Dear CARB Staff,

Thank you very much for the opportunity to offer comments on the Community Air Protection Program (CAPP) Framework Concept Paper Draft, dated February 7, 2018.

I offer these comments as an academic researcher who has studied community-based air monitoring, community-industry relations, and citizen science for over 15 years. Most recently, I have been working with residents of three refinery-adjacent Bay area communities to create airwatchbayarea.org, a website that aims to make real-time air monitoring data more widely accessible. My comments draw on my experiences in that project as well as my earlier research in environmental justice communities in California, Pennsylvania, and Louisiana.

Your draft concept paper specifically asks for recommendations in several areas, including the make-up of community steering committees, the various uses that the data portal should support, resources for community science, and metrics for evaluation. Interpreting some of these broadly, I offer recommendations in five areas: recommendations for public engagement (including steering committee composition), recommendations for making air monitoring data “broadly accessible, transparent, and relevant” (including recommendations on data portal uses), recommendations for resources to support community science, recommendations for evaluation metrics, and a recommendation for emissions reductions.

**Recommendations for Public Engagement**

For the credibility and efficacy of CARB and Air District public engagement efforts, two things are crucial. First, public engagement should not consist only of staff communicating *to* members of the public; they should also be hearing from them, soliciting input, and allowing public input to influence community air monitoring programs. Second, public engagement should be very attentive to disparities in power and privilege not only between staff and community members, but also within communities. Some specific recommendations that follow from those principles:

* Community steering committees (p 15) should be sure to reflect the diversity (racial/ethnic background and socioeconomic status) of the community.
* Community steering committees should not be limited to community monitoring/community science enthusiasts, but should also explicitly include individuals advocating more transformative solutions to air quality and community health issues.
* Community steering committee meetings should be run by professional facilitators trained in facilitating discussions across disparities of power and privilege, to ensure that all voices are heard.
* Staff should find out from community members what sort of resources are necessary to enable participation of less-advantaged community members in steering committee or other public meetings. While timing and location are key concerns that staff have already acknowledged, other elements such as child care may also be necessary.
* Public meetings (p 15) should not be merely informational but should actively seek input from interested community members not included on the steering committee.
* Staff should consider the possibility that websites may not be the most accessible mode of communication for some community members, and should work with community partners to identify potential alternatives.
* Community participation should be included in as many of the 13 Community Air Monitoring Plan Elements (p 25) as possible. In particular, community partners should participate in analyzing and interpreting data (as described on p. 26), with the help of independent technical advisors. The community steering committee should also have a role in communicating results (p 26).

**Recommendations for Data Accessibility and Relevance**

For most community members, air monitoring is important because of the insight it offers into potential threats to community health and safety. For data to be relevant, then, the health and safety contexts must be front-and-center. Specific actions that could be taken to make data more relevant include:

* Reporting air monitoring data alongside data about related illnesses, both acute and chronic.
* Enabling community members to “annotate” real-time air quality data with information about symptoms they are experiencing.
* Using combined air quality and health data to continually review and update screening levels for dangerous or potentially dangerous emissions. This is a process in which community members should be involved, both to make the process more transparent and to benefit from their lived experience.

Air monitoring data also becomes relevant in the context of permitting, enforcement, and policy decisions. Specific actions that could be taken to make data more relevant in that context include:

* Reporting air monitoring data *both* as real-time readings and as rolling averages that compare directly to National Ambient Air Quality Standards or, for non-criteria pollutants, to OEHHA screening levels.
* Providing technical support in the calculation or visualization of other policy-relevant measures, at the request of community groups wishing to participate in state or local decision-making processes.

To further make data meaningful in the contexts of health & safety and political intervention, the state-wide data portal (p 27) should support at least the following uses:

* Presenting data at city or county land use meetings, or incorporating it into public comments on permitting decisions. *To effectively support this use, the portal should give users the ability to customize (e.g. by selecting relevant data or relevant time periods) and print reports*.
* Examining the data for trends over time, including day-of-week and time-of-day effects on data
* Looking at data across monitoring sites for a particular time period (e.g. the 8 hours following a major release)
* Identifying periods during which monitors were offline or non-operational, and viewing overall “uptime” rates
* Extensive data analysis by independent or community-allied health researchers and/or data scientists. *To support this use, the portal should allow the user to select data and export it in .csv or .json format.*
* Incorporating data into other apps and websites, where users can further customize how they interact with it. *To support this use, an API should be provided*.
* Improving the quality of health-based standards for air quality. *To support this use, the portal should enable community members to annotate monitoring data with information about smells and symptoms, so as to give relevant context for the data. Providing an API and export capabilities will also support this use by enabling researchers to combine monitoring data with other relevant health data.*

Data can only be accessible and relevant to the extent that the infrastructures for accessing it, however well designed, are also well maintained in the long term. The state should thus

* Provide sufficient on-going technical support to respond to community feedback about usability issues, to make unanticipated necessary refinements, and to combat “bitrot” (the loss of access to data that occurs when web infrastructures are not adequately maintained, including loss associated with changes in browsers, technical libraries used to build the site, etc), keeping in mind that the resources necessary for maintenance are too often underestimated.

