



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

BOARD OF DIRECTORS
ADVISORY COUNCIL

October 30, 2024

COUNCIL MEMBERS

Professor Ann Marie Grover Carlton, Ph.D., University of California Irvine
Dr. Stephanie M. Holm, MD, PhD, MPH, University of California San Francisco
Dr. Michael T. Kleinman, Ph.D., University of California Irvine
Dr. Philip T. Martien, Ph.D.
Professor Michael T. Schmeltz, DrPH, MS
Dr. Gina Solomon, M.D., M.P.H., University of California San Francisco
Garima Raheja, PhD candidate, Columbia University
Davina Hurt, Air District Board of Directors Liaison

**MEETING LOCATION(S) FOR IN-PERSON ATTENDANCE BY
COUNCIL MEMBERS AND MEMBERS OF THE PUBLIC**

**Bay Area Metro Center
1st Floor Board Room
375 Beale Street
San Francisco, CA 94105**

THE FOLLOWING STREAMING OPTIONS WILL ALSO BE PROVIDED

These streaming options are provided for convenience only. In the event that streaming connections malfunction for any reason, the Advisory Council reserves the right to conduct the meeting without remote webcast and/or Zoom access.

The public may observe this meeting through the webcast by clicking the link available on the air district's agenda webpage at www.baaqmd.gov/about-the-air-district/advisory-council/agendasreports.

Members of the public may participate remotely via Zoom at <https://bayareametro.zoom.us/j/81750321852>, or may join Zoom by phone by dialing (669) 900-6833 or (408) 638-0968. The Webinar ID for this meeting is: 817 5032 1852

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 a matter on the agenda will have two minutes each to address the Council on that agenda item, unless a different time limit is established by the Co-Chairs. No speaker who has already spoken on an item will be entitled to speak to that item again.

The Council welcomes comments, including criticism, about the policies, procedures, programs, or services of the District, or of the acts or omissions of the Council. Speakers shall not use threatening, profane, or abusive language which disrupts, disturbs, or otherwise impedes the orderly conduct of a Council meeting. The District is committed to maintaining a workplace free of unlawful harassment and is mindful that District staff regularly attend Board meetings. Discriminatory statements or conduct that would potentially violate the Fair Employment and Housing Act – i.e., statements or conduct that is hostile, intimidating, oppressive, or abusive – is *per se* disruptive to a meeting and will not be tolerated.

ADVISORY COUNCIL MEETING AGENDA

WEDNESDAY, OCTOBER 30, 2024

9:30 AM

1. Call to Order - Roll Call

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

CONSENT CALENDAR (Item 2)

The Consent Calendar consists of routine items that may be approved together as a group by one action of the Council. Any Council member or member of the public may request that an item be removed and considered separately.

2. Approval of the Draft Minutes of the Advisory Council Meeting of September 19, 2024

The Council will consider approving the draft minutes of the Advisory Council meeting of September 19, 2024.

INFORMATIONAL ITEM(S)

3. Overview of Air District Strategic Plan

The Council will review and discuss a presentation on the Air District's 2024-2029 Strategic Plan, adopted by the Air District Board of Directors on September 4, 2024. The plan was developed through a collaborative process with community leaders, Air District employees, the Board of Directors, and Community Advisory Council members, representatives from regulated industries, and our government and non-government partners. The result was one of the most forward-thinking, ambitious strategic plans ever to be adopted by a local air district in the state - one centered on fairness, respect, diversity, equity and inclusivity. Staff will provide an overview of the strategies within the plan, and the nexus between the Advisory Council's work. This item will be presented by Gregory Nudd, Deputy Executive Officer of Science and Policy.

4. National Academies of Science, Engineering, and Medicine Project: *State-of-the-Science and the Future of Cumulative Impact Assessment*

The Council will receive and discuss a presentation summarizing a current project by The National Academies of Sciences, Engineering, and Medicine (National Academies). The project is entitled State-of-the-Science and the Future of Cumulative Impact Assessment. Staff will provide a brief overview of key participants, process, and aims of the project. This item will be presented by Dr. David Holstius, Senior Advanced Projects Advisor in the Assessment, Inventory, and Modeling Division.

5. Presentation on Cumulative Impact Assessment from Dr. William Boyd (University of California Los Angeles)

The Council will receive a presentation on cumulative impact assessment from Dr. William Boyd, University of California Los Angeles (UCLA) School of Law, and will have an opportunity to discuss and raise questions.

ACTION ITEM(S)

6. 2025 Advisory Council Work Plan

The Council will consider adopting a Workplan Outline for meetings in 2025.

OTHER BUSINESS

7. Report of the Executive Officer/APCO
8. 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 will be given an opportunity to address the Council. Members of the public will have two minutes each to address the Council, unless a different time limit is established by the Chair. The Council welcomes comments, including criticism, about the policies, procedures, programs, or services of the District, or of the acts or omissions of the Council. Speakers shall not use threatening, profane, or abusive language which disrupts, disturbs, or otherwise impedes the orderly conduct of a Council meeting. The District is committed to maintaining a workplace free of unlawful harassment and is mindful that District staff regularly attend Board meetings. Discriminatory statements or conduct that would potentially violate the Fair Employment and Housing Act – i.e., statements or conduct that is hostile, intimidating, oppressive, or abusive – is per se disruptive to a meeting and will not be tolerated.

9. Council Member Comments / Other Business

Council members may make a brief announcement, provide a reference to staff about factual information, or ask questions about subsequent meetings.

10. Time and Place of Next Meeting

At the Call of the Chair.

11. Adjournment

The Council meeting shall be adjourned by the Chair.

CONTACT:

MANAGER, EXECUTIVE OPERATIONS
375 BEALE STREET, SAN FRANCISCO, CA 94105
vjohnson@baaqmd.gov

(415) 749-4941
FAX: (415) 928-8560
BAAQMD homepage:
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 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.

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

OCTOBER 2024

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Advisory Council Meeting	Wednesday	30	9:30 a.m.	1 st Floor Board Room

NOVEMBER 2024

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Meeting	Wednesday	6	10:00 a.m.	1 st Floor Board Room
Board of Directors Special Finance and Administration Committee	Wednesday	6	11:30 a.m.	1 st Floor Board Room
Board of Directors Stationary Source Committee	Wednesday	13	10:00 a.m.	1 st Floor, Yerba Buena Room
Board of Directors Community Equity, Health, and Justice Committee	Wednesday	13	1:00 p.m.	1 st Floor, Yerba Buena Room

Board of Directors Finance and Administration Committee – CANCELLED AND RESCHEDULED to Wednesday, November 6, 2024, at 11:30 a.m.	Wednesday	20	10:00 a.m.	1 st Floor Board Room
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Board of Directors Policy, Grants and Technology Committee -- CANCELLED	Wednesday	20	1:00 p.m.	1 st Floor Board Room
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Board of Directors Community Advisory Council Meeting	Thursday	21	6:00 p.m.	1 st Floor, Yerba Buena Room
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MV 10/23/2024 – 4:27 p.m.

G/Board/Executive Office/Moncal

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Gina Solomon and Members
of the Advisory Council

From: Philip M. Fine
Executive Officer/APCO

Date: October 30, 2024

Re: Approval of the Draft Minutes of the Advisory Council Meeting of September 19,
2024

RECOMMENDED ACTION

Approve the attached draft minutes of the Advisory Council meeting of September 19, 2024.

BACKGROUND

None.

DISCUSSION

Attached for your review and approval are the draft minutes of the Advisory Council meeting of September 19, 2024.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Marcy Hiratzka
Reviewed by: Vanessa Johnson

ATTACHMENTS:

1. Draft Minutes of the Advisory Council Meeting of September 19, 2024

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

Advisory Council Meeting
Friday, September 19, 2024

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

CALL TO ORDER

1. **Opening Comments:** Advisory Council (Council) Chairperson Solomon called the meeting to order at 9:33 a.m.

Roll Call:

Present: Chairperson Dr. Gina Solomon; Vice Chairperson Dr. Phil Martien; and Members Professor Ann Marie Grover Carlton, Dr. Stephanie Holm, and Professor Michael Kleinman.

Absent: Members Garima Raheja, Dr. Michael Schmeltz, and Board Liaison Davina Hurt.

CONSENT CALENDAR

2. **APPROVAL OF THE DRAFT MINUTES OF THE ADVISORY COUNCIL MEETING MINUTES OF JULY 29, 2024**

Public Comments

No requests received.

Council Comments

Chair Solomon noted that at the bottom of Page 5 of the Draft Minutes of the Advisory Council Meeting Minutes of July 29, 2024, the acronym “CBAs” is not spelled out.

Note: The Clerk later noticed that the acronym “CBAs” was spelled out as “Community Benefit Agreement” on Page 4 of the Draft Minutes of the Advisory Council Meeting Minutes of July 29, 2024, so there was no need to amend (correct) the minutes.

Council Action

Professor Kleinman made a motion, seconded by Dr. Holm, to **approve** the Draft Minutes of the Advisory Council Meeting Minutes of July 29, 2024; and the motion **carried** by the following vote of the Council:

AYES: Carlton, Holm, Kleinman, Martien, Solomon.
NOES: None.
ABSTAIN: None.
ABSENT: Hurt, Raheja, Schmeltz.

INFORMATIONAL ITEMS

3. CUMULATIVE IMPACTS ANALYSIS WITHIN AIR DISTRICT POLICY DEVELOPMENT AND PROGRAMS

Greg Nudd, Deputy Executive Officer of Science and Policy, gave the staff presentation *Cumulative Impacts in Air District Policies and Programs*, including: outline; air quality planning: current regional approach and community-focused approach; California Environmental Quality Act (CEQA) guidance; permits for new and modified facilities; and stationary source regulations.

Public Comments

Public comments were given by Ken Szutu, Citizen Air Monitoring Network of Vallejo.

Council Comments

Professor Ann Marie Carlton initiated the discussion by asking about the impact of climate change on air quality planning, particularly in light of projections that San Francisco's average temperature could rise by 3 to 5 degrees by 2050. Mr. Nudd replied that this was not yet something the District had fully thought through, but that there were several issues: first, the impact of higher temperatures on vulnerability; second, how the temperature on the hottest days might affect ambient air quality trends, which staff have considered with respect to ozone. He noted that as winters grow warmer, the Bay Area may see changes in Particulate Matter (PM)_{2.5} patterns as well.

Vice-Chair Dr. Phil Martien commented that Mr. Nudd had described Rule 11-18 as looking at impacts of toxics from whole facilities. Acknowledging that the rollout of Rule 11-18 has been slow, but that the Air District was taking steps to accelerate it, Dr. Martien suggested that Council members would benefit from a future discussion on the rule and its status. Chair Solomon agreed, noting it as a priority for future meetings.

Dr. Stephanie Holm inquired whether there were efforts to incorporate cumulative or synergistic effects into the Office of Environmental Health Hazard Assessment (OEHHA)'s health risk assessment methodology. Mr. Nudd replied that to his knowledge, there were none. He added that any changes in the methodology used by the Air District would need to be coordinated through OEHHA, given the statutory requirements. Dr. Holm wondered if it could be communicated that the issue is being considered by the Council.

The discussion then shifted to CEQA. Chair Solomon asked how the Air District's comments and guidance are weighted when local jurisdictions make decisions about project significance, particularly in the context of balancing air quality concerns with statewide housing efforts. Mr. Nudd explained that while the Air District's comment letters are not typically very influential in CEQA processes, its guidance carries significant weight, as local jurisdictions rely on it heavily. However, he acknowledged that the data is less robust for shorter-term, intermittent PM exposures—such as dust from construction sites—leading to challenges in translating engineering analyses of those into meaningful health impact assessments. Mr. Nudd suggested that developing more sophisticated approaches to evaluate short-term exposures could help the District strike a balance between protecting air quality and not exacerbating the Bay Area's housing shortage, especially when considering infill housing that is crucial for regional air quality and climate goals.

