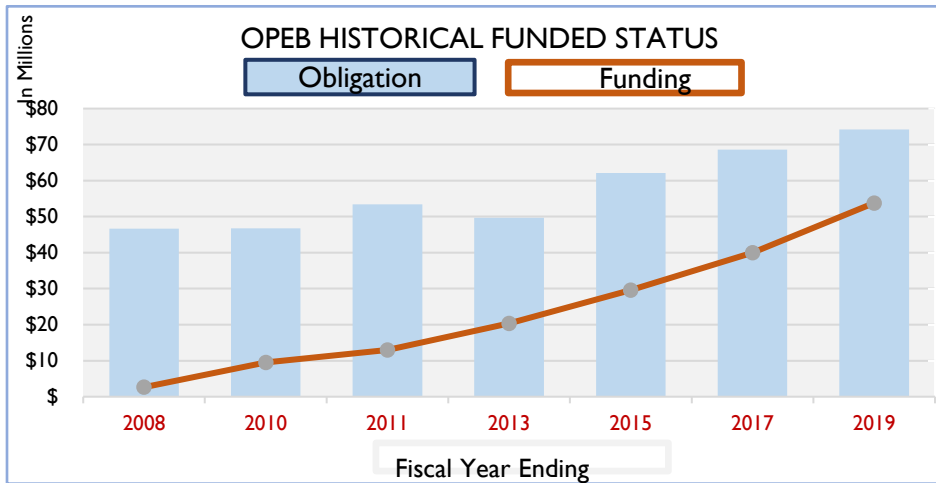
The 2020 actuarial valuation report shows a total funded obligation of \$258 million: leaving an unfunded liability of \$100 million shown in Figure 12. The total required employer contribution for fiscal year 2021 was \$10.7 million, which includes the \$6.3 million UAL payment. The Air District plans to address the unfunded liability pursuant to the Pension policy noted in the Financial Policies Section of this document.

**OTHER POST-EMPLOYMENT BENEFITS (OPEB)**

In addition to pension, the Air District provides continuation of medical, dental, vision, and life insurance coverage to its retired employees. These benefits vary based on retirees’ date of hire, years of PERS service, and coverage level selected. Figure 13 below shows the funding history for the Air District’s OPEB Plan based on the most recent actuarial valuation report dated June 30, 2019. An actuarial valuation report is prepared every other year, the valuation report is currently underway for the period dated June 30, 2021.



**Figure 13 OPEB Historical Funded Status**



Prior to 2008, the Air District made annual “pay as you go” payments. These payments only covered the current benefit payments due and payable. They did not account for the dollars required to fund the plan for current plan

members and past vested plan members. While employers are not required to fund the plan, it was strongly recommended that these benefits should be funded as they are earned.

In 2008, the Air District Board approved a plan to start prefunding OPEB and over the last 10-years, these annual discretionary contributions took the plan from 0% funded in 2008 to 75% funded in 2019. Based on the most recent actuarial valuation; the plan’s unfunded liability is estimated at \$18 million. The total employer contribution for fiscal year 2020 was \$6.8 million, which includes the \$4.0 million discretionary funding pursuant to the OPEB policy noted in the Financial Policies Section of this document.

#### ALTERNATIVE STRATEGY FOR PENSION LIABILITIES

The Air District’s current unfunded liabilities for both the OPEB and Pension plans total \$109 million.

**District’s Current Policy** was approved by the Board in June 2018. It will be possible to shift the \$4 million in discretionary funds from OPEB once the 90% funded target is reached. Those funds can then be directed to further pay down the unfunded liability in the CalPERS Pension Plan.

In an effort, to address the unfunded liabilities for pension, staff has recommended several investment options which was presented to the Budget & Finance Committee (Committee) in late 2020. Staff anticipates the Committee will take up this item again will refer to the Board its recommendation in 2022.

#### CERTIFICATION OF PARTICIPATION NOTES (COPS)

In 2013, the Air District issued \$30M in COPS to finance its new headquarters at 375 Beale Street in partnership with Metropolitan Transportation Commission (MTC) through a private purchase with Bay Area Headquarters Authority (BAHA). In May 2017, the Air District closed escrow and acquired approximately 75,000 square feet of office space. As a part of this

acquisition, the Air District prepaid \$10.7M towards the purchase, leaving the remaining balance to be paid annually.

