**QUESTIONS**

**Background:**

To check:

* Intro to community-air-quality <https://ww2.arb.ca.gov/introduction-community-air-quality>
* ab-617-implementation <https://ww2.arb.ca.gov/our-work/programs/resource-center/ab-617-implementation>
* Community air protection program (CPP) <https://ww2.arb.ca.gov/capp>

**How much money is being spent (annualy?) and where does it come from?**

## Summarise the goals of the "community-level air monitoring" component.

The overarching goal of the “community-level air monitoring” is to identify the communities with the highest air pollution burden, with a focus on criteria air pollutants and toxic air contaminants, to develop new community-specific emissions reduction programs.

## How much money is being spent (annualy?) and where does it come from?

## Maybe districts money (<https://ww2.arb.ca.gov/sites/default/files/2020-08/1--Community%20Air%20Protection%20Program_Draft%20Guidance_Stipends.pdf>)

## To jump-start emissions reductions in disproportionately burdened communities, the fiscal year 2017-2018 State budget included $250 million to help clean up heavily polluting mobile sources, like diesel trucks and buses. Further, the fiscal year 2018-2019 State budget includes an additional $245 million in funding for continuing AB 617 emissions reduction efforts. ([Community Air Protection Blueprint(<https://ww2.arb.ca.gov/sites/default/files/2020-03/final_community_air_protection_blueprint_october_2018_acc.pdf)>)

## Since 2017 the California Legislature has [budgeted $704 million]( https://ww2.arb.ca.gov/our-work/programs/community-air-protection-incentives/about) to support Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) with incentives directed by local air districts to put advanced technologies to work for cleaner air in the California communities that are most heavily impacted by disproportionate levels of air pollution.

## The Legislature has appropriated money from the Greenhouse Gas

## Reduction Fund (GGRF) for incentives to support AB 617, as summarized in Table 1 in the Appendix of the [Biannual Report on AB 617 Community Air Protection Incentives](https://ww2.arb.ca.gov/sites/default/files/2020-06/cap\_incentives\_april\_2020\_board\_update.pdf). According to this report, the deadline of the 2020-2021 budget of $200 million proposed by the Governor is yet to be defined.

## More info at https://ww2.arb.ca.gov/our-work/programs/community-air-protection-incentives/about

## Which state agencies are in charge?

## The South Coast Air Quality Management District? http://www.aqmd.gov/

## Which communities are involved?

## The [communities involved]( https://ww2.arb.ca.gov/capp-communities) are the following:

## Calexico, El Centro, Heber

## East Los Angeles, Boyle Heights, West Commerce

## Eastern Coachella Valley

## Portside Environmental Justice Neighborhoods

## Richmond - San Pablo

## San Bernardino, Muscoy

## Shafter

## South Central Fresno

## South East Los Angeles

## South Sacramento - Florin

## Southwest Stockton

## West Oakland

## Wilmington, Carson, West Long Beach

## What progress has been made to date?

## Since 2018, more than 120 communities have been nominated for consideration for community actions defined as monitoring and/or emission reduction programs, but only 13 have been approved.

## The CARB website does not include a clear plan for 2021, but it mentions that "one of the main lessons learned is that building new community partnerships and developing and implementing effective community-focused programs takes time and resources" and that the 2020-2021 state budget is very limited, thus affecting the number of communities that were considered for addition to the Program in 2020 and those that could be added in 2021.

## Which of the Air Quality Managment Districts (AQMDs) have made the most progress?

## Sac Metro Air District launched a new program

## What other organizations (federal agencies universities, NGOs, ...) have been working with community data.

## The Community Air Protection Program includes a [multi-stakeholder Consultation Group]( <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program-ab617/community-air-protection-program-consultation-group>), whose members work for environmental justice organizations, air districts, industry, academia, public health organizations, and local government. Below is a comprehensive list of the organizations involved:

* + Central California Environmental Justice Network
  + Physicians for Social Responsibility - Los Angeles (PSR-LA)
  + University of California
  + American Lung Association
  + Bay Area Air Quality Management District
  + California Department of Public Health/California Environmental Health Tracking Program
  + Environmental Health Coalition
  + Blue Lake Rancheria Tribe
  + West Oakland Environmental Indicators Project
  + Central California Asthma Collaborative
  + California Cotton Ginners and Growers Association
  + California Air Pollution Control Officers Association (CAPCOA)
  + Institute for Local Government
  + Los Angeles Community Environmental Enforcement Network/Coalition for a Safe Environment
  + Local Government Commission
  + South Coast Air Quality Management District
  + Comité Cívico del Valle
  + San Diego State University
  + Western States Petroleum Association
  + San Joaquin Valley Air Pollution Control District
  + California Council for Environmental and Economic Balance (CCEEB)
  + BlueGreen Alliance