Dr. Kleinman inquired whether it might be possible to rank or weight offsets such that reductions in a more impacted area would yield more credit, which might reduce inequities. He also wondered whether offsets retain their value over time. Ms. Leong responded that with regard to location, it was once the case for certain pollutants that offsets were applicable only to projects located where the credits were generated, but that this is no longer the case; however, offsets must still be generated within the Air District's nine-county jurisdiction. Ms. Leong added that offsets are applied on a 1:1.15 basis, not a 1:1 basis, so as to drive down emissions overall; and that staff could look at the possibility of requiring offsets within a certain radius of a source, but a concern is that, since offsets are not necessarily generated near every location, it is possible that applicable offsets might not be available. As to whether offsets retain their value over time, Ms. Leong stated that when they are generated, and when they are used, there is a “reasonably available control technology” (RACT) adjustment, and staff do look at how technology has changed when determining the present value of credits: for example, if credits were generated at some point by not burning fuel oil, then since current rules prohibit that use of fuel oil, those credits' value would today be zero.

Chair Solomon clarified that she understood Dr. Kleinman's comments to be less restrictive, in the sense that they were not about offsets within a certain radius, but about whether offsets within any disadvantaged community might be weighted more heavily. Ms. Leong affirmed that staff could look at the possibility of a higher exchange ratio on that basis. Chair Solomon added that there could be several methods: one could be a higher ratio; another could be a higher value, such that an offset created in a disadvantaged community would be more valuable than an offset created elsewhere. Mr. Nudd stated that if a case could be made for that on a health basis, staff might be freer to be more stringent than federal requirements in this respect, and affirmed that considering creative ideas to incentivize reductions to come from more desirable locations was helpful.

Vice-Chair Martien remarked that the presentation was helpful in focusing what the Council should be considering. Looking forward to the next meeting, Dr. Martien added, it seemed advisable to develop a draft workplan based on the ideas presented so far, and wondered if the Council would be open to creating a subcommittee to develop it. Chair Solomon expressed support for the idea of a workplan, noting that the current meeting's presentations were helping by providing context, but that the purpose of the next two meetings was to turn back to consideration of a broader framework; she added that it could be compatible with the Brown Act, for a subgroup to bring back a draft framework for consideration at the next meeting, and suggested that this idea be tabled until the end of the present meeting.

Chair Solomon returned to the issue, raised earlier by Dr. Holm, of synergistic effects within significance determinations for air toxics. Chair Solomon remarked that it is a big recommendation to make, and seemed a worthy challenge for the Council, to determine whether there was enough science to support it, and whether it would make sense as a path forward. Chair Solomon expressed interest in seeing the Council reviewing literature and digging further into the issue. Prof Carlton added that this was relevant to the temperature issue raised before, insofar as temperature is well documented as having synergistic effects; she agreed that it would be challenging and might be a place to start. Regarding temperature, Chair Solomon recalled that it was mentioned briefly at the last meeting, in the context of a relevant study on PM_{2.5}, and agreed that it could be a great place to start.

Council Action

No action taken.

4. CALENVIROSCREEN AT THE AIR DISTRICT

Dr. David Holstius, Senior Advanced Projects Advisor in the Assessment, Inventory, and Modeling Division, gave the staff presentation *CalEnviroScreen in Air District Policy and Practice*, including: outline, geographic information system (GIS)-based approach; design decisions; notable indicators in other tools; CalEnviroScreen (CES) at the Air District; “overburdened community” designation; incentive projects; place-based tools, designations, and programs; and assessment versus designation.

Dr. Holstius began by explaining the fundamental approach of CES: though often thought of as a geographic tool, it is essentially a spreadsheet-based system that ranks census tracts based on a variety of environmental and population-based indicators. Multiple indicators are first transformed to percentiles by the spreadsheet operator; this standardizes data across indicators, but discards quantitative units. The transformation can obscure meaningful differences between tracts, such that data indicating a factor-of-two difference in real indicator values might be reduced to just a 1% difference in terms of percentiles, and this is known to happen for some Bay Area communities. Dr. Holstius stated that the approach can be helpful for prioritizing areas most in need of current attention, but it is no longer obvious how to track long-term progress over time, because nothing remains on an absolute scale.

Dr. Holstius identified six key design decisions shared by CES and similar place-based tools, including: spatial scale; set of indicators; how indicators are operationalized; numeric transformations, including percentiles; post-transform weighting; and a reduction method, including the handling of missing data. Dr. Holstius recalled that about ten years prior, Air District staff had developed an interactive tool called “CalEnviroScreen Explorer,” which allowed experimentation with some of those design decisions. The tool helped the Air District explore how small changes, such as modifying indicator weights or how missing data is handled, could impact outcomes. Dr. Holstius emphasized a significant learning from that project: it was critical to decide on objective measures of difference between outcomes from Option A and Option B, but arriving at consensus on those measures could be challenging.

In response to a request by the Council from the previous meeting, Dr. Holstius next reviewed additional indicators that are not part of CES [version 4.0] but are found in tools and procedures used by other states to create place-based designations related to cumulative impacts. Such tools were reviewed by Dr. Judy Cutino, the Air District’s Health Officer, at the previous meeting.

Turning first to health-related indicators, Dr. Holstius added that operationalization decisions can matter: as proxies for heart disease and asthma, CES uses certain incidence-based measures (emergency room visit rates), while other tools use estimated prevalence rates. Dr. Holstius also emphasized that spatial scale is not truly separable from choices about indicators and their operationalizations. He stated that health indicators, in particular, are typically based on small-area population estimates. When dealing with relatively infrequent health events, which can still be important to public health, the smaller the geographic area, the fewer observations will be available, which increases the noise in the data. Dr. Holstius explained this noise can make it difficult to capture meaningful differences between neighborhoods at scales pertinent to the design and application of certain Air District policies and practices, such as in permitting.

In addition to health indicators, Dr. Holstius discussed indicators relating more directly to the Air District’s regulatory scope, or its scope as it may be perceived by the public, beginning with indicators that involve air pollution modeling or proximity-based metrics with large sources, including industrial and waste handling sources, traffic and goods movement corridors, and supporting or related facilities. Finally, Dr. Holstius noted the importance of climate-related indicators such as heat and flooding risks, which also have environmental justice implications.

Turning to applications, Dr. Holstius explained how CES influences or contributes to three main areas of work at the Air District: designating areas; characterizing local conditions; and assessing programmatic investments. Using the permitting process as an example, Dr. Holstius explained how staff have designated certain places as “Overburdened Communities.” The process involved choosing a specific threshold and then applying a spatial buffer of 1,000 ft to the Census tracts that scored above that threshold. The District now applies stricter cancer risk limits to permits issued to sources located in these designated areas. It also enhances fees and noticing requirements for such projects. As a second example, Dr. Holstius described how CES-based designations shape funding eligibility for incentive programs, as well as prioritization and award amounts. He also indicated that they also influence marketing and outreach, and may be used to set goals by various programs, which may be a requirement for some State programs.

Before closing, Dr. Holstius discussed the complex landscape of place-based designations and tools now relevant to Air District work, explaining that the field is not static and that many are simultaneously in use. To illustrate, he showed a flow chart connecting various place-based programs and designations that influence a dozen example programs.

Noting the persistence of history, Dr. Holstius said that before CES, the Air District used its own place-based designation system under its Community Air Risk Evaluation (CARE) program. While CES has largely replaced CARE in terms of guiding resource allocation and policy focus, legacy CARE communities are still tied to some current incentive programs.

Emphasizing a distinction between tools and designations, Dr. Holstius compared the Air District’s “Assembly Bill (AB) 617 Communities” to the “Overburdened Communities.” Both are traceable in some way to CES, but the former has been refined with local knowledge and a participatory process. That process involves community-led partnerships that can and do consider CES, but also bring many other considerations to bear. A key tradeoff is that, to date, the AB 617 Communities designation comprises a much smaller number of tracts.

Finally, Dr. Holstius drew attention to the various manners in which additional designations can be layered on top of designations traceable to CES, creating new composite designations. He offered the “California Climate Investment Priority Populations” designation scheme as a good example: this designation also references a map of tribal lands, as well as a third map based on an operationalization of poverty different from the one that is represented as a layer in CES. Dr. Holstius noted that these maps of tribal lands and poverty were not inserted as additional layers into CES; that would not have had much of an effect, and would have been less predictable than the approach taken, which was simply to union the CES-based product with the other two.

Dr. Holstius concluded by suggesting that, over time, as additional layers of data, priorities, and policies have been incorporated, the system shows evidence of becoming more nuanced and more complicated; and that the Council could consider balancing the need for specificity in targeting areas for intervention with the overall complexity that results from tailoring tools like CES, or place-based designations that depend on those tools, for specific policy goals.

Public Comments

Public comments were given by Ken Szutu, Citizen Air Monitoring Network of Vallejo.

Council Comments

Dr. Holm requested clarification regarding the consistency of the use of CES across the Air District, for example whether it was being used more or less frequently by different programs. Mr. Nudd responded that it varies by program but is largely consistent. In the case of permits, it is used all the time, at the time of permit applications. In the case of incentive programs, there is a bit of analysis after the fact, in terms of analyzing where funds have gone, and how much has fallen into communities of concern, but it is used consistently in terms of outreach and looking for opportunities in those communities. Dr. Holm clarified that she was wondering whether one could identify programmatic areas where CES was not yet being used, as a way to increase consideration of cumulative impacts.

Prof. Kleinman inquired whether anyone had tested the sensitivity of the results of CES to the various “degrees of freedom” discussed in the presentation, in particular which might have the greatest effect, or whether adding another degree of freedom might improve the discrimination factor. Dr. Holstius responded that there have been a handful of papers limited to a few of those questions: for example, adding a race/ethnicity layer to CES and then assessing the change. He was unaware of anything that had systematically compared multiple degrees of freedom. He remarked that it is necessary to decide on a summary measure of difference—is it just the number of tracts that agree with the previous option, or is there a measure of “better” or “worse”? Chair Solomon added that, while OEHHA was developing CES, a fair amount of that was done internally; CES 1.0 originally included race/ethnicity, which was removed in version 1.1; indicators for “old” and “young” were originally separate but later combined, then jettisoned in v3.0; most recently lead [Pb], and other indicators, have been added; and that one can compare the resulting maps, but that there are not large changes, or high sensitivity to adding or removing an indicator.

Chair Solomon added that a key issue was identified in the presentation: namely, that percentile transforms matter; the 98th and 99th percentile tracts can be quite different, in terms of the absolute burdens, than those in the 70th percentile.

Prof. Carlton commented that while a Census tract represents where people live, exposure can be different when there is substantial mobility (e.g., where people work differs a lot), and that statewide, the worst PM_{2.5} is typically found where farmers or dockworkers labor outside; at the same time, adding an indicator to represent that specifically may not particularly help, if, as remarked earlier, the tool's output is not particularly sensitive to small changes in the set of indicators.

Chair Solomon opened the discussion by remarking that there had been discussions about a “regional CalEnviroScreen”—same structure, same spreadsheet and indicators, but doing the scoring within a specific region alone—and wondered if the Air District had explored that for the Bay Area. Mr. Nudd replied that staff have not looked at that specifically, but that it is interesting to consider what adjustments to CES would look like. Further, he stated, if staff should expand the use of CES, it seemed that it could be appropriate for the map to look different, and that could be appropriate to discuss not only with the Advisory Council but with community partners as well. Chair Solomon ventured that a Bay Area edition of CES might sort out essentially in the same way that the tracts already do. Mr. Nudd remarked that, as Dr. Holstius said, there is a question about how many tracts should be designated, and in addition, community representatives should be looking at the map in order to flag any places that might not be included but should be.

Vice-Chair Martien reflected on two things he had struggled with, not only in terms of CES but in terms of any similar screening tool: it is challenging to define what exactly is to be identified (e.g., outside worker exposures), but more broadly, it is also challenging to define the reference or “touchstone” by which one can tell that the tool has improved. The closest thing that there is, Dr. Martien reflected, was what Mr. Nudd had remarked on: namely, vetting by community groups. Still, he reflected, this is an imperfect measure, since some communities are relatively more vocal. Dr. Martien stated that he found comfort in the fact that many tools appear to identify essential similar sets of Census tracts, and therefore, whether the set of indicators is scoped narrowly to air quality, or much broader, there is expected to be a great deal of overlap; still, there are many edge cases where there is uncertainty, and it is not clear how to tell what map is an improvement over another, but that it is important to have a way of doing so.