Under the terms of the financing lease/sublease agreement between BAHA and the Air District, total monthly payments have been predetermined. The total annual payments and interest rate caps to pay down the COPs are as follows:

<b>Predetermined payments:</b>	
<u>Year</u>	<u>Annual Payments</u>
1-10	\$1.2 Million
11-30	\$1.37 Million

<b>30-Year variable rate structure with preset interest rate caps:</b>	
<u>Year</u>	<u>Caps</u>
1-5	3.20%
6-10	4.20%
11-30	5.20%

The interest rate is based on Securities Industry and Financial Market Association (SIFMA) rate plus 1.2%. The estimated principal and interest payments remaining is \$21,173,770 based on the June 30, 2021 SIFMA rate.

## FINANCIAL POLICIES

Financial policies provide a shared understanding of how the Air District will develop its financial practices and manage its resources. These policies were established by prior Boards using best practices and industry standards to guide the Air District’s decision-making process. Listed below are Board approved financial policies.

### 1. Reserve Policy

In 2016, the Air District amended its reserve policy, raising it from 15% to 20% of General Fund operating budget. The Air District’s minimum reserve balance of 20% of the General Fund Operating Budget is intended to address financial emergencies, litigations and one-time operating and capital needs.

### 2. Cost Recovery Policy

In 2012, the Board approved a Cost Recovery Policy providing for annual amendments to the fee schedules. The annual fee schedule amendments are intended to achieve an 85% cost recovery goal.

### 3. Pension Policy

In 2016, the Board adopted a policy setting a target funding level of 90%. In 2018, this policy was revised to establish a target date of 20 years to reach a 90% funding level. It also designated \$1 million annually to accelerate funding of the liability. As a part of this action, the Air District will identify alternative investment options for the \$1 million in annual discretionary funding, and present to the Budget and Finance Committee before the end of 2022.

#### **4. Other Post-Employment Benefit (OPEB) Policy**

In 2008, the Board approved prefunding of its OPEB plan through a 115-trust with the California Employers Retirement Benefit Trust (CERBT). The Air District discretionary contributions have accelerated through the years and as a result, the current annual discretionary funding is \$4 million. In 2016, the Board approved a policy to set a target funding level of 90%, with no target date. In 2018, the policy was revised to achieve target funding in 3 years. Upon reaching the full funding level, the \$4 million discretionary funding may be redirected to the CalPERS pension plan.

BUDGET AND FINANCE  
COMMITTEE MEETING  
01/13/2022

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
Memorandum

To: Chairperson Carole Groom and Members  
of the Budget and Finance Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: February 23, 2022

Re: Participation and Selection of a Section 115 Pension Trust Administrator for  
Prefunding Air District's Pension Obligations

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

As part of the Fiscal Year Ending (FYE) 2019 Budget process, the Board directed staff to conduct an independent analysis of strategies and consider options for pre-funding pension liability. The Air District worked with an independent consulting firm, NHA Advisors, to identify investment options and identify strategies to pay down the long-term liabilities for the Other Post-Employment Benefits (OPEB) and Pension Plans.

DISCUSSION

On November 25, 2019, staff provided a presentation of Section 115 options and staff's recommendations, based on the results of the independent analysis. On February 26, 2020, staff presented additional information on the investment options with the three suggested providers. Staff will present additional information at the February 23, 2022 meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Since 2018, the Board, through the budget process, approved \$1 million annually for pre-funding pension obligations. As of today, a total of \$5 million has been set aside for this purpose; \$4 million from the Air District's Designated Reserves and \$1 million from the FYE 2022 Adopted Budget.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Leonid Bak and Stephanie Osaze

Reviewed by: Jeff McKay

BUDGET AND FINANCE  
COMMITTEE MEETING OF  
01/13/2022

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Karen Mitchoff and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: March 2, 2022

Re: Current Legislation on Potential Amendments to the Brown Act

RECOMMENDED ACTION

Recommend the Board of Directors (Board) support Assembly Bill (AB) 1944 (Lee) - Local government: open and public meetings.

BACKGROUND

**AB 1944 (Lee) - Local government: open and public meetings.**

CapitolTrack Summary: Current law, the Ralph M. Brown Act, requires, with specified exceptions, that all meetings of a legislative body of a local agency, as those terms are defined, be open and public and that all persons be permitted to attend and participate. Current law, until January 1, 2024, authorizes a local agency to use teleconferencing without complying with those specified teleconferencing requirements in specified circumstances when a declared state of emergency is in effect, or in other situations related to public health. This bill would specify that if a member of a legislative body elects to teleconference from a location that is not public, the address does not need to be identified in the notice and agenda or be accessible to the public when the legislative body has elected to allow members to participate via teleconferencing.

