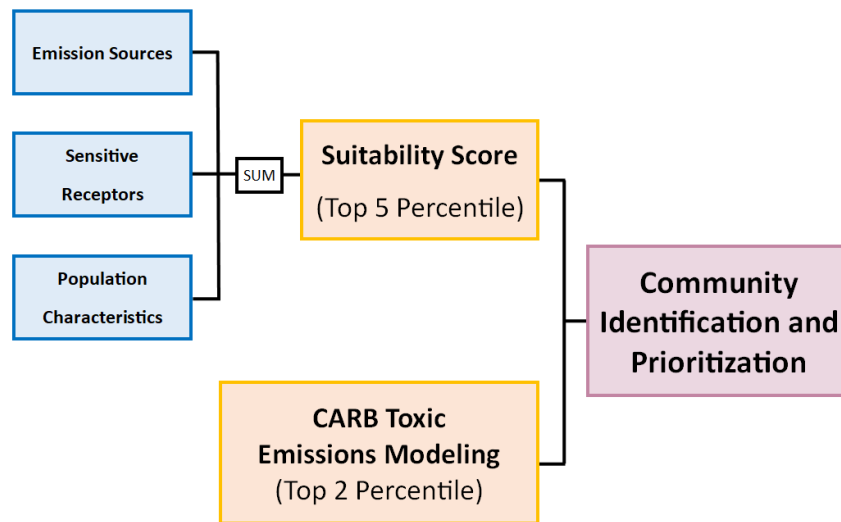# 2020 Suitability Analysis Update

(October 1, 2020)

Introduction

On July 31, 2018, the Sacramento Metropolitan Air Quality Management District (District) submitted to the California Air Resources Board (CARB), a Technical Assessment[1] identifying recommended communities in Sacramento County to be a part of the State's Community Air Protection Program (AB 617). The District has updated its 2020 (Year 3) analysis with more recent air pollution information and incorporating on-going community feedback to put more focus on underserved communities based on population characteristics. The below description provides information on the details of the update. In addition, a map of the census tracts that fall within the top 5 percent of the analysis is included.

2018 Suitability Analysis Background

The 2018 Technical Assessment was based on three groups of data: Emission Sources, Population Characteristics, and Sensitive Receptors. The analysis identified the census tracts within the top 5 percentile of the suitability score and combined them separately with the census tracts within the top 2 percentile of toxic emissions modeling by CARB to identify possible community areas.

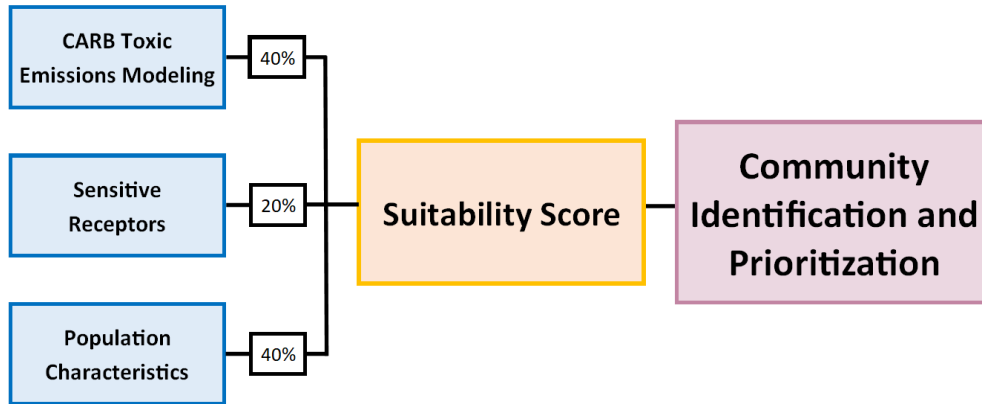Figure 1: 2018 analysis flowchart

2020 Suitability Analysis Update

The District has updated its 2020 analysis with **three significant changes**. These changes and rationale are discussed in detail below and are as follows:

- Updated CARB Toxic Emissions Modeling
- Emissions Sources factor is now represented by CARB Toxic Emissions Modeling
- Increased overall weighting of Population Characteristics factor consistent with strong community feedback

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[1] http://www.airquality.org/ProgramCoordination/Documents/SMAQMD%20Final%20Recommendations-Report.pdf

Figure 2: 2020 analysis flowchart

Updated Toxic Emissions Modeling

The CARB Toxic Emissions Modeling was updated to include the **most up-to-date information** on emission sources. Previous modeling used 2012 toxic emissions inventory data, which was updated to 2016 data. The 2016 data included updates to on-road sources, such as impacts of newer and retrofitted trucks and compliance of truck regulations, as well as updates to stationary and area-wide sources. The updated Sacramento Valley modeling showed a reduction of diesel particulate matter, a slight increase in particulate matter from area-wide sources, and an overall reduction in total cancer risk of 40% from 2012 to 2016.