## To what extent is community monitoring data open access?

## \*\*needs review, the data is actually at the site level, not the community level. Currently exploring this webpage https://aqview.arb.ca.gov/data.html. The entire text below needs revision.\*\*

## Important links to check:

## [Community Air Monitoring]( <https://ww2.arb.ca.gov/capp-resource-center/community-air-monitoring>): Community air monitoring technologies, activities, and resources.

## [AQview]( <https://aqview.arb.ca.gov/about.html>): CARB is launching a new air quality viewer.

## [Air Quality and Emissions Data]( <https://ww2.arb.ca.gov/CAPP-air-quality>): see AQview and data analysis.

## [Visualization & Data Analysis](<https://ww2.arb.ca.gov/capp-resource-center/data-portal/visualization-and-data-analysis-tools>): resources to assist with data visualization and data analysis.

## [Community Air Quality Portal](https://ww2.arb.ca.gov/community-air-quality-portal)

## [Access data](<https://aqview.arb.ca.gov/data.html>): reports available for some communities.

## [Explainer](<https://aqview.arb.ca.gov/Resources/Data-Download-Explainer.pdf>): guide to understand the reports.

## [outline-of-measurement-technologies](https://ww2.arb.ca.gov/capp-resource-center/community-air-monitoring/outline-of-measurement-technologies#apptbl) currently reading this: check consumer grade sensors, not interested in high end professional instruments (Jon suggestion).

## [Existing Community Monitoring Systems](<https://ww2.arb.ca.gov/capp-resource-center/community-air-monitoring/existing-community-monitoring-systems>). currently reading this …

## From here:

## At a higher level (parts of State, air basins, counties) air quality data is easily accessible through the [Air Quality Data (PST) Query Tool](<https://www.arb.ca.gov/aqmis2/aqdselect.php>), which generates reports (csv format) on [criteria](https://www.epa.gov/criteria-air-pollutants), toxic, and GHG pollutant emissions, including PM2.5 in ppm or ppb.

## At the community level, data is temporally and geographically limited. Only 7 of the 13 communities currently under monitoring have reports available, and the most recent reports are from May 2020 or earlier depending on the community.

## Following is a list of the communities providing data:

## \* East Los Angeles, Boyle Heights, West Commerce

## \* San Bernardino, Muscoy

## \* Portside Environmental Justice Neighborhoods

## \* Shafter

## \* South Central Fresno

## \* South Sacramento - Florin

## \* Wilmington, Carson, West Long Beach

**Reports include:** Community Name, Data Provider, Site Name, Latitude, Longitude, Elevation, Monitor ID, Parameter Code, Parameter Name, Measurement Start Time, Measured Value, Adjusted Value, Units, Adjustment Description, and Instrument. Some also include Measurement Technique Description and Code. The columns name in the reports could change slightly depending on the community. For instance, South Sacramento – Florin has the column “Measurement Start Time” while San Bernardino, Muscoy has the column “StartDateTime”. Description of each column and details on the downloadable data can be found in the [Data Download Explainer](<https://aqview.arb.ca.gov/Resources/Data-Download-Explainer.pdf>).

## In general, criteria and toxic pollutant emissions data are stored in the California Emissions Inventory Development and Reporting System ([CEIDARS]( https://ww3.arb.ca.gov/ei/drei/maintain/dbstruct.htm)), which serves as the main repository for emissions data used to develop air quality management plans to show attainment and maintenance of ambient air quality standards. While GHG emissions data are stored in CARB’s Mandatory Reporting Regulation ([MRR]( https://ww2.arb.ca.gov/our-work/programs/mandatory-greenhouse-gas-emissions-reporting)) database. Facility ID numbers are different from CEIDARS database IDs.

## CARB has also released a [Pollution Mapping Tool]( https://ww3.arb.ca.gov/ei/tools/pollution\_map/pollution\_map.htm), which allows users to explore maps but also to visualize graphs and export data about emissions from large facilities (stationary point sources). However, the most recent year available is 2018, and there are [caveats about using data in the tool for Comparative analyses](https://ww3.arb.ca.gov/ei/tools/pollution\_map/doc/caveats%20document10\_19\_2020.pdf) since the criteria, toxic and GHG pollutant emissions data presented in the tool are collected through different emissions reporting programs, each designed to meet specific goals. The tool is slow and not very user friendly.

