COMMENT

CALIFORNIA'S ENVIRONMENTAL JUSTICE MAPPING TOOL: LESSONS AND INSIGHTS FROM CALENVIROSCREEN

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I.   Introduction

CalEnviroScreen, California's mapping tool that quantifies cumulative impacts in communities, has played a pivotal role in advancing environmental justice in the state. The tool continues to evolve with each version by incorporating new data sources, the latest data, and community involvement and feedback. The tool can be tailored to fit unique applications because the underlying data sets are publicly available. This Comment expands on the points raised in Dr. Charles Lee's article[1] by sharing lessons learned during the development of the tool and providing insights to other states and jurisdictions as they consider developing mapping tools.

II.   Legal Background

Dr. Lee's article highlighted the statutory sources that provided the impetus for the Environmental Justice program in California and the development of the CalEnviroScreen tool by the California Office of Environmental

Health Hazard Assessment (OEHHA) within the California Environmental Protection Agency (CalEPA). The tool was first widely used as a mechanism for identifying communities to receive funding through the California Cap-and-Trade Program (AB 32, 2006).[2] The idea behind the Cap-and-Trade Program as it relates to CalEnviroScreen was to use some of the auction proceeds for investments to reduce the overall pollution burden in the communities most impacted by and susceptible to pollution and climate change. Legislation amending AB 32 (SB 535, 2012)[3] required 25% of proceeds from the Cap-and-Trade Program to go to projects benefiting disadvantaged communities. CalEnviroScreen was the tool used to identify such disadvantaged communities. Although the legislation often does not specifically name CalEnviroScreen, however, there is sufficient trust in the tool that its use is expected and the results are accepted. The tool is used to identify and support disadvantaged communities for various related purposes. Recent legislation targeting disadvantages communities includes:

- AB 1550 (2016)[4] requires 25% of funds from the Cap-and-Trade program to support projects in the impacted area, not just to benefit disadvantaged communities as originally required.

1.   Charles Lee, *A Game Changer in the Making? Lessons From States Advancing Environmental Justice Through Mapping and Cumulative Impact Strategies*, 50 ELR 10203 (Mar. 2020).

2.   California Global Warming Solutions Act of 2006, ch. 488 (A.B. 32) (codified at Cal. Health & Safety Code §§38500 et seq. (West 2021)).
3.   Cal. Health & Safety Code §§39711 et seq. (West 2021).
4.   Cal. Health & Safety Code §39713 (West 2021).

- AB 617 (2017) builds community capacity by ensuring community members are active partners with the government to help identify, evaluate, and ultimately reduce air pollution and exposure to harmful emissions in highly impacted communities. The California Air Resources Board administers the Community Air Grants Program, which supports these activities in select communities.

Legislation continues to be proposed that contemplates use of CalEnviroScreen. For example, proposed AB 976 (Feb. 2021) would create "The Resilient Economies and Community Health Pilot Program," which would expressly require the California Strategic Growth Council to use CalEnviroScreen to identify disadvantaged communities for the pilot program. The pilot program is designed to provide economic savings, reduce greenhouse gas emissions, and air pollution, and improve resiliency to the impacts of climate change in disadvantaged communities. CalEnviroScreen continues to be used to assist in identifying the communities most vulnerable to environmental and health stressors. Such use has increased since the tool was first identified for use in allocating auction proceeds from the Cap-and-Trade Program nine years ago. Legislators, state and local government leaders, NGOs, and community groups have all become comfortable with using the tool as part of a holistic approach to improving services, support, participation, and quality of life for communities disproportionately affected by economic disadvantage, environmental pollution, and other hazards. CalEnviroScreen is also used by state agencies for prioritizing such communities for the allocation of their resources to address environmental justice issues, such as in targeted enforcement.

III. Public Engagement Processes

In Lesson Five, Dr. Lee discusses the significant role that the community-government partnership has played in advancing environmental justice at the state level and reflects the nongovernmental origins of CalEPA's work on cumulative impacts. CalEPA and OEHHA have used multiple approaches to foster a sense of partnership and cultivate buy-in across the state's highly varied communities and stakeholders. Early work was guided by a group of external stakeholders, the California Environmental Justice Advisory Committee, who provided a definition for cumulative impacts that guided the development of the CalEnviroScreen framework. The Cumulative Impacts and Precautionary Approaches Work Group was later convened specifically to advance OEHHA's work in characterizing impacts. Both groups include representatives from community and environmental organizations, agricultural interests, industry groups, and local/regional and federal government.