Vice-Chair Martien additionally remarked on the issue of complexity, represented by the flowchart slide. As the Council considers what to do, he urged, it would be well for members understand how things are being used now, and ask whether things can be simplified, or at least not made more complicated.

Chair Solomon turned to the consideration of indicators, especially those that are not currently included in CES. Some, she remarked, were previously included but removed; others are covered indirectly—for example, prevalence versus incidence of coronary heart disease or asthma, as alluded to by Dr. Holstius. Therefore, it seemed unlikely to Chair Solomon that small changes to the set of indicators would yield a remarkably different result. With regard to air toxics and emission sources, Chair Solomon added that air quality is weighted fairly heavily by CES, which happens to be good for present purposes, and while it would be possible to add more air quality indicators, or indicators for certain source types, it would be surprising to see much change, as the relevant communities (places) already seem to be included. Chair Solomon concluded that the presentation had given her comfort, in terms of not missing anything of major importance. Dr. Solomon added that the multiplicative operation used to summarize results was appealing, insofar as it represents an expert understanding of synergistic effects, and embeds, in the model itself, the understanding of OEHHA that the overall data suggest that

interactions between pollution burden and population characteristics are multiplicative, rather than additive.

Dr. Fine praised the discussion, and then clarified that in CES the multiplication step multiplies rankings, rather than risks, so there may be an opportunity for improvement in that detail. Dr. Fine added that implementing a “Bay Area CalEnviroScreen” might actually reorder some tracts in the Bay Area, given that the percentiles of different indicators might change; yet, to Dr. Martien’s point, there seems to be nothing that can be done that would change the map drastically. Therefore, there are some applications where it seems mapping is an appropriate approach; for others, it may be possible to go beyond dichotomous designations, having for example some gradient or tiers, or some more case-by-case dives into health indicators of concern, and cumulative effects of other factors. Dr. Fine summarized his questions as “Is mapping as far as we go? Has mapping gone as far as it can go? And is there anything beyond that?”

Prof. Kleinman remarked that cancer risk is mainly reflected by the diesel PM indicator, and yet there are many other substances that would not be captured by that, that might affect certain communities differentially. Therefore, he asked, is there any merit to adding weight to some other carcinogens, that might have localized effects? Dr. Fine responded that this is one way in which drilling down in certain parts of the Bay Area could be helpful; while CES needs statewide-consistent data, the South Coast Air Quality Management District (SCAQMD), San Joaquin Valley Air Pollution Control District (SJVAPCD) and Bay Area Air Quality Management District (BAAQMD) have done more work than other Air Districts on characterizing toxic air contaminants (TACs), which are not accounted for to that level of detail in CES. Dr. Fine elaborated that while diesel is still driving [cancer risk], it is also true that because of some changes in risk numbers around ethylene oxide, hexavalent chromium, and even benzene, it is known that there are areas where the risk from other localized TACs can exceed that from diesel PM.

Dr. Fine pointed out that this recalled one of Mr. Nudd’s original points around air quality planning and modeling, namely that staff can do some air toxics modeling and consider how it might relate to the CES mapping. Dr. Holm invited Dr. Fine to elaborate on how that might differ from the “toxic release” indicator layer featured in CES, acknowledging that the latter is relatively crude. Dr. Fine clarified that the CES layer is multi-media, which is good for cumulative impacts, but that he was referring to modeling air pollution. Dr. Fine added that the Air District’s emission inventory data is expected to be more refined than that found in that layer, which is based on US Environmental Protection Agency’s (EPA’s) data. Dr. Fine again asked how much it would change the map, but that it might be worth doing the exercise. Chair Solomon suggested that it might not be much to work to swap out the air toxics layer and re-run the tool for Bay Area tracts alone; but, though the result might be interesting to see, wondered what kind of action should follow from that, given some of the issues raised in the slide that depicted the multiple tools, designations, and programs in whether it might be advantageous simply to remain with CES, to keep things from getting vastly more complicated; but for the Advisory Council, doing that sensitivity analysis could still be useful. Dr. Holm expressed support for this, especially if the expectation is that staff’s air toxics data are not well aligned with the corresponding information in CES.

Mr. Nudd recommended the approach of, as part of staff’s more community-focused air quality planning, that staff update their air toxics monitoring and modeling beyond the AB 617 communities of West Oakland, Richmond, and East Oakland. Regionally this work has not been done for a few years. Mr. Nudd added that it would be a good idea to address ethylene oxide, insofar as that could overturn

a lot of understandings about what is driving toxic risk. However, Mr. Nudd clarified, all told this would be several years' worth of work, so he would not recommend putting that work on the critical path, so as to be able to move forward on policy changes that are supported by the current evidence, and not become mired in “analysis paralysis,” while staff continue to refine tools and approaches over time. Dr. Fine expanded on this, remarking that the Advisory Council does not necessarily need to see results from a methodology to weigh in on the types of methodologies that staff ought to consider; if, for instance, CES is one layer, plus improved regional air toxics modeling as an overlay on top of that, then that is an approach for the Council to consider, which staff can consider in planning, and will likely pursue in any case as part of planning; that is, to bring in toxics risk and toxics exposure along with traditional PM_{2.5} exposure and ozone exposure.

Council Action

No action taken.

5. ENVIRONMENTAL BENEFITS MAPPING AND ANALYSIS PROGRAM – COMMUNITY EDITION (BENMAP - CE) IN AIR DISTRICT POLICY AND PRACTICE

Dr. Holstius gave the staff presentation *BenMAP-CE in Air District Policy and Practice*, including: outline; extreme application; simulation-based approach; BenMAP-CE at the Air District; multi-pollutant BenMAP-CE; multi-pollutant versus single-pollutant; multi-pollutant caveats; and non-chemical stressors.

Dr. Holstius recalled a key statement by Dr. Fine from a previous meeting: that the Air District aims to be able to assess the health benefits of actions to reduce emissions and exposures, and that this requires consideration of cumulative impacts. The Air District currently uses the Environmental Benefits Mapping and Analysis Platform, Community Edition (BenMAP-CE), an open-source computer program developed by US EPA to estimate the number and economic value of air pollution-related deaths and illnesses.

Dr. Holstius provided an example from the Air District's recent work on Regulation 6, Rule 5, which addresses PM emissions from fluid catalytic cracking units at Bay Area refineries. BenMAP was used to model air quality impacts, estimating health outcomes like premature mortality and asthma exacerbations based on exposure to PM_{2.5}. Staff also analyzed racial and ethnic disparities in long-term PM_{2.5} exposure attributed to these modeled sources.

Dr. Holstius identified five key design decisions in applications of BenMAP-CE: spatial scale; extent of study area / population coverage; set of health impact functions (HIFs); economic valuation approaches; and levels and dimensions of analyses of variation. Regarding spatial scale, Dr. Holstius explained that BenMAP performs intermediate calculations at a very fine spatial scale, from modeled air quality impacts at a kilometer scale or less, and population at a Census block level (roughly 100 residents per block), where each block typically contains around 100 residents. He noted that this helped to capture correlations at fine spatial scales. However, Dr. Holstius emphasized that aggregation before reporting was warranted to mitigate against noise and uncertainty inherent in small-area health and demographic data. Dr. Holstius mentioned that while it may be difficult to determine a bright line for a “large enough” scale of aggregation, staff had consulted with BenMAP experts and developers at US

EPA, and that the total study area population in this case, which was approximately 1 million residents, was deemed sufficiently large.

Dr. Holstius explained that BenMAP employs HIFs, derived from well-regarded epidemiological studies, to estimate health impacts from modeled population exposures. Dr. Holstius noted that the Air District supplements EPA’s default HIFs with a California-specific HIF for mortality and an HIF for mortality based on a meta-review, but acknowledged that not all health outcomes of local concern are well-represented in the literature, limiting their inclusion.

Turning to equity, Dr. Holstius explained that BenMAP focuses on estimating net impacts for the overall population within a study area. However, the Air District also analyzes variation in modeled annual average exposure levels by race and ethnicity. He stated that the Air District is seeking guidance on how best to assess patterns of inequity, noting that findings can vary according to the spatial scale of the analysis, and may even indicate a different “most exposed” group depending on whether the analysis is at a regional level or a county level. This poses a significant challenge in communicating and addressing environmental justice concerns analytically.

Dr. Holstius mentioned BenMAP’s role in past efforts like the CARE program, which was mentioned in the previous agenda item. He emphasized that BenMAP is now primarily used for large-scale public health assessments, supplementing the Air District’s broader rule development and environmental justice efforts with additional information.

Dr. Holstius recalled a remark by Board Chair Hurt at the previous meeting, to the effect that the relationship between science and environmental justice may sometimes be perceived, or cast, as oppositional. Dr. Holstius suggested that the Council might wish to consider the dual values of reducing uncertainty and increasing representation of disadvantaged groups. He explained that these values bear on several degrees of freedom in the approach, including the spatial scale, the minimum extent of a study area or population, and the scope of HIFs considered appropriate for modeling.

The discussion then shifted to BenMAP’s potential for analyzing multi-pollutant impacts. Dr. Holstius summarized results from a proof-of-concept study recommended by the Council, which used a customized version of BenMAP to model the effects of criteria pollutant mixtures. The study was scoped to a 15-year rollback of historical levels in the Atlanta area, and used asthma emergency department visit rates as the outcome measure. For most of the mixtures and seasons that it considered, summing the health impacts of pollutants modeled individually resulted in higher net estimates of health impacts. Modeling pollutants jointly also produced wider confidence intervals, reflecting greater statistical uncertainty.

Dr. Holstius closed by mentioning two key caveats documented by the study authors: first, that such analyses require detailed input data not commonly reported in epidemiological studies; and second, that in addition to introducing greater statistical uncertainty, an element of scientific uncertainty is also introduced, insofar as the conclusions about the strength of causal relationships involving mixtures of stressors may not yet be as well substantiated as those for causal relationships involving single pollutants. As such, Dr. Holstius explained, the study authors emphasized a need for policymakers to consider the value of information gained, given the extra effort required.

Public Comments

No requests received.

Council Comments

Vice-Chair Martien requested confirmation that the figure on slide 7 indicated that the “sum of single pollutants” results were generally as large or larger than the “joint effects” results. Dr. Holstius confirmed this.

Prof Kleinman remarked that BenMAP essentially assumes a linear dose-response, and does not take into account nonlinearities, such as cases where a time-varying dose rate (lower, then higher) has more of an impact than a constant dose rate, holding the total dose constant. He suggested that multiple pollutants acting on the same receptors or health endpoint might have such an effect. Prof Kleinman continued that some other extrinsic factors, such as stress or temperature, may alter metabolism or total response to some inhaled pollutant, which would be important to factor in.

Vice-Chair Martien reflected on the study’s usefulness but wondered whether its findings warranted incorporating multi-pollutant modeling into the Air District’s work process, and posed the question to staff. Dr. Holstius responded that for this particular scope, it did not seem like it would add much, given the level of effort required. Dr. Holstius offered that there were aspects of BenMAP applications where additional effort might be more helpful. He recalled Prof. Kleinman’s comments, and pointed out that although the relative risk yields a nearly linear dose-response for small effect sizes, the baseline rate matters a great deal to BenMAP’s calculations. As an example, Dr. Holstius stated, the all-cause mortality rate for African-Americans in San Francisco is essentially double that of the regional average for all groups; there are many causes of that, and to use that rate is to reflect those causes, not explicitly, but implicitly. Dr. Holstius emphasized that the tradeoffs imposed by a finite data budget make it important to consider priorities in terms of seeking additional spatial resolution versus disaggregating by race/ethnicity. Vice-Chair Martien agreed that disaggregated data might be helpful not only for BenMAP applications, but for understanding the variability that is seen in terms of health impacts by race and ethnicity, in the context of broader applications, and that further exploration of that could be interesting.