## What types of sensors/monitors are being used to generate data?

## [Sensors and Sensor Networks]( <https://ww2.arb.ca.gov/capp-resource-center/community-air-monitoring/outline-of-measurement-technologies#sensors>)

## Small particle count (PM2.5 and PM10) is performed with an [optical particle counter]( <https://ww2.arb.ca.gov/capp-resource-center/community-air-monitoring/outline-of-measurement-technologies#part>)

## <http://www.aqmd.gov/aq-spec>

## “The South Coast Air Quality Management District ([SCAQMD](http://www.aqmd.gov/)) evaluates and shares sensor evaluation through their Air Quality Sensor Performance Evaluation Center ([AQ-SPEC](http://www.aqmd.gov/aq-spec)). This program evaluates the performance of sensors both in laboratory and field applications to help inform the general public of the performance of commercially available sensors. Similarly, the US EPA's air sensor toolbox provides guidelines on best practices in the selection, use, and data interpretation ([Air Sensor Toolbox](https://www.epa.gov/air-sensor-toolbox/how-use-air-sensors-air-sensor-guidebook)) of air sensors.”

## Working on this:

## (to be continued tomorrow) check plans of each community to find info on sensors (https://ww2.arb.ca.gov/capp-communities)

## A summary of monitoring technologies employed by communities and the science behind them can be found [here](https://ww2.arb.ca.gov/capp-resource-center/community-air-monitoring/outline-of-measurement-technologies).

## Following, a closer look to the monitoring methods and equipment employed by each community:

## \* [Richmond-San Pablo community]( https://www.baaqmd.gov/community-health/community-health-protection-program/richmond-area-community-health-protection-program): [Monitoring Methods and Equipment (p. 46, C-4)](<https://www.baaqmd.gov/~/media/files/ab617-community-health/richmond/richmondsanpabloairmonitoringplanjuly2020-pdf.pdf?la=en>) include Custom-designed Aclima mobile sensor nodes, measuring carbon dioxide (CO2), carbon monoxide (CO), nitric oxide (NO), nitrogen dioxide (NO2), ozone (O3), and particulate matter (PM2.5).

## \* [West Oakland](<https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/west-oakland>). No methods/technologies/sensors found. It is possible that they get their data from [Bay Area Air Quality Management District]( https://www.baaqmd.gov/) which seems to use low-cost sensors such as PM sensors to count particles, PurpleAir, and Clarity. This info was found in the [Air Quality Data Sources Explained]( <https://www.baaqmd.gov/~/media/files/communications-and-outreach/wildfire-materials/air-quality-data-sources-explained-pdf.pdf?la=en>), and there is no reference to AB 617. The [[West Oakland Environmental Indicators Project](https://www.woeip.org/)]( https://woeip.org/) partnered with the Air District and a community-based Steering Committee to develop [*Owning Our Air: The West Oakland Community Action Plan]* ( <https://www.baaqmd.gov/~/media/files/ab617-community-health/west-oakland/2020_1101_wo_annual_report_slide_deck-pdf.pdf?la=en>) which includes [6 Air District and 8 CARB measures].

## \* [El Centro, Heber, Calexico community](https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/calexico-el-centro-heber): Dylos DC1700 sensor (light-scattering particle counter to measure particle counts) [[Community Air Monitoring Plan](https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/AB_617/AB-617%20Elements%20and%20Required%20Criteria_San%20Diego_June%202019.pdf)](<https://c1b3e492-1448-4e62-b7f8-7aaf61550a90.filesusr.com/ugd/99eb03_4aacc3a0f9b34bbbbc9c908b8ba628bc.pdf>).

## \* [South Sacramento-Florin community](<https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/south-sacramento-florin>): “The District will deploy 21 Clarity Node sensors, which calculate PM2.5 mass concentrations at near-real time (approximately 15 minute) resolution using a laser particle counter. The Clarity Node sensors also include NO2 sensors, but preliminary testing indicates NO2 sensors in the Clarity may not be accurate enough for all data uses. The District will evaluate the NO2 data from the low-cost sensors and determine suitable uses for those data. Other low-cost and professional grade sensors include PM2.5, Ozone, and Mini-aethalometer. An exhaustive list of all monitors/sensors that will be used in each phase of the monitoring plan can be found in the [Final Community Air Monitoring Plan June 2020](<http://www.airquality.org/AB617/Documents/Final%20Community%20Air%20Monitoring%20Plan%20July%202020%20(1).pdf)>.

