



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

May 27, 2014

CalEnviroScreen
c/o Dr. John Faust
Chief, Community Assessment & Research Section
Office of Environmental Health Hazard Assessment
1515 Clay Street, Suite 1600
Oakland, CA 94612

Re: Draft California Communities Environmental Health Screening Tool
(CalEnviroScreen) Version 2.0

Dear Dr. Faust:

I am writing to provide comments on the Draft CalEnviroScreen Version 2.0 (CESv2) tool and associated report which were released for public review by CalEPA and OEHHA on April 21, 2014.

The April 2014 draft guidance and screening tool document indicates that among various potential uses, CalEnviroScreen will inform CalEPA's identification of impacted and disadvantaged communities pursuant to Senate Bill 535. SB 535 requires that the investment plan developed for available cap-and-trade auction proceeds direct resources to the state's most impacted and disadvantaged communities to provide economic and health benefits to these communities. **We strongly believe that CESv2 is not suitable for allocating SB 535 cap-and-trade auction proceeds.** This letter explains the reasons behind our position.

We are concerned that the use of CESv2 on a statewide basis would omit many health-impacted communities that are in need of the benefits that SB 535 envisioned. For example, areas in West Oakland identified through state and local studies to suffer the greatest air pollution impacts in the Bay Area do not appear in the top 20% of statewide CESv2 scores. Similarly, areas in Richmond, identified as impacted in other studies, do not appear in the top 20% of statewide CESv2 comparisons. These are among the most severely-impacted areas in the state, and any accurate and objective tool to measure such areas should reflect that.

Many health-impacted census tracts in the Bay Area do not have CESv2 scores in the top 20% on a statewide basis, but nonetheless have health burdens that are in the top 20%. This is true, for example, for asthma and low birth weight (LBW) infants, which are the two health indicators used in CESv2. On the basis of CESv2 health indicators alone (asthma plus LBW), 19% percent of Bay Area census tracts would qualify as "impacted"

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(299 tracts out of 1562 would be in the top 20% in a statewide comparison). On the basis of statewide CESv2 scores, however, only 3% (49 tracts) qualify.

There are a number of reasons why the use of statewide CESv2 scores may under-represent health impacts in the Bay Area (and likely in urban areas in general). We have identified some of these reasons in our detailed comments that follow. Because a long-term solution to these issues will be technically difficult and time-consuming, we believe that the following two-step approach for allocating cap-and-trade auction proceeds under SB 535 is a practical alternative:

- (1) Allocate SB 535 funds to regions in proportion to the region's population.
- (2) Within each region, distribute funds to impacted and disadvantaged communities based on a localized method. If an established method is not yet available, consider applying the CalEnviroScreen tool on a regional basis, using the top 20% of CES scores for the region.

Our Community Air Risk Evaluation (CARE) program's methodology is well suited for the second step. Another example of an established local method is the Metropolitan Transportation Commission's Communities of Concern.

As we indicated to you in our January 23, 2013 comment letter on the second working draft version of CalEnviroScreen, our Air District initiated the CARE Program in 2004. Over the past 10 years, in consideration of input received from a diverse stakeholder work group known as the CARE Task Force, our staff has updated and refined the technical basis for identifying impacted communities in the Bay Area. The results of this work have been used to prioritize a broad array of actions designed to foster healthy communities through our Clean Air Communities Initiative. Additional details on the CARE Program are provided in our recent report entitled *Improving Air Quality & Health in Bay Area Communities: Community Air Risk Evaluation Program Retrospective & Path Forward (2004 – 2013)*, Bay Area Air Quality Management District, April 2014 (available at <http://www.baaqmd.gov>).

The work of CalEPA and OEHHA in developing CESv2 is an important step toward the goal of identifying communities with disproportionate health impacts from environmental pollutants. However, this screening tool needs additional work to rank impacts within a region and needs significant improvements before it can be used to rank communities

across regions of the state. Our specific technical comments on the current draft version of CalEnviroScreen follow.

- (1) With CESv2, OEHHA has transitioned to the use of pollution burden and population characteristics in census tracts rather than ZIP codes. The use of census tracts as the unit of analysis provides certain benefits in that census tracts contain roughly equal population numbers, thereby providing a better representation of aggregate population health risks that result from environmental exposures. On an overall basis, census tracts also provide a finer spatial scale of analysis than ZIP codes. This degree of refinement is not uniform, however – it is substantially more evident in urbanized areas with high population densities. For example, the average census tract size in the SJVAPCD (31.7 square miles) is about nine times larger than in the BAAQMD (3.6 square miles). The use of census tracts therefore introduces a bias where more spatially-resolved data are available for use in heavily populated urban areas relative to less populated areas.

The Bay Area maps of impacted communities have changed dramatically from CESv1.1 to CESv2, with far fewer areas now being identified as impacted. Our staff has examined some of the Bay Area zip code areas that were identified as impacted under the CESv1.1 that have now dropped out of this designation based on the use of CESv2. The primary reason identified for this change is the increased spatial refinement resulting from transitioning zip codes to census tracts. Since the same level of spatial refinement has not occurred uniformly throughout the state within CalEnviroScreen, it is not acceptable to use it for inter-regional comparisons.