Dr. Holm returned to the issue of long-term versus short-term exposure patterns, emphasizing the lack of information concerning the situation that Prof Kleinman had noted, where the total exposure may be the same but the temporal profile differs. Dr. Holm wondered whether the relatively dense deployment of low-cost sensors in the Bay Area might offer ways to observe “spikes” in exposures, or a general pattern of higher short-term temporal variability, within more-impacted areas such as neighborhoods large industrial facilities.

Chair Solomon suggested that while the BenMAP study did not find much, there were still advantages to thinking further about that approach. She indicated that something might be found by examining a different location, or a different set of stressors, and if it were, BenMAP represented a well-accepted foundation for regulatory applications. Recognizing the time and effort needed, Chair Solomon suggested developing a Bay Area case study examining interactions between non-chemical stressors and PM_{2.5}.

Prof. Carlton recalled an earlier comment on temperature, and wondered to what extent there was a responsibility to assess the effectiveness of current policy or past policy, versus forecasting to protect human health in the future. Prof. Carlton elaborated that to understand the response to an engineering intervention is fairly straightforward, but changes in human activity, and second-order changes, are harder to forecast. She agreed that the study proposed by Dr. Solomon had value, but that it could be advisable to first consider to what degree the goal involves forecasting the future.

Vice-Chair Martien pointed out that a suitable epidemiologic study would be needed, to support such a [Bay Area] case study. Chair Solomon clarified that there was a question about whether such an epidemiologic study would need to be geographically specific to the Bay Area, and if so, that would be a significant challenge; but there was a possibility of identifying an epidemiologic study that had observed a population elsewhere, that was otherwise scoped to the issues with which the Council and/or staff were concerned. Dr. Solomon indicated there would be a need to review a set of studies, and ascertain whether they met suitable criteria in terms of reliability, outcome measures, and exposure measures; that there are in fact studies that have looked at heat, socioeconomic factors, and race/ethnicity, etc.; and that a next step would be to have a closer look at several such studies, followed by a discussion to weigh the pros and cons of selecting any in particular.

Summarizing the interests expressed by Council members, Chair Solomon stated that the Council had expressed interest in a presentation at a future meeting on Rule 11-18, as well as a much longer-term project that the Air District might pursue regarding TACs, including the generation of a map layer for TACs, incorporating the newest cancer risk factors, including for ethylene oxide. Chair Solomon added that the Council was also interested in advancing the potential of a BenMAP-CE analysis involving interactive effects, that would be in some ways a replication of the Atlanta study, but scoped to the Bay Area, and addressing cumulative impacts from social and economic stressors, or potentially heat, rather than from only air pollutants. Finally, Chair Solomon recalled Vice-Chair Martien’s suggestion to have a subgroup of Council members work between Council meetings to come back with concrete proposals for the entire Council to discuss. Vice-Chair Martien volunteered to lead such a subgroup. Chair Solomon looked to other Council members to express any interest they had in participating, noting that several members were not present and would need to be made aware. Chair Solomon looked for clarification as to the maximum number of participants that could meet without Brown Act concerns. Staff clarified that four would be a sub-quorum, but that three would be more customary for a small group, and advised the Council not to form that group at the present meeting.

Council Action

No action taken.

OTHER BUSINESS

6. REPORT OF THE EXECUTIVE OFFICER/AIR POLLUTION CONTROL OFFICER (APCO)

Dr. Philip M. Fine, Executive Officer/APCO announced the following:

- On September 4, 2024, the Air District's Board of Directors approved the [2024-2029 Strategic Plan](#) for implementation.

- The Air District will arrange for the Advisory Council and Community Advisory Council to have a joint meeting or interaction, as the Advisory Council seeks the input of the Community Advisory Council regarding cumulative impacts.

7. **PUBLIC COMMENT ON NON-AGENDA MATTERS**

No requests received.

8. **COUNCIL MEMBER COMMENTS**

None.

9. **TIME AND PLACE OF NEXT MEETING**

Thursday, October 30, 2024, at 9:30 a.m. at 375 Beale Street, San Francisco, CA 94105. The meeting will be in-person for the Advisory Council members and members of the public will be able to either join in-person or via webcast.

10. **ADJOURNMENT**

The meeting adjourned at 11:46 a.m.

Marcy Hiratzka
Clerk of the Boards
Executive Office

&

Dr. David Holstius
Sr. Advanced Projects Advisor
Assessment, Inventory, and Modeling

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Gina Solomon and Members
of the Advisory Council

From: Philip M. Fine
Executive Officer/APCO

Date: October 30, 2024

Re: Overview of Air District Strategic Plan

RECOMMENDED ACTION

No action requested at this time.

BACKGROUND

The *2024-2029 Strategic Plan* was developed through a collaborative process with community leaders, Air District employees, the Board of Directors, and Community Advisory Council members, representatives from regulated industries, and our government and non-government partners. We surveyed more than 60 individuals with whom we regularly work. We gave public updates about the plan's progress at public meetings of our Board of Directors and our Community Advisory Council from January through July 2024.

As part of this outreach, we discussed what needs to change, what we are doing well, and where we can do better. We talked about the Air District's internal strengths and weaknesses, and external opportunities and threats. We held visioning exercises to learn about what we aspire to be over the long term and hope to achieve in the short term. We collaborated on goals and strategies and the actions needed to achieve real change.

What we learned is that people value the Air District's renewed focus on environmental justice and community engagement. They appreciate our knowledge and technical expertise, and our emphasis on science. We heard about our internal challenges, like poor internal communication and bureaucratic processes that disincentivize change, innovation, and collaboration. We heard that there continues to be a lack of trust in the Air District, particularly in communities overburdened by pollution. There is also a sense of opportunity. Permitting and enforcement of our regulations on industries, gas stations, generators and other stationary sources could be more transparent, efficient, and a mechanism for advancing environmental justice. People also see an opportunity to embrace new technology and funding sources to achieve our air quality goals.

Notably, communities, Board members, and employees all share the belief that the Air District is an air quality leader, in California and nationally. Being a leader, however, means we need to continue to be bold and visionary to ensure that all communities have equitable access to clean air.

DISCUSSION

The *2024-2029 Strategic Plan* is centered on four primary goals: 1. Achieve impact, 2. Advance environmental justice, 3. Foster cohesion and inclusion, and 4. Maintain an effective, accountable, and customer-oriented organization. The plan's goals are designed to move us closer to our long-term mission, and near-term vision of organizational transformation. Each goal includes objectives, strategies, and our commitments to action. We also include a detailed narrative for the strategies to describe how they will advance the plan's goals and objectives.

Environmental Justice: A Strategic Focus

Over the last two and a half years, the Air District Community Advisory Council has been advising the Air District on what environmental justice means and about what we should consider as we shift toward centering our work in environmental justice.

To help us understand the strategies and actions that would move toward more equitable outcomes in communities, the council formed an Ad Hoc committee on Environmental Justice Policy in late 2022 to work directly with Air District leadership and employees. The *2024-2029 Strategic Plan* reflects this partnership. It also reflects the knowledge gained from our many conversations with the council and other community members on what we need to do to advance environmental justice.

The strategies in this plan were developed not only in consultation with the Community Advisory Council, but also in consideration of their Environmental Justice Priorities. More than three quarters of the strategies in this plan link directly to one or more of the Community Advisory Council priorities.

Strategy Deep Dives

Two strategies in the strategic plan have been discussed at length with the Advisory Council, Strategy 1.1 Change Approach to Air Quality and Strategy 2.11 Cumulative Impacts.

Strategy 1.1: Change Approach to Air Quality

Strategy 1.1 is about how we will change our approach to reducing air pollution so that we achieve more meaningful improvements to air quality in communities, with a focus on those overburdened by air pollution. As discussed with the council, the traditional approach to air quality management has successfully reduced air pollution across the region, however, many communities still face higher levels of exposure to air pollution than others. Communities where air pollution remains high are mostly located near freeways, busy roadways, or large industrial facilities and are often impacted by more than one of these sources. They are also more often

lower-income communities of color.

There are four commitments in Strategy 1.1, including:

- Analyze existing data and do modeling to determine which sources cause the highest level of air pollution.
- Partner with communities to determine which sources most impact them.
- Determine which actions have the greatest impact in reducing pollution.
- Prioritize actions that reduce inequitable exposures to air pollution.

To meet these commitments, we will do computer modeling of emissions data and collect new monitoring data at and near sources to understand which are most significant. Our efforts will center on the air pollutants that cause the greatest health effects, including fine particulate matter and toxic air contaminants. We will also build community capacity to collect air pollution data to ensure we have a complete and accurate picture of local air pollution, one that includes community experience and perspectives. We will also work to better understand how we can reduce pollution from the sources that cause the most harm. Through computer modeling of possible actions, we can learn which actions would be most effective at reducing harmful pollution in communities.

Strategy 1.1 will be informed by and inform many of the other strategies in the strategic plan, including:

- **Strategy 1.2 Stronger Regulations:** Develop stronger regulations, prioritizing those that can improve local air pollution.
- **Strategy 1.4 Reimagine Funding:** Reimagine funding programs so that they better benefit communities impacted by air pollution.
- **Strategy 2.1 Community Partnership:** Develop partnerships with communities so they can directly participate in the solutions to the air quality problems that impact them.
- **Strategy 2.2 Collect Community Data:** Build community capacity to collect air pollution data and ensure the Air District better utilizes those data to reduce the pollution that harms communities most.
- **Strategy 2.4 Community Health Data:** Provide communities with better health information, so they know the potential health implications of air pollution and are better able to participate in decision-making.
- **Strategy 2.7 Understand Local Air Pollution:** Work with communities overburdened by air pollution to develop a more complete understanding of air pollution in their neighborhoods.
- **Strategy 2.11 Cumulative Impacts:** Develop our understanding of the cumulative effects of air pollution and other stressors and use this information to focus regulatory efforts in areas experiencing the most serious air pollution and related cumulative impacts.
- **Strategy 4.3 Consistent Permits:** Ensure Air District regulations and associated air quality permits issued are clear, consistent, and enforceable so that air pollution affecting communities is minimized.

- **Strategy 4.4 Improve Air Monitoring:** Update the design and operations of the air quality monitoring network to improve reliability, efficiency, data quality, and accessibility to better meet monitoring objectives and to support efforts to understand local exposure to air pollution.
- **Strategy 4.5 Improve Compliance Investigations:** Increase the efficiency and effectiveness of inspection and investigation resources to improve compliance and increase the impact of our enforcement program.

Strategy 2.11: Cumulative Impacts

Strategy 2.11 is about how we will develop our understanding of the cumulative effects of air pollution and other stressors and use this information to focus regulatory efforts in areas experiencing the most serious air pollution and related cumulative impacts.

There are three commitments in this strategy, including:

- Develop and share methods to better understand where cumulative impacts exist and how they should be considered in decision making.
- Consider cumulative impacts in our programs, including permitting, regulations, and compliance.
- Provide tools and guidance to local governments to address cumulative impacts.

The second commitment is consistent with recent discussions with the council. As shared with the council, the Air District is researching ways to better understand and more effectively address cumulative impacts in communities overburdened by air pollution and other chronic environmental, income, health, housing, job security, and other stressors, including in our programs and policies. We are exploring ways to address cumulative impacts, including in our air quality planning work, CEQA guidance, permitting and in our regulations of stationary sources.

Strategy 2.11 will be informed by and inform many of the other strategies in the strategic plan, including:

- **Strategy 1.1 Change Approach to Air Quality:** Change our approach to reducing air pollution so that we achieve more meaningful improvements to air quality in communities, with a focus on those overburdened by air pollution.
- **Strategy 2.1 Community Partnership:** Develop partnerships with communities so they can directly participate in the solutions to air quality problems that impact them.
- **Strategy 2.2 Collect Community Data:** Build community capacity to collect air pollution data; ensure the Air District better utilizes data to reduce the pollution that harms communities most.
- **Strategy 2.4 Community Health Data:** Provide communities with better health information, so they know the potential health implications of air pollution and are better able to participate in decision-making.