## # not sure if its worth it to include the many other sensors. I started the following paragraph, but I’ll leave it pending for now. (Other sensors are: Met One BAM-1020, a suitable instrument to deploy throughout the community to accurately determine near real-time particulate matter concentrations; Magee Scientific AE33, which introduces air samples onto a filter medium and detects black carbon using ultraviolet and infrared illumination; TCA-08 uses, which uses flash combustion to determine the total carbon content of the sample; Met One Speciation Air Sampler System (SASS), which collects particulate matter samples and send them out for analysis of chemical species, including metals and trace elements such as lead and arsenic)

**[**Portside Environmental Justice Neighborhoods**](** <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/portside-environmental-justice>**):** the [[Community Air Monitoring Plan](https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/AB_617/AB-617%20Elements%20and%20Required%20Criteria_San%20Diego_June%202019.pdf)]( <https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/AB_617/AB-617%20Elements%20and%20Required%20Criteria_San%20Diego_June%202019.pdf>) only mention the use of low-cost sensors and that more info regarding the data collected will be available in the AB 617 Community Air Quality Viewer ([AQ-View]( <https://ww2.arb.ca.gov/community-air-quality-portal)>).

## [Shafter community]( <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/shafter>): [(Community Air Monitoring Plan)]( <http://community.valleyair.org/media/1306/shafter_camp_-v1_-2019_july.pdf>) mentions that the community air monitoring network design for Shafter includes the use of several fixed, mobile, and semi-mobile monitoring platforms, all of which are equipped to detect the community-specific pollutants of concern as shown in the table below.

<img src="./images/shafter\_sensors.png">

## [South Central Fresno community]( <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/south-central-fresno>): same as Shafter community, but does not include VOC Speciation pollutant [(Community Air Monitoring Plan)]( <http://community.valleyair.org/media/1308/fresno_camp_v1_2019_july-1.pdf>).

## [Southwest Stockton Community]( <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/southwest-stockton>): No sensors/monitors available. The Stockton community is in the process of drafting a Community Emissions Reduction Program, and the plan is expected to be published in 2021. The CERP file will be made available here after it is published.

## [East Los Angeles, Boyle Heights, West Commerce](<https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/east-los-angeles-boyle-heights-west>): [[Community Air Monitoring Plan](https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/AB_617/AB-617%20Elements%20and%20Required%20Criteria_San%20Diego_June%202019.pdf) - draft](<http://www.aqmd.gov/docs/default-source/ab-617-ab-134/camps/elabhwc-camp.pdf?sfvrsn=4>)

## <img src="./images/EastLosAngelesNeighborhoods\_sensors.png”>

## All communities seem to use \*\*low-cost sensors\*\* and due to their new development, there is no well-established, widely accepted set of data quality indicators (DQI). “The South Coast Air Quality Management District ([SCAQMD](http://www.aqmd.gov/)) evaluates and shares sensor evaluation through their Air Quality Sensor Performance Evaluation Center ([AQ-SPEC]( http://www.aqmd.gov/aq-spec)). This program evaluates the performance of sensors both in laboratory and field applications to help inform the general public of the performance of commercially available sensors. Similarly, the US EPA's air sensor toolbox provides guidelines on best practices in the selection, use, and data interpretation ([Air Sensor Toolbox]( https://www.epa.gov/air-sensor-toolbox/how-use-air-sensors-air-sensor-guidebook)) of air sensors.”

## [Air Quality Data Sources Explained Bay Area Air Quality Management District](https://www.baaqmd.gov/~/media/files/communications-and-outreach/wildfire-materials/air-quality-data-sources-explained-pdf.pdf?la=en)

## What types of analysis have been done on this data?

Check <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/communities/shafter> and then click on the Air District web page at the bottom of the page and then click Air Monitoring on the right shoulder for graphics and reports.

## What software tools are being used to analyze this data?

## According to their Community Air Monitoring Plans, Shafter and South Central Fresno communities use [Agilaire’s 8872](<https://agilaire.com/solutions-for/model-8872/>) data loggers to collect and organize data from the analyzers integrated into their operation, and Agilaire’s AirVision software as its air quality data management system for the community air monitoring network.

## Other interesting questions that come up