Emission Sources Replaced by Toxic Emissions Modeling

As shown in Figure 1, the previous methodology included both the Emission Sources category and CARB's Toxic Emissions Modeling. The 2018 analysis gave more weight to emission impacts, which reduced the weighting of the other two factors. The 2020 analysis is updated to increase the weighting of the population characteristics (low income communities, non-English speaking households, asthma rates, hospitalizations, etc.) to help identify underserved communities most burdened by air pollution.

The sources that were included in the 2018 Emission Sources category are included and more accurately represented in the updated CARB Toxic Emissions Modeling. Table 1 describes each layer included in the 2018 Emissions Sources category and whether that information is included in the updated toxic emissions modeling.

Increased Overall Weighting of Population Characteristics Factor Consistent with Community Feedback

AB 617 looks to improve air pollution in communities most burdened by air pollution. Population characteristics is a major factor to identifying these communities. For this update, the analysis redistributed some of the emission weighting to increase its population characteristics weighting. This update is consistent with on-going community feedback the District has received since submitting its 2018 Technical Assessment. The updated weighting is 40% to Population Characteristics, 40% to the CARB Toxic Emissions Modeling, and the remaining 20% to Sensitive Receptors.

Table 1 – Description of emission source indicators from the previous suitability analysis and whether they are included in the update CARB toxic emissions modeling.

Emission Source Indicator Layer (included in previous Suitability Score)	Source of Information	What Indicator Measures	Reflected in CARB Toxic Emissions Modeling (Cancer Burden, 2016)[a]
Traffic Density	CES3[b]	Sum of traffic volumes adjusted by road segment length (vehicle-kilometers per hour) divided by total road length (kilometers) within 150 meters of the census tract boundary	Yes
Diesel Emissions	CES3[b]	Spatial distribution of gridded diesel particulate matter emissions from on-road and non-road sources for a 2012 summer day in July (kg/day)	Yes
PM$_{2.5}$	CES3[b]	Annual mean concentration of PM$_{2.5}$ (average of quarterly means, $\mu g/m^3$), over three years (2012 to 2014)	Yes[c]
Toxics Releases from facilities	CES3[b]	Toxicity weighted concentrations of modeled chemical releases to the ambient air from facility emissions and off-site incineration.	Yes
Retail Gasoline Dispensing Facilities	District	Total throughput is used as a surrogate for the emissions from gas stations because gasoline volume can be used to calculate the different pollutants from gasoline dispensing facilities.	Yes
Emergency Engines	District	Emissions of particulate matter (lbs/day) released from permitted emergency diesel engines in the county.	Yes
AB 2588 Air Toxics "Hot Spots" Program Core Facilities[d]	District	This indicator reports the types and quantities of certain substances routinely released into the air by certain stationary sources.	Yes
GHG Emissions from Large Stationary Sources	District	Most of these facilities are those that have GHG emissions greater than 10,000 metric tons per year, which is the reporting threshold for most GHG stationary sources. These facilities are included in this analysis based on annual GHG emissions in units of metric tons of carbon dioxide equivalent (CO2e).	Some[e]

[a] CARB's toxic emissions modeling calculated the cancer risks from multiple air pollution sources, such as on-road mobile sources (i.e. cars and trucks), area-wide sources (i.e. residential wood burning devices and gas dispensing facilities), and stationary sources (i.e. Title V facilities and AB 2588 facilities) and summed the total cancer risks and burdens from all sources (Final AB617 Assessment, page 21)

[b] CalEnviroScreen Version 3.0, more information can be found at https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30.

[c] The modeling includes only toxic PM2.5 emissions.

[d] More information can be found at https://ww2.arb.ca.gov/our-work/programs/ab-2588-air-toxics-hot-spots/about.

[e] Only sources that emit toxic emissions are reflected in CARB Toxic Emissions Modeling.

2020 Map with Top 5 Percent

A map of the census tracts within the top 5 percent of the suitability score for the 2020 analysis is shown in Figure 3. Based on these updates, the District is recommending three general community areas for the State's Community Air Protection Program: North Sacramento, Oak Park/Fruitridge, and Meadowview.

Figure 1 – Census tracts within the top 5 percent of the updated suitability analysis, the updated suitability score for those census tracts, and the existing community boundary. Census tracts within the boundary of the existing community were removed.