- **Strategy 2.7 Understand Local Air Pollution:** Work with communities overburdened by air pollution to develop a more complete understanding of air pollution in their neighborhoods.
- **Strategy 4.3 Consistent Permits:** Ensure Air District regulations and associated air quality permits issued are clear, consistent, and enforceable so that air pollution affecting communities is minimized.
- **Strategy 4.9 Land Use Impacts:** Provide tools for local governments to consider environmental justice, air quality, and climate priorities in local land use plans, policies, projects, and permitting decisions.

Continued Implementation and Next Steps

Much of the work described in the strategic plan is well under way, including in the strategies described above. We will continue our implementation efforts through the completion and development of action plans for Strategies 1.1 and 2.11, as well as all the strategies in the plan.

Action plans will include performance timelines, milestones, metrics, and targets. We will also continue our work with communities in our efforts to implement most of the plan's strategies. Each year, we will do an annual implementation progress report for increased transparency and to reassess and realign resources, as needed.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Christy Rivere
Reviewed by: Greg Nudd

ATTACHMENTS:

1. Strategic Plan Overview Presentation

2024-2029 Strategic Plan

Advisory Council
October 30, 2024

Greg Nudd
Deputy Executive Officer



Outline

- Strategic Plan Development
- Strategic Plan Overview
- Goals and Strategies
- Implementation
- Strategy Deep Dives:
 - Strategy 1.1 Change to Approach to Air Quality
 - Strategy 2.11 Cumulative Health Impacts



Strategic Plan Development

Why a Strategic Plan?

- Aligns Board of Directors, Community Advisory Council, employees, and public on mission, values, and vision
 - Ensure alignment on work and decision making
- Sets goals and objectives for next 5 years; aligns resources to support them
- Provides tool for accountability; track progress and communicate feedback

Why focus on Environmental Justice?

- Many low-income, communities of color experience relatively higher air pollution than rest of region
- Work with AB 617 communities, Community Advisory Council (CAC) and others has inspired a shift in focus for agency
- Plan demonstrates commitment to work with communities to reduce disparities in exposure to air pollution
- CAC Environmental Justice Priorities inform plan goals and strategies

Plan Development Engagement

- Visioning exercises, workshops, and meetings with employees
- Surveyed partners: community, industry, and government agencies
- Collaborated with Board via ad hoc committee and retreats
- Worked with our Community Advisory Council to align plan with EJ priorities

Strategic Plan Overview

Strategic Plan Framework

MISSION

The Air District improves air quality to protect public health, reduce historical and current environmental inequities, and mitigate climate change and its impacts.

CORE VALUES



5-YEAR VISION

Over the next 5 years, the Air District will transform its workforce, operations, community engagement, and programs to improve air quality, increase public trust, and demonstrate leadership in equity-centered environmental stewardship.

Environmental Justice Priorities

5-YEAR GOALS





Goal 1: Achieve Impact

- Reduce health impacts of air pollution
- Hold violators accountable
- Mitigate climate change and its impacts

Sample Commitments to Action

- With community partners, determine which sources cause the highest level of pollution and which actions to take.
- Update regulations to ensure health protection and stringency.
- Increase inspections and monitoring where flaring occurs.
- Develop enforcement policy that considers environmental justice principles and community perspectives.
- Develop regional climate plan.



Goal 2: Advance Environmental Justice

- Build partnership and community capacity
- Identify disparities
- Reduce disparities

Sample Commitments to Action

- Expand community partnership models to other communities impacted by air pollution.
- Provide community with air quality and health data, data collection tools, and training.
- Improve the transparency of complaint outcomes.
- Meet regularly with community members on compliance and enforcement activities.



Goal 3: Foster Cohesion & Inclusion

- Embody diversity, equity, inclusion, and belonging
- Become *One Air District*

Sample Commitments to Action

- Establish recruitment, hiring, retention, and advancement policies and practices that promote diversity and inclusion and remove any structural biases.
- Conduct annual diversity and unconscious bias training for all levels of the organization.
- Add advancing environmental justice and equity as a core competency in performance reviews.



Goal 4: Be Effective, Accountable, and Customer-Oriented

- Improve permitting, monitoring, and enforcement
- Build relationships and enhance communications
- Be accountable

Sample Commitments to Action

- Target inspections and other compliance activities where they are most needed.
- Increase social media presence to expand youth outreach and engage young people.
- Strengthen internal organizational knowledge and communication skills so people experience the highest level of service.
- Create measurable performance outcomes for each strategy and associated action.



Strategy Deep Dives

Strategy 1.1 Change Approach to Air Quality

Description: Change approach to reducing air pollution so that we achieve more meaningful improvements to air quality in communities, with a focus on those overburdened by air pollution.

Strategy Commitments:

- Determine which sources cause highest level of air pollution.
- Partner with communities to determine which sources most impact them.
- Determine which actions have the greatest impact in reducing pollution.
- Prioritize actions that reduce inequitable exposures to air pollution.

Strategy 1.1 Nexus to Other Plan Strategies



Strategy 1.1 Nexus to Other Plan Strategies (cont.)

- **Strategy 1.2 Stronger Regulations:** Develop stronger regulations, prioritizing those that can improve local air pollution.
- **Strategy 1.4 Reimagine Funding:** Reimagine funding programs so that they better benefit communities impacted by air pollution.
- **Strategy 2.1 Community Partnership:** Develop partnerships with communities so they can directly participate in the solutions to air quality problems that impact them.
- **Strategy 2.2 Collect Community Data:** Build community capacity to collect air pollution data; ensure the Air District better utilizes data to reduce the pollution that harms communities most.
- **Strategy 2.4 Community Health Data:** Provide communities with better health information, so they know the potential health implications of air pollution and are better able to participate in decision-making.

Strategy 1.1 Nexus to Other Plan Strategies (cont.)

- **Strategy 2.7 Understand Local Air Pollution:** Work with communities overburdened by air pollution to develop a more complete understanding of air pollution in their neighborhoods.
- **Strategy 2.11 Cumulative Impacts:** Develop our understanding of the cumulative effects of air pollution and other stressors; use this information to focus regulatory efforts in areas experiencing the most serious air pollution and related cumulative impacts.
- **Strategy 4.3 Consistent Permits:** Ensure Air District regulations and associated air quality permits issued are clear, consistent, and enforceable so that air pollution affecting communities is minimized.
- **Strategy 4.4 Improve Air Monitoring:** Update design and operations of air quality monitoring network to improve reliability, efficiency, data quality, and accessibility to better meet monitoring objectives and to support efforts to understand local exposure to air pollution.
- **Strategy 4.5 Improve Compliance Investigations:** Increase the efficiency and effectiveness of inspection and investigation resources to improve compliance and increase the impact of our enforcement program.

Strategy 2.11 Cumulative Impacts

Description: Develop our understanding of the cumulative effects of air pollution and other stressors and use this information to focus regulatory efforts in areas experiencing the most serious air pollution and related cumulative impacts.

Strategy Commitments:

- Develop and share methods to better understand where cumulative impacts exist and how they should be considered in decision making.
- Consider cumulative impacts in our programs, including permitting, regulations and compliance.
- Provide tools and guidance to local governments to address cumulative impacts.

Cumulative Impacts Commitment 2.11.2

Consider cumulative impacts in our programs, including permitting, regulations and compliance.

Air Quality Planning

- Opportunities for a community-focused approach

California Environmental Quality Act Guidance

- Opportunities for more thorough consideration of cumulative impacts

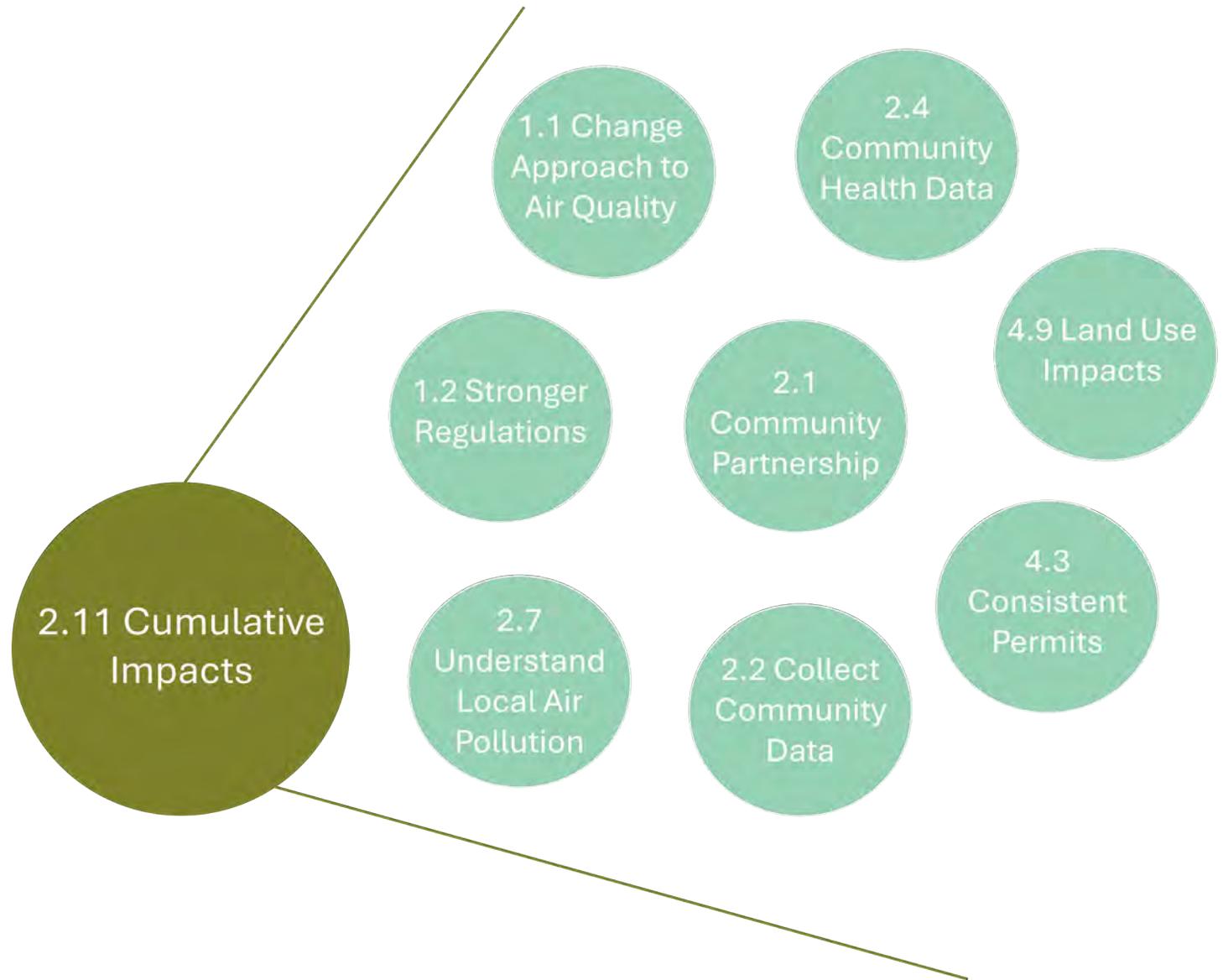
Permits (New and Modified Facilities)

- Opportunities for a more refined and protective health risk assessments

Stationary Source Regulations (Existing Facilities)

- Opportunities to consider cumulative impacts when setting emission standards

Strategy 2.11 Nexus to Other Plan Strategies



Strategy 2.11 Nexus to Other Plan Strategies (cont.)

- **Strategy 1.1 Change Approach to Air Quality:** Change our approach to reducing air pollution so that we achieve more meaningful improvements to air quality in communities, with a focus on those overburdened by air pollution.
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Strategy 2.11 Nexus to Other Plan Strategies (cont.)