Beginning with the first version of CalEnviroScreen, OEHHA has had particular success with a public engagement model adapted from the established World Café pro-

cess. Using this model, the office conducted workshops across the state, to "ground truth" and receive input on the tool. Workshops were held in communities known or perceived to be disadvantaged. This approach places an emphasis on creating a space for conversation in which many voices and perspectives can be heard, interaction is encouraged, and collective input is shared broadly across participants. While adequately representing the interests of all of California's nearly 40 million residents can be daunting, the approach has generated thousands of comments and has led to improvements to the tool.

IV. Impact of Public Comment

During the evolution of CalEnviroScreen across the now four different versions, OEHHA has seen public participation inform much of the direction of the tool's development. Resolution moved from ZIP code-scale to census tract-scale because of early public comments. Additional indicators have been incorporated into the tool as data and methodologies have become available. For example, an indicator of drinking water quality was developed as part of version 2.0. The drinking water indicator relies on geographic data for accurate water system service area boundaries. Much of these data were not initially readily available, and methods for approximating which communities were served by which water systems had to be introduced. Since then, OEHHA and partners, led by Tracking California,[5] have undertaken efforts to capture service area boundaries accurately, leading to dramatic increases in the number of water systems with available boundary information.

The public process for earlier versions also led to the inclusion of indicators for diesel particulate matter emissions and linguistic isolation. Further, communities along the California-Mexico border expressed dissatisfaction with the lack of accounting for pollution sources originating in Mexico that impact California communities. AB 1059 (2015)[6] explicitly required OEHHA to evaluate and address some of these data gaps. This work included analyzing Mexico's Pollutant Release and Transfer Register (RETC) and collaborating with the U.S. Environmental Protection Agency and Abt Associates on their Risk Screening Environmental Indicators (RSEI) analysis to provide toxic release estimates for California that incorporated releases from the Mexican side of the border. Further work has been done in the lead-up to draft 4.0 to address these issues and other pollution indicators in CalEnviroScreen (see table on next page).

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5. Tracking California is a program of the Public Health Institute, in partnership with the California Department of Public Health and the Centers for Disease Control and Prevention's (CDC's) National Environmental Public Health Tracking Program. *Project Partners*, Tracking Cal. (2020), https://trackingcalifornia.org/about/project-partners.

6. Cal. Pub. Res. Code §71090 (West 2021); *CalEnviroScreen 3.0*, Cal. Off. Env't Health Hazard Assessment (June 25, 2018), https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30.

Version	Year	Scale	Major Changes
1.0 1.1	2012 2013	ZIP code	1.1 removed race as an indicator; added diesel emissions indicator.
2.0	2014	Census tract	Added drinking water quality and unemployment indicators; added environmental data from California-Mexico border region.
3.0	2017	Census tract	Added cardiovascular disease and housing burden indicators; removed age indicator.
Draft 4.0	2021	Census tract	Proposed adding indicator of children's lead risk from older housing.

V. Tension Between CalEnviroScreen Stability and Keeping Current

CalEnviroScreen represents a snapshot of conditions in communities using the most recent available data, which can provide a broad sense of their environmental, health, and socioeconomic conditions. The tool needs to have a level of stability for a variety of reasons, including those related to funding opportunities. Due to the nature of the data and uses of the tool, CalEnviroScreen does not represent short-term fluctuations in conditions. For example, the tool cannot tell the user what today's air quality is, or how many people are currently employed in a community. However, the tool is updated to reflect longer-term changing conditions and newer demographic data. Updates include newly available information on new industrial operations, pollution mitigation strategies, land use planning, transportation and population growth patterns, changes in community health, and socioeconomic opportunity. The tool is updated regularly to account for these changes, as well as advances in research that allow for better characterization of cumulative impacts in communities.

VI. Discussion

The need to access statewide, location-based data or fine-scale data that can be analyzed at a census tract level for CalEnviroScreen has driven both data collection and data analysis practices. Much of the indicator data from the environmental effects component of CalEnviroScreen is downloaded from databases managed by the other CalEPA departments and California state agencies. As technology has improved, the data sets have improved in accuracy, which benefits both CalEnviroScreen and the users of the databases.

Another example of improvements to the data in CalEnviroScreen and the future directions of the data are the air quality indicators. CalEnviroScreen's reliance on the state's air monitoring network to provide modeled estimates of air contaminants at a census tract scale has its limitations. The further away from the monitoring sites a community is located, the more uncertain those measurements are at characterizing conditions in that community. In earlier versions of CalEnviroScreen, census tracts greater than 50 kilometers from a monitoring site were not scored for ozone or fine particulate matter ($PM_{2.5}$). Improvements in technology and advancements in data analysis techniques

and use of satellite imagery by the California Air Resources Board has enabled CalEnviroScreen to incorporate more complete coverage and finer-scale estimates of $PM_{2.5}$ data, rather than relying solely on geospatial modeling techniques. Academic researchers have utilized individual indicator data from CalEnviroScreen, such as the $PM_{2.5}$ layer, to study a wide range of outcomes. The comprehensiveness, transparency of methodology, and ease of use has made CalEnviroScreen data important to other government agencies, environmental justice advocates, and the scientific community.