**Recommendations for Supporting Community Science**

The goal of developing community science to “help democratize the process of data collection” (p 36) is a laudable one. However, collecting data is only one step in doing science. For community monitoring to actually result in *knowledge*, the CAPP should strive to democratize the process of data analysis and interpretation, as well. Many of the recommendations above support this end, especially the ability to annotate data and to analyze it on platforms other than the state-wide data portal. In addition:

* The CAPP should provide resources for communities to hire independent technical experts to assist them in (a) analyzing data and/or (b) incorporating monitoring data into community-driven health research.
* University researchers should be incentivized to use data from the CAPP (a) in their research projects and (b) in community-based research collaborations.
* When evaluating air sensors (p 36) and especially helping to bring new technologies to market (p 37), special attention should be paid to low-cost, real-time strategies for measuring toxic air contaminants at health-relevant (i.e. low ppb or even ppt) levels. The relative lack of reliable sensors for toxic gasses (compared to PM 2.5 sensors) is of particular concern for communities in close proximity to oil refineries and other petrochemical facilities and limits their potential to engage in relevant community science.

**Recommendations for Evaluation Metrics**

Given the CAPP’s emphasis on community participation and engagement, I suggest incorporating additional metrics (beyond the number of public meetings held) to represent the quality and extent of community engagement. These might include:

* number of community steering committee meetings held
* rates of attendance and retention among community steering committee members (individuals who feel their time is being wasted will soon cease to participate)
* number of instances where community input (from steering committee or public meetings) was reflected in concrete, constructive changes to monitoring or emissions reductions plans.

The evaluation framework should also include metrics that help to represent the effectiveness of the data portal. The portal design should make download, use, and visualization of the data is easy, intuitive, and compelling; it should also improve communities’ ability to use data to advocate for emissions reductions. Metrics to assess the effectiveness of the data portal might include:

* Data portal traffic sources, standard on-site events and use, and on-site events and use customized for the air data portal.  These performance indicators can be obtained through website analytics and user testing, ideally using a combination of industry standard tools (i.e., Google Tag Manager, Google Analytics, conversion funnels, a heatmap/scroll tool, A/B testing tool, surveys/polls/user feedback as well as recruitment for one-on-one testing).
* Number of instances in which data from the portal is used by community members to discuss land use and other air quality-related issues with local officials and other decision-makers
* Number of instances in which data from the portal is used by local officials or industry to inform decisions related to emissions reductions.

**Recommendation for Emissions Reductions**

The overarching goal of AB 617 is to reduce cumulative exposures to air pollutants at the community level. This is especially important in communities with multiple sources of pollution and/or very large stationary sources nearby. However, despite the Air Resources Board and the regional Air Districts’ acknowledgement that cumulative emissions are a problem for these communities, permits continue to be improved for new emissions sources and expansions at existing sources. The Bay Area Air Quality Management District’s January 25, 2018 approval of a permit for a 55% hydrocracking capacity expansion at the Philips 66 refinery in Rodeo—where the refinery’s fenceline monitoring plan under BAAQMD Rule 12-15 has not even been approved yet—is the latest example of this disturbing pattern, which clearly undermines the spirit of AB 617. I recommend, as an essential strategy for emissions reduction (p 12):

* Air districts should be explicitly directed to consider cumulative impacts in deciding whether to approve permit requests for new and existing sources. They should have the authority, and the mandate, to deny any permit which would substantially increase the exposures to communities where cumulative impact is already a concern.

I especially urge the adoption of this recommendation in particular. More than the other strategies pointed to in the concept paper, it would act directly to reduce cumulative emissions by preventing further increases in the pollution released, and thus go further toward fulfilling the mission of AB 617.

Again, I appreciate the opportunity to participate in this process. If you have questions about any of the above, if you would find a short list of relevant citations helpful, or if there is any other way that I could make my expertise useful to you, please do contact me.

With very best wishes,

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