- **Strategy 2.4 Community Health Data:** Provide communities with better health information, so they know the potential health implications of air pollution and are better able to participate in decision-making.
- **Strategy 2.7 Understand Local Air Pollution:** Work with communities overburdened by air pollution to develop a more complete understanding of air pollution in their neighborhoods.
- **Strategy 4.3 Consistent Permits:** Ensure Air District regulations and associated air quality permits issued are clear, consistent, and enforceable so that air pollution affecting communities is minimized.
- **Strategy 4.9 Land Use Impacts:** Provide tools for local governments to consider environmental justice, air quality, and climate priorities in local land use plans, policies, projects, and permitting decisions.



Next Steps

Next Steps

- Put supporting infrastructure into place
- Develop action plans
- Align next budget cycle with goals and strategies
- New strategic plan website will show progress through performance metrics
- Report annually

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Gina Solomon and Members
of the Advisory Council

From: Philip M. Fine
Executive Officer/APCO

Date: October 30, 2024

Re: National Academies of Science, Engineering, and Medicine Project: *State-of-the-Science and the Future of Cumulative Impact Assessment*

RECOMMENDED ACTION

No action requested at this time.

BACKGROUND

The National Academies of Sciences, Engineering, and Medicine (National Academies) is assisting the U.S. Environmental Protection Agency (US EPA) by assembling an ad hoc committee to convene state-of-the-science workshops and develop a consensus report to advise on how US EPA might further develop the scientific foundation underlying the practice of cumulative impact assessment. Input is also being sought from community and tribal liaisons, as well as researchers, physicians, or other partners involved in community-engaged research in the United States.

DISCUSSION

Using an interdisciplinary approach, the project is exploring the state-of-the-science of cumulative impact assessment and its application at the community, state, and national levels. The work entails public workshops, community and tribal engagement, and a broad array of consulted scientific expertise. It is building from prior National Academies reports highlighting the need to better characterize and manage cumulative exposures, health risks, and other impacts experienced in diverse populations. Overall, the aim is to highlight key opportunities and challenges to advancing the science and practice of cumulative impact assessment in an integrated social-environmental framework.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: David Holstius
Reviewed by: Judith Cutino and Song Bai

ATTACHMENTS:

1. National Academies Project on Cumulative Impact Assessment Presentation



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

AGENDA: 4

National Academies Project on Cumulative Impact Assessment

**Advisory Council Meeting
October 30, 2024**

**David Holstius, PhD
Senior Advanced Projects Advisor
dholstius@baaqmd.gov**



Presentation Outline

- Overview of current National Academies project*
 - Organizations
 - Process and timeline
 - Charge questions
 - Key participants

* Project title = “State-of-the-Science and the Future of Cumulative Impact Assessment” (National Academies of Sciences, Engineering, and Medicine)

<https://www.nationalacademies.org/our-work/state-of-the-science-and-the-future-of-cumulative-impact-assessment>

Organizations

- Leading: National Academies of Sciences, Engineering, and Medicine
- Sponsoring: U.S. Environmental Protection Agency (EPA)

Charge Questions

- How can elements of prior risk assessment advice from the National Academies, developments by EPA and others, and response from communities inform a holistic and inclusive approach to developing and implementing cumulative impact assessment?
- What types of stressors should be prioritized, characterized, and considered in combination in a cumulative impact assessment (e.g., chemical, nonchemical, and climate-related stressors)?
- How should stressors be conceptualized relative to community assets and vulnerability, and how can environmental justice considerations be incorporated in relation to cumulative exposures and health risks facing diverse communities and populations?
- How can community-generated data and tribal ecological knowledge be incorporated into cumulative impact assessment?

Charge Questions (cont'd)

- How can cumulative impact assessment be adapted to different communities, generalized to regional or national scale, and remain flexible for EPA's different programmatic needs?
- What methods for assessing health effects, such as allostatic load (or biological aging, or toxic stress) are most useful for incorporating into cumulative impact assessment?
- How should uncertainty in cumulative impact assessments be characterized, particularly when using mixed methods?
- What are the key considerations in characterizing and managing environmental justice in relation to cumulative exposures and health risks facing diverse communities and populations?

Process and Timeline

- June–September 2024
 - Open: 1 multiday event; 1 workshop
 - Closed: 5 additional meetings; 5 subgroup meetings
- **October 2024**
 - Oct 15: Workshop #1 (open)
 - Member self-introductions + quick summaries of prerecorded full presentations
 - Moderated panel discussions
 - Public comments
 - Oct 22: Meeting #6 (partly open)
 - Moderated panel discussion
 - Public comments
- Consensus report (TBD)

Committee

Chair

Dr. Weihsueh A. Chiu
Professor
Department of Veterinary Physiology
and Pharmacology, Texas A&M

Members

Dr. Andrew L. Dannenberg
Affiliate Professor
Depts of Environmental &
Occupational Health Sciences and
Urban Design & Planning
University of Washington

Dr. Mia V. Gallo
Associate Director, Center for the
Elimination of Minority Health
Disparities; Research Professor,
Dept of Anthropology
University at Albany, SUNY

Dr. Rima Habre
Associate Professor
Environmental Health and Spatial
Sciences, University of Southern
California

Dr. Jerreed D. Ivanich
Assistant Professor
Centers for American Indian and
Alaska Native Health
Colorado School of Public Health

Dr. Jonathan I. Levy
Professor and Chair
Dept of Environmental Health
School of Public Health, Boston
University

Emmanuel Liban
Chief Sustainability Officer
Los Angeles County Metropolitan
Transportation Authority

Dr. Kristen Malecki
Professor and Division Director
Environmental and Occupational
Health Sciences
University of Illinois Chicago

Dr. Rachel Morello-Frosch
Professor
School of Public Health; Department
of Environmental Science, Policy and
Management, UC Berkeley

Dr. David J. G. Slusky
Professor of Economics
Chair, Dept of Speech-Language-
Hearing, University of Kansas

**Dr. Yoshira Ornelas Van
Horne**
Assistant Professor
Department of Environmental Health
Sciences, Columbia University

Dr. Courtney G. Woods
Associate Professor
Dept of Environmental Sciences and
Engineering
University of North Carolina at
Chapel Hill

Lauren Zeise
Director
California Environmental Protection
Agency's Office of Environmental
Health Hazard Assessment
(OEHHA)

Kathryn Guyton
Senior Program Officer
Board of Environmental Studies and
Toxicology, National Academies

Dr. Julia Brody
Executive Director Emeritus, Silent
Spring Institute; Research Associate
in Epidemiology, Brown University

Dr. Zhen Cong
Professor and Chair
Department of Health Sciences
Chapman University

Dr. Deborah Cory-Slechta
Professor of Environmental Medicine
Univ. Rochester Medical School

Community Liaisons

Dr. Axel Adams
University of Illinois Chicago

Dr. Walter E. Auch III
FracTracker Alliance

Jo Banner
The Descendants Project

Dr. DeeDee Bennett Gayle
University at Albany, State University
of New York

Cassie Cohen
Portland Harbor Community Coalition

Tewentahawih'tha Cole
Akwasasne Mohawk Tribe

Jess Conard
Resident, East Palestine, OH

Dionne Delli-Gatti
Environmental Defense Fund

Dr. Robin Dodson
Silent Spring Institute

Jennifer M. Hadayia
Air Alliance Houston

Dr. Berneece Herbert
Jackson State University

Dr. Joseph F. Kozminski
Lewis University

Alexia Leclercq
People Organized in Defense of Earth
and her Resources

Dr. Stephen Linder
The University of Texas Health
Science Center at Houston School of
Public Health

Sophia Longsworth
Clean+Healthy

Andrea Isabel López
Ciencia Puerto Rico

Beto Lugo Martinez
Environmental & Climate Justice
Organizer

Aaron Maruzz
Silent Spring Institute

Jackie Medcalf
Texas Health and Environment
Alliance

Antoinette Medina
Gabrielino Tongva Nation

Dr. Esther Min
Front and Centered

Mona Munroe-Younis
Environmental Transformation
Movement of Flint

Dr. Valerie I. Nelson
Cape Ann Climate Resilience
Collaborative

Dr. Shalmalee Pandit
Stanford Doerr School of
Sustainability

Dr. Jacob Park
Vermont State University Castleton

Dr. Nikita Patil
Aquasaic

Dr. Kan Shao
Indiana University School of Public
Health Bloomington

Shereyl Snider
East Trenton Collaborative

Dr. Orly Stampfer
Washington State Department of
Health Climate and Health Section

Raymond Sweet
Hollygrove-Dixon Neighborhood
Association

Workshop Presenters

KEYNOTE

Cumulative Impacts of Pollution and Environmental Policy

- Dr. Janet Currie, Princeton

SESSION 1: Key Concepts

What is cumulative impact assessment?

- Dr. Na'Taki Osborne Jelks, Spelman College

Regulatory policy basis of cumulative impact assessment

- Dr. William Boyd, UCLA
- Dr. Tracey Woodruff, UCSF

An exposome approach to understanding disparities in risk-trajectories to chronic disease

- Dr. Darryl B. Hood, Ohio State

SESSION 2: Combined Impacts

Combined impacts of pollutants, climate, the social environment, and other factors on community health

- Dr. Joan Casey, U Washington

Vulnerability, resilience, and capacities to respond to environmental impacts

- Dr. Christopher Emrich, U Central Florida

Opportunities for promoting health and community well-being

- Dr. Denise Dillard, Washington State

Salutogenesis

- Dr. Sacoby Wilson, U Maryland

SESSION 3: Methods/Approaches

The role of geospatial models in representing and addressing cumulative impacts

- Dr. Marcos Luna, Salem State Univ

Available models to combine cumulative impacts across domains

- Dr. Bill Rish, ToxStrategies

Multicriteria decision analysis

- Dr. Ben Trump, U.S. Army Corps of Engineers

Integration of environmental, health, and government administrative data

- Dr. Reed Walker, UC Berkeley

Discussion

- Thank you

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Gina Solomon and Members
of the Advisory Council

From: Philip M. Fine
Executive Officer/APCO

Date: October 30, 2024

Re: Presentation on Cumulative Impact Assessment from Dr. William Boyd (University
of California Los Angeles)

RECOMMENDED ACTION

No action requested at this time.

BACKGROUND

Dr. William Boyd is Professor and Michael J. Klein Chair in Law at the University of California Los Angeles (UCLA) School of Law, and Professor at the UCLA Institute of the Environment and Sustainability. Dr. Boyd is also a Faculty Co-Director of the Emmett Institute on Climate Change and the Environment. His primary research and teaching interests are in energy law and regulation, climate change law and policy, and environmental law. Prior to joining academia, Dr. Boyd served as counsel and AAAS congressional science fellow for the Democratic minority staff of the U.S. Senate Committee on Environment & Public Works, and practiced law at Covington & Burling LLP in Washington DC.

DISCUSSION

In October 2024, Dr. Boyd delivered a presentation entitled “Risk Assessment and the Challenge of Cumulative Impacts: Some Lessons from Regulatory History” for the National Academies of Sciences, Engineering, and Medicine (NASEM) project on *State-of-the-Science and the Future of Cumulative Impact Assessment*.