An example of the way that spatial refinement can influence designations is given by comparing San Francisco's Bay View/Hunters Point (BVHP) neighborhood in CESv1.1 versus CESv2. In CESv1.1, BVHP zip code 94124 has a summary score in the top 10 percent of zip codes statewide because it has high values for both pollution burden indicators and population characteristic indicators. However, in CESv2, census tracts on the eastern side of this zip code area have high pollution burden indicators (near the freeway), but relatively low population characteristic indicators. Census tracts on the western side of the BVHP zip code area have high population characteristic indicators but relatively low pollution burden indicators. The resulting CESv2 summary scores for these census tracts are below the top 20 percent statewide. It is logical to expect that if a similar degree of spatial refinement could be extended to less populated regions, the

statewide map of impacted areas would change significantly from its current form.

- (2) The guidance for CESv2 indicates that CalEnviroScreen does not provide expressions of health risk, but rather a relative ranking of communities based on a selected group of datasets through the use of a summary score. In a summary score approach, the selection of appropriate indicators, and the relative importance (weighting) of these indicators as determinants of health, is critically important. In CESv2, much has been done to select a broad array of indicators (i.e., seven exposure indicators, five environmental effects indicators, three sensitive population indicators, and four socioeconomic factors indicators). Almost nothing has been done, however, to determine the relative importance of these indicators (all indicators are weighted equally, except for the five environmental effects indicators which are weighted at one-half the others). **The equal weighting of indicators is a critical failing of this assessment tool when used to allocate cap-and-trade (air quality) funding.**

Much of this decision may have to do with a lack of a scientific basis to do otherwise. Nonetheless, the equal weighting of all indicators introduces significant uncertainties in the summary scores and the associated relative rankings. We recommend that the guidance issued with CESv2 better document these uncertainties, and advise users to review both the scores of individual indicators and the summary scores.

Ozone and PM_{2.5} exposures are an example of indicators that likely have much different relative health impacts. The ozone indicator in CESv2 is given the same weight as PM_{2.5}, but PM_{2.5} has far greater health impacts with strong causal relationships established for mortality and a variety of serious cardiovascular health effects.

Many of the indicators included in the pollution burden score have heavily skewed distributions. For example, over 60 percent of all tracts receive scores of zero for pesticides, and over 20 percent of tracts receive a score of zero for ozone. Environmental effects indicators are similarly skewed with over one-third of all tracts receiving marks of zero for solid waste sites, hazardous waste, cleanup sites, and impaired water bodies. The problem with skewed indicators is that top scores in a skewed index exert a greater influence on the top CESv2 summary scores relative to indicators with scores that are more uniformly distributed. From the documentation, it is clear that more weight is not intended to be given to these skewed indicators. Nor

should it be. For example, the environmental effects indicators are given half the weight of the exposures indicators because the contribution to the pollutant burden from the environmental effects indicators "was considered to be less than those from sources in the exposures indicators." Yet these skewed indicators have in fact been overrepresented in the CESv2 scoring. Many urban areas tend to have zero values in these skewed indicators with the unintended result that Bay Area tracts (and many others) have been under represented relative to the health indicators.

- (3) The income thresholds used in the poverty indicator in CESv2 are uniform throughout the state even though there are large regional differences in the cost-of-living in California. OEHHA should consider using different income thresholds for establishing the poverty indicator in various regions based on cost-of-living considerations.
- (4) The pesticide use indicator in CESv2 is based on production agricultural pesticide use records and excludes many pesticide uses such as those in homes and industry for which data are only available at the county scale. The result of this is that zero pesticide scores are determined in CESv2 for most urban areas even though significant pesticide exposures occurs in these areas (see, for example, *Pesticides in House Dust from Urban and Farmworker Households in California: An Observational Measurement Study*, Environmental Health, 2011, 10). The use of county-level pesticide data for non-production and non-agricultural uses may be preferable to the use of no data at all. These county-level data could be spatially disaggregated based on the use of appropriate surrogates.
- (5) Sixty two census tracts statewide appear to be missing data on key measures of population characteristics. These tracts do not appear to be included in the online mapping tool (or KML file). However, these tracts are apparently included in the calculation of percentiles for exposure and environmental effects, and thereby influence the cumulative scores for other tracts. Either population data should be supplied for these tracts or they should be withheld in the calculation of percentiles.

To conclude, CESv2 is an inappropriate tool to use to choose which disadvantaged communities should receive cap-and-trade auction proceeds. That underlying goal, to benefit disproportionately impacted communities, is a critical public health goal that deserves a better solution.

May 27, 2014

Thank you for your consideration of these comments. If you have any questions regarding this letter, or would like to discuss, please contact Dr. Phil Martien of my staff (415-749-4660, pmartien@baaqmd.gov).

With regards,


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cc: Matthew Rodriques, CalEPA
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