**AB 2449 (Rubio, Blanca) - Open meetings: local agencies: teleconferences.**

CapitolTrack Summary: Existing law, the Ralph M. Brown Act, requires, with specified exceptions, that all meetings of a legislative body of a local agency, as those terms are defined, be open and public and that all persons be permitted to attend and participate. The act contains specified provisions regarding the timelines for posting an agenda and providing for the ability of the public to observe and provide comment. The act allows for meetings to occur via teleconferencing subject to certain requirements, particularly that the legislative body notice each teleconference location of each member that will be participating in the public meeting, that each teleconference location be accessible to the public, that members of the public be allowed to address the legislative body at each teleconference location, that the legislative body post an agenda at each teleconference location, and that at least a quorum of the legislative body participate from locations within the boundaries of the local agency's jurisdiction. The act provides an exemption to the jurisdictional requirement for health authorities, as defined. This bill

would authorize a local agency to use teleconferencing without complying with those specified teleconferencing requirements if at least a quorum of the members of the legislative body participates in person from a singular location clearly identified on the agenda that is open to the public and situated within the local agency's jurisdiction. The bill would impose prescribed requirements for this exception relating to notice, agendas, the means and manner of access, and procedures for disruptions. The bill would require the legislative body to implement a procedure for receiving and swiftly resolving requests for reasonable accommodation for individuals with disabilities, consistent with federal law. This bill contains other related provisions and other existing laws.

**Senate Bill (SB) 1100 (Cortese) - Open meetings: orderly conduct.**

CapitolTrack Summary: (1) Existing law, the Ralph M. Brown Act, requires, with specified exceptions, that all meetings of a legislative body of a local agency, as those terms are defined, be open and public and that all persons be permitted to attend and participate. Existing law requires every agenda for regular meetings of a local agency to provide an opportunity for members of the public to directly address the legislative body on any item of interest to the public, before or during the legislative body's consideration of the item, that is within the subject matter jurisdiction of the legislative body. Existing law authorizes the legislative body to adopt reasonable regulations to ensure that the intent of the provisions relating to this public comment requirement is carried out, including, but not limited to, regulations limiting the total amount of time allocated for public testimony on particular issues and for each individual speaker. Existing law authorizes the members of the legislative body conducting the meeting to order the meeting room cleared and continue in session, as prescribed, if a group or groups have willfully interrupted the orderly conduct of a meeting and order cannot be restored by the removal of individuals who are willfully interrupting the meeting. This bill would authorize the members of the legislative body conducting a meeting to remove an individual for willfully interrupting the meeting. The bill, except as provided, would require removal to be preceded by a warning, either by the presiding member of the legislative body or a law enforcement officer, that the individual is disrupting the proceedings and a request that the individual curtail their disruptive behavior or be subject to removal. The bill would similarly require a warning before clearing a meeting room for willful interruptions by a group or groups. The bill would define "willfully interrupting" to mean intentionally engaging in behavior during a meeting of a legislative body that substantially impairs or renders infeasible the orderly conduct of the meeting in accordance with law. The term would include failure to comply with a reasonable regulation adopted in accordance with existing law after a warning and request in accordance with the bill, as applicable. By establishing new requirements for local legislative bodies, this bill would impose a state-mandated program.

This bill contains other related provisions and other existing laws.

## DISCUSSION

Staff will provide the Board with a summary and status of the following three bills that would amend the Brown Act:

- AB 1944 (Lee) - Local government: open and public meetings.
- AB 2449 (Rubio, Blanca) - Open meetings: local agencies: teleconferences.
- SB 1100 (Cortese) - Open meetings: orderly conduct.

AB 1944 (Lee) - If passed, this bill would allow members of a local legislative body, upon majority vote, to allow members to waive Brown Act requirements of publishing their private address, and making their private address open to members of the public. It would also require a remote participation option for members of the public to address the body. This bill amends Brown Act language for public meetings during the currently declared State of Emergency, applicable through January 1, 2024, as well as language in effect after that date, providing for a permanent option of remote teleconferencing from non-public locations, as long as the public is provided a remote teleconferencing option for participation.

AB 2449 (Rubio, Blanca) - Similar to AB 1944 (Lee) but would only authorize a local agency to use teleconferencing if a quorum of the members of the legislative body participate in person from a singular location stated on the agenda that is open to the public and situated within the local agency's jurisdiction .

SB 1100 (Cortese) - If passed, this bill would give legislative bodies the ability to remove individuals for willful interruptions of a meeting of a legislative body.

## BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Alan Abbs  
Reviewed by: Jack P. Broadbent