The Air District extended an invitation to Dr. Boyd on the basis of a recommendation from the Advisory Council’s Vice Chair, Dr. Phil Martien. Today, the Advisory Council will receive a presentation from Dr. Boyd and have the opportunity to discuss.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: David Holstius
Reviewed by: Judith Cutino and Song Bai

ATTACHMENTS:

1. Presentation from Dr. Boyd, UCLA on Risk Assessment and the Challenge of Cumulative Impacts: Some Lessons from Regulatory History

Risk Assessment and the Challenge of Cumulative Impacts: Some Lessons from Regulatory History

William Boyd, JD, PhD

Professor UCLA School of Law & UCLA Institute of the
Environment & Sustainability

BAAQMD Advisory Council | October 30, 2024



Roadmap

- Brief, selective history of risk assessment in health, safety, and environmental law
- Challenges of accommodating cumulative risk and cumulative impacts in the risk assessment framework
- Some lessons from the regulatory history of risk assessment

Google Books Ngram Viewer

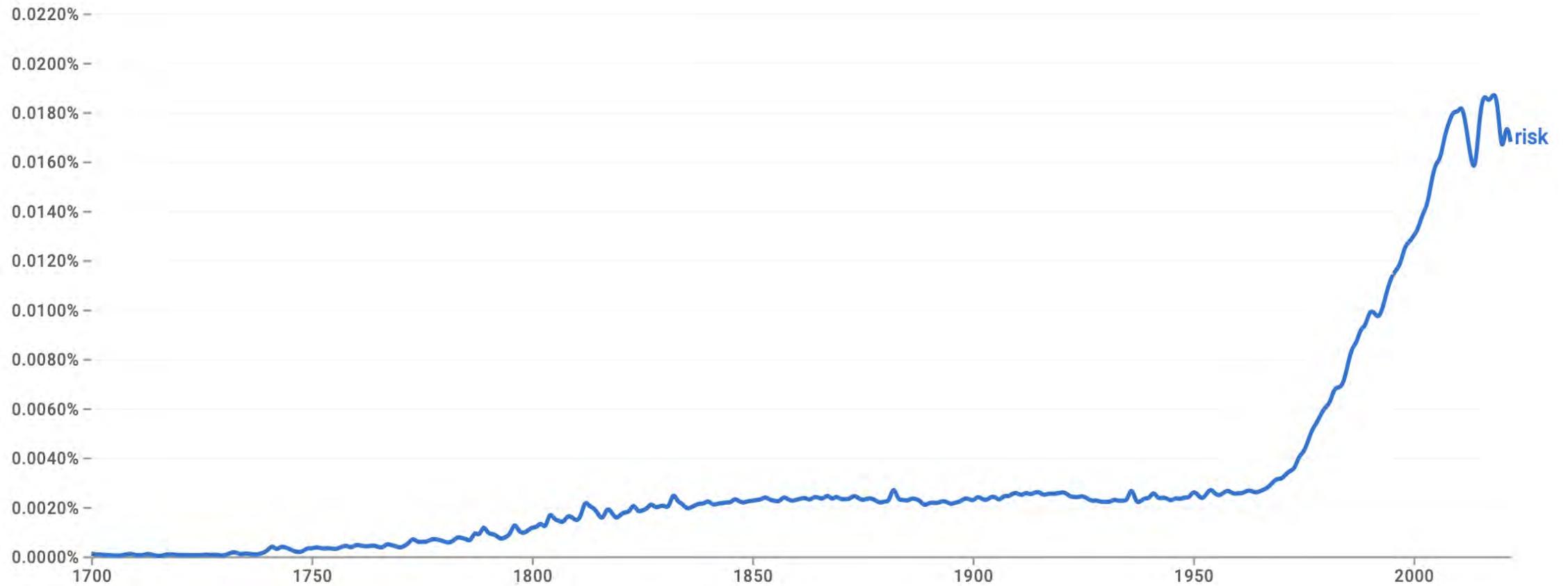
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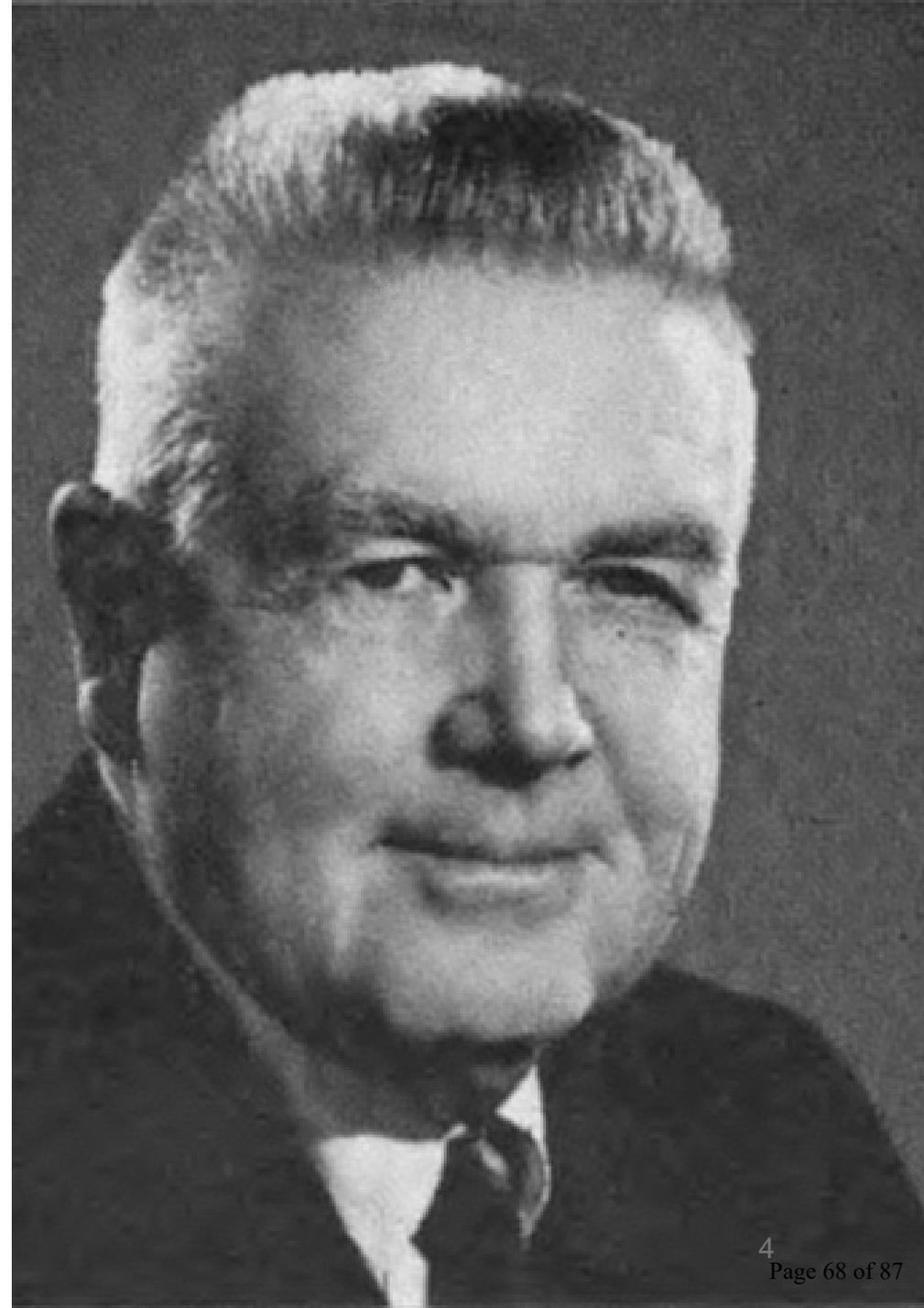
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(click on line/label for focus)

1958 “Delaney Clause” amending 1938 Federal Food, Drug, and Cosmetic Act

No food additive “shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal”





Between 1958 and 1978 significant advances in detection capabilities and analytical techniques reveal vast new world of environmental hazards

- Sensitivity of detection capabilities increases by ~ 5-6 orders of magnitude
- Substantial increase in animal testing and development of new low-dose extrapolation techniques
- Recognition of vast range in cancer potencies
- Advances in pollutant fate and transport models and attention to problems of environmental persistence and biomagnification reveal widespread global contamination

Expanding Universe of Carcinogens

4 = Known Human Carcinogens in 1958

37 = Known Human Carcinogens in 1978

500+ = Known Animal Carcinogens in 1978

“When FDA entered the 1970s, the Agency believed that it was feasible to eliminate virtually all carcinogens from the food supply. By the end of the 1970s, the Agency had indisputable proof that it [was] impossible. Thus, it became essential to adjust regulatory policy to accommodate this new scientific information.”

Source: Richard Wilson, Risks Caused by Low Levels of Pollution, 51 YALE J. BIOLOGY & MEDICINE 37, 48 (1978)

-Peter Hutt, Former FDA Chief Counsel, Use of Quantitative Risk Assessment in Regulatory Decisionmaking under Federal Health and Safety Statutes(1985)

OSHA Generic Cancer Policy, 1977

Identification, Classification, and Regulation of Toxic Substances Posing a Potential Occupational Carcinogenic Risk, 42 Fed. Reg. 54148 (Oct. 4, 1977)

- OSHA completed only 4 rulemakings in the health area during its first six years (1970-76)
- Workers were being exposed to hundreds of toxic chemicals in the workplace with outdated or non-existent standards
- OSHA proposed Generic Cancer Policy as means to move quickly on carcinogens in the workplace
- If chemical was found to induce cancer in animals or humans – OSHA would automatically set permissible exposure limits (PELs) at lowest feasible level

“It is OSHA’s belief that if this proposal or something like it is not promulgated, with present resources the output of standards to protect American workers from carcinogens will never be adequate and may collapse by means of the futility of the effort. Indeed, to follow the present system and procedure for each and every individual substance and hazard would be, we contend, beyond the abilities of any agency, no matter how large a staff it may have.”

-42 Fed. Reg. 54148, 54154 (Oct. 4, 1977)

Supreme Court Benzene Decision, 1980

Industrial Union Dept., AFL-CIO v. American Petroleum Inst., 448 U.S. 607 (1980)

- Industry challenge to OSHA's benzene rulemaking, which was promulgated in parallel to OSHA's Generic Cancer Policy
- Case becomes a referendum on OSHA's Generic Cancer Policy
- Split plurality decision requires OSHA to make a threshold finding of "significant risk" for individual chemicals before issuing any standards
- Widely viewed as requiring quantitative risk assessment before regulating
- Although decision applied specifically to OSHA, it was viewed as a strong signal to EPA and FDA on the need for quantitative risk assessment



1983: National Research Council Publishes Risk Assessment in the Federal Government (The “Red Book”)

- Elaborates basic conceptual architecture of risk assessment
- Distinguishes between **risk assessment** as a largely technical exercise aimed at developing facts and **risk management** as a normative process of weighing alternative policy responses based on the facts provided by risk assessment
- Outlines four-step process for risk assessment:
 - Hazard identification
 - Dose-response assessment
 - Exposure assessment
 - Risk characterization



Source: US Environmental Protection Agency

1983: William Ruckelshaus Returns to EPA and Embraces Risk Assessment as Way to Restore Public Trust

“When I began my current, and second tenure as Administrator of EPA, my first goal was the restoration of public confidence in the Agency, and it was impressed upon me that straightening out the way we handled health risk was central to achieving [that].”

-William Ruckelshaus, *Risk in a Free Society*,
Speech delivered at Princeton University (Feb. 18,
1984)

Risk Assessment at EPA, 1980s-2010s

- Risk assessment becomes key part of the foundation of major regulatory programs for industrial chemicals, pesticides, hazardous waste, air and water pollution
- Substantial increase in use of models across statutory programs
- Growing emphasis on increasingly formal and elaborate approaches to quantifying and managing uncertainty in risk assessments
- Push to make comparative risk assessment overarching framework for determining priorities across agency programs
- Major risk re-assessments initiated in 1990s for dioxins, TCE, formaldehyde, etc.

Multiple Independent Reviews by the NRC, GAO and Others Point to Major Problems with Practice of Risk Assessment

“...risk assessment is at a crossroads. Despite advances in the field, it faces a number of substantial challenges, including long delays in completing complex risk assessments, some of which take decades to complete; lack of data, which leads to important uncertainty in risk assessments; and the need for risk assessment of many unevaluated chemicals in the marketplace and emerging agents.”

“Decision-making based on risk assessment is also bogged down. Uncertainty . . . continues to lead to multiple interpretations and contribute to decision-making gridlock. Stakeholders—including community groups, environmental organizations, industry, and consumers—are often disengaged from the risk-assessment process at a time when risk assessment is increasingly intertwined with societal concerns. Disconnects between the available scientific data and the information needs of decision-makers hinder the use of risk assessment as a decision-making tool.”

-NRC, Science and Decisions: Advancing Risk Assessment ix, 5 (2009)

SCIENCE AND DECISIONS

Advancing Risk Assessment

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

Cumulative Risk & the Challenge of Complexity

- Standard approach to risk assessment tends to focus on single chemicals and single endpoints
- But hazardous chemicals are often implicated in multiple types of harm
- People are also exposed to multiple chemicals and other stressors across multiple exposure pathways in their daily lives
- Environments and exposure pathways are also constantly shifting, undermining the stability of any particular risk assessment

Narrowly focused risk assessments that omit complex interactions will be increasingly uninformative and unsupportive of effective preventive decisions. The broad challenge before the agency will involve developing tools and approaches to characterize cumulative effects in complex systems and harnessing insights from multistressor analyses without paralyzing decisions because of analytic complexities or missing data.

-NRC, Science for Environmental Protection: The Road Ahead 138 (2012)

Cumulative Risk & the Challenge of Complexity (cont.)

- Mid 1980s: Attention to cumulative risk under the Superfund program given the need to understand risks associated with potential exposure to large number of substances at individual sites || 1986 Guidelines for Health Risk Assessment of Chemical Mixtures introduces concept of Toxic Equivalency Factors (TEFs)
- Early to mid 1990s: Growing attention to exposures to multiple pesticides from diet and other pathways (particularly for children) || 1996 Food Quality Protection Act mandates attention to aggregate exposures across multiple pathways and to the cumulative effects of multiple pesticides with “common mechanism of toxicity”
- 1990s-2000s: EPA develops cumulative risk assessments for several pesticide groups; EPA proposes framework and additional guidance on cumulative risk (1997, 2003)
- 2016: New provisions in 2016 TSCA amendments do not require cumulative risk assessment but do provide possible basis for assessing exposure to multiple chemicals in risk evaluations
- 2022-23: New EPA general guidelines on cumulative risk + specific guidelines for cumulative risk assessment under TSCA + EPA ORD report on Cumulative Impacts

Structural Vulnerability and Environmental Justice

- Longstanding environmental justice critiques of risk assessment have demonstrated that risk assessment focus on averages and aggregates ignores the uneven and inequitable distribution of environmental harms
- Problem of structural vulnerability and the manner in which environmental harms compound these vulnerabilities has been largely invisible to standard risk assessment approach
- Quantitative risk assessment disempowers public participation and excludes certain facts, voices, and lived experiences
- Statutory provisions under FQPA and amended TSCA mandating attention to vulnerable subpopulations are a modest step in the right direction
- Emerging approaches to cumulative impacts might provide a way to accommodate these broader concerns – but if pursued within the standard risk assessment framework, could add to the complexity and contestability of these assessments

Going Forward: Some Lessons from Regulatory History

- Risk assessment in health, safety and environmental law emerged during a specific period (the late 1970s and early 1980s) and displaced earlier, more precautionary approaches
- Risk assessment is not simply a tool for discovering and developing facts; it has also operated as a political technology intended to discipline and constrain agency decision-making
- Risk assessment has not delivered the information needed for effective and timely regulation; individual risk assessments for single, data-rich chemicals take far too long, with many thousands of additional chemicals waiting in the queue
- Cumulative risk assessment and attention to structural vulnerabilities could make this all more difficult by increasing the analytical challenges and complexity of the exercise
- Many good recommendations exist for reforming risk assessment, including burden shifting, more pre-market testing, no data no market, increased attention to vulnerable subpopulations, use of stopping rules, etc.
- But also need to consider alternative approaches that employ simple hazard-based triggers for initial action based on a broad screening across a range of potential harms, employ generous safety factors to account for multiple uncertainties, improve research and surveillance on emerging contaminants of concern, consider generic class-based approaches where feasible, and iterate and adjust as new information becomes available
- Goal should be to move fast and protect people, to use simple default rules to drive innovation toward sustainability and health, and to build a more holistic framework that accounts for the ways that specific harms materialize and insinuate themselves into the lives of actual people

Thank you and further reading

Genealogies of Risk: Searching for Safety, 1930s-1970s, 39 *ECOLOGY LAW QUARTERLY* 895 (2012) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2203136

With Regard for Persons, 86 *LAW & CONTEMPORARY PROBLEMS* 101 (2023) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2203136

De-Risking Environmental Law, 48 *HARVARD ENVIRONMENTAL LAW REVIEW* 153 (2024) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4753197

Everywhere and Forever All at Once: PFAS and the Failures of Chemicals Regulation, *Legal Planet* (May 29, 2024) <https://legal-planet.org/2024/05/29/pfas-and-the-failures-of-chemicals-regulation/>

email: boyd@law.ucla.edu

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Gina Solomon and Members
of the Advisory Council

From: Philip M. Fine
Executive Officer/APCO

Date: October 30, 2024

Re: 2025 Advisory Council Work Plan

RECOMMENDED ACTION

Review, edit as appropriate, and approve the Advisory Council Workplan Outline.

BACKGROUND

Through previous meetings, the Advisory Council has been briefed on how cumulative impacts might be integrated more deeply into Air District policy development and programs, including permitting, air quality modeling, and rules prioritization. Given the range of possibilities presented, it was suggested at the last meeting that a work plan be developed, to focus on the most efficient and most necessary connections between the Air District's needs and the Advisory Council's expertise. At the current meeting, the Advisory Council will have received an overview of the Air District's *2024–2029 Strategic Plan*, which may further inform the development of its own work plan for 2025.

DISCUSSION

The Advisory Council will receive a draft work plan outline for discussion and live editing (as needed) during the meeting. This outline was drafted by Vice Chair Martien and highlighted the following work plan contents: background on cumulative impacts; methods and key principles; roles and process, including engagement with stakeholders outside the Advisory Council; potential focus areas for the Advisory Council; and prioritization and/or timelines for the Advisory Council's efforts. The potential focus areas to be clarified in the work plan may include but need not be limited to: permitting requirements and/or procedures for new or modified sources; regulations applicable to existing sources; community-focused air quality planning; matters related to the California Environmental Quality Act (CEQA); compliance and enforcement; and incentive programs. Vice Chair Martien will introduce the draft 2025 work plan outline to the Advisory Council members.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: David Holstius
Reviewed by: Judith Cutino and Song Bai

ATTACHMENTS:

1. Draft Work Plan Outline

Cumulative Impacts Workplan Outline

Bay Area Air Quality Management District Advisory Council
DRAFT – October 2024

Introduction

Purpose

The purpose of the *Cumulative Impacts Workplan* is to provide a blueprint for the Bay Area Air District’s Advisory Council in developing recommendations on methods to identify, assess, and reduce the cumulative impacts of air pollution in the Bay Area, where such methods would account for impacts of both chemical and non-chemical stressors on health, well-being, and quality of life outcomes.

The *Workplan* development process will be a collaborative one. Specifically, the process will engage and have guidance from community members most impacted by air pollution.

The goal of having a *Workplan* is to guide the development of a specific set of written recommendations for the Air District’s Board of Directors to consider adopting.

Audience

Because the *Workplan* process will be a collaborative one, the *Workplan* should be understandable by those who wish to participate, including members of the Advisory Council, Air District staff, the Community Advisory Council, and members of the public.

To help make the *Workplan* accessible, its length should be about 10–12 pages, not counting the Appendix.

Contents

The *Workplan* Introduction section will be followed by four additional sections (see below). The Background section will briefly summarize key information about cumulative impacts, how current Air District programs consider them, and how the Air District’s strategic planning address them. The Methods section will present principles, roles, and processes to guide and focus the Advisory Council’s work. The Focus Areas section will outline potential focus areas, ways to prioritize them, and estimated levels of effort. The Appendix will contain supplemental and supporting information.

Background

Cumulative Impacts Overview

This subsection will provide a brief overview of literature on Cumulative Impacts, emphasizing the intersection with air pollution. [Include literature review...]

Existing Air District Programs

This subsection will provide a brief overview of existing Air District programs that currently address Cumulative Impact and selected programs that where Cumulative Impacts could be addressed. [Discuss Air District programs...]

Air District 2024-2029 Strategic Plan

This subsection identifies portions of the Air District’s *2024-2029 Strategic Plan* most relevant to the *Workplan*, including the two related Strategies listed below.¹

Cumulative Health Impacts: *[The Air District] will develop [its] understanding of the cumulative effects of air pollution and other stressors, and use this information to focus regulatory efforts in areas experiencing the most serious air pollution and related cumulative impacts.*

Change Approach to Air Quality: *[The Air District] will change [its] approach to reducing air pollution so that [it] achieve[s] more meaningful improvements to air quality in communities, with a focus on those overburdened by air pollution.*

Methods

Principles

The Advisory Council recommends adopting the following key principles to guide its work:

- Follow a collaborative development process. Specifically, align with the Air District’s *2024–2029 Strategic Plan* and seek community perspectives to help drive the process.
- Have a bias for action. Prioritize work that can lead to tangible benefits for communities in a feasible timeframe.
- Be transparent about how work is done and how decisions are reached.
- Identify resource needs for work product options.
- Favor simple methods over more complex ones. Simple methods are more easily understood, adopted, defended, and maintained than complex ones.

Roles and Process

This section will establish roles and responsibilities for implementing the *Workplan*. It will specify how Advisory Council members will work with staff, engage with community members, and collaborate with the Community Advisory Council. It will be specific in recommending how candidate focus areas should be prioritized for Advisory Council work.

Focus Areas

Potential Focus Areas

Each item in this list could be an area of focus for the Advisory Council. For each, work products may include suggested methods to identify cumulative impacts, to assess the extent and character of the impacts, and to facilitate policies or actions to reduce the impacts.

- Permits (New and Modified Facilities)
 - ☞ Provide additional justification and documentation for the current regulatory approach (Air District Rule 2-5) of stricter risk limits in overburdened communities.

¹ In the Strategic Plan, these are Strategies 2.11 and 1.1, respectively.

- ☞ Make recommendations for streamlining the current health risk assessment methodology while addressing cumulative impacts. New methods may be less quantitative and/or may mix quantitative and qualitative methods.
 - ☞ Recommend ways to include the local, near-source impacts of fine PM, in addition to those from toxic air contaminants. This would incorporate prior work developed under the Advisory Council.
- Stationary Source Regulations (Existing Facilities)
 - ☞ Recommend ways to consider cumulative impacts when setting emission standards.
 - ☞ Recommend ways to simplify and streamline the current approach of implementing Air District Rule 11-18.
 - ☞ Recommend ways to include the local, near-source impacts of fine particulate matter, in addition to those from toxic air contaminants. This would incorporate prior work developed under the Advisory Council.
- Air Quality Planning
 - ☞ Make recommendations for a community focused approach to air quality planning.
- California Environmental Quality Act (CEQA)
 - ☞ Make recommendations for more thorough consideration of cumulative impacts, balancing infill development with protecting community health.
- Compliance / Enforcement
 - ☞ Make recommendations for a community-focused approach to enforcement activities and the distribution of penalty funds.
 - ☞ Recommend ways to leverage compliance / enforcement data: for example, to inform other activities such as emissions characterization.
- Incentives
 - ☞ Recommend ways to expand, standardize, and/or streamline consideration of cumulative impacts across incentive programs.

Prioritizing Focus Areas for the Advisory Council

This section discusses how the focus areas will be prioritized, including ways to center community perspectives in the prioritization process.

An important step in prioritizing the Advisory Council’s work will be to explain in plain language what the anticipated outcomes and consequences of various efforts would be for impacted community members, so that members can understand the options and more fully engage in the prioritization process. Estimates of time needed for development and/or implementation may be helpful for prioritization.

Appendix

This section contains supporting information. It may incorporate, for example:

- The Selected References reading list provided to and supplemented by members of the Advisory Council on the topic of Cumulative Impacts;

- The seven-point Interim Findings developed by the Advisory Council;
- Additional detail regarding the Air District’s Strategic Plan, as warranted; and
- Other supplemental material as needed.

This section is not counted toward the goal of an overall 10–12 page limit.