CalEnviroScreen, more than a decade into its development and implementation, is continuing to grow, evolve, and improve. At its core, CalEnviroScreen has been shaped by community and stakeholder input, which continues to guide the evolution of the tool as we move into its fourth iteration. As technologies improve to provide online interfaces to display and manipulate data, the many layers of information in CalEnviroScreen have become more accessible to a wide range of stakeholders. To date, CalEnviroScreen has been a statewide assessment tool, but there is a growing desire to use it to characterize other scales such as regions, legislative districts, or cities. Developing guidance and best practices on the use of CalEnviroScreen, with an understanding of local and regional specific data and needs, is critical to the program moving forward.

Until now, CalEnviroScreen has been used primarily for identifying impacted communities, targeting resources, or undertaking enforcement actions. There has been interest from communities to apply the tool in the context of permitting decisions related to siting or expansion of pollution sources such as facilities, roadways, or new developments. The current form of the tool limits this application since it neither establishes thresholds of cumulative impact nor evaluates the incremental impact of individual projects.

Most permitting decisions also happen at the city, county, or regional level. The tool could be tailored to meet a local need by developing software applications that would enable a small jurisdiction to apply boundaries of interest, reanalyze the data within those boundaries, and generate maps and scores using the new boundaries. This would require a coordinated effort from a multidisciplinary team of academia, community, government, and other stakeholders. For example, data sets available only for a smaller jurisdiction could be eligible for inclusion in a tailored application, whether they are collected by local government or community groups. Also, the tool's scor-

ing algorithm could be adapted to address this specialized application, based on the number of census tracts and the range of data values within the small geography.

The underlying indicator data layers of CalEnviroScreen or other publicly available data sets can serve as basic foundational data for these specialized applications. Depending on the type of decision in question, it is also possible that all indicator data sets may not be required. For example, in a small area where air quality does not vary greatly, these indicators may not contribute to differences, and their contribution could be minimized or eliminated.

Another major question that continues to arise with each updated version is how to evaluate changing conditions over time. Internal and external stakeholders would like to understand whether environmental conditions are improving or worsening. The data embedded in the multiple versions of CalEnviroScreen may lend itself to beginning to address these questions. CalEnviroScreen uses a relative ranking basis for scoring cumulative burden, which limits the ability to identify absolute levels of improvement or degradation over time; a complementary scoring system to track change could be developed. Improvements and changes to the data used to develop the CalEnviroScreen indicators also affect observations between versions of the tool.

CalEnviroScreen has been criticized for not fully capturing the unique experiences of some Californians, particularly for rural Californians and California Native American Tribes. CalEnviroScreen does not identify many tribal lands in California as high-scoring. As sovereign nations, tribes have their own authority over the collection and dissemination of their data, which has led to gaps in statewide data. In addition, CalEnviroScreen does not capture the concerns of some rural Californians that may not experience the same air quality and industrial pollution issues of more urban areas. With each update to the tool, OEHHA strives to better understand the concerns of all Californians and to reduce some of these data gaps that affect rural and tribal lands. We also recognize the unique experiences and historic wrongs against California Native peoples and acknowledge that the subset of indicators selected in CalEnviroScreen do not fully reflect the cultural, environmental, and socioeconomic burdens on tribes.

VII. Lessons Learned

Dr. Lee's article ends with a call to action but notes that it took concerted action by many individuals to overcome obstacles and ultimately lead to the development of environmental justice mapping tools. A key lesson from the California process was to propose an approach and submit it for public discussion and comment, with an understanding that it may not be perfect initially. There are many examples where a data gap in CalEnviroScreen led to the development of the needed publicly available data. The evolution of the drinking water and diesel PM indicators are good examples of this.

Ongoing feedback received across versions of CalEnviroScreen informs advances in research. The public workshop and comment periods on each iteration serves as an opportunity to hear the direct observations of the lived experiences of community members as they relate to pollution burdens and population characteristics. Mapping conditions in the diverse communities of 40 million Californians is a monumental task that is best accomplished in a transparent manner, with openness to criticism as well as support. It is neither feasible nor practical for a governmental entity to develop such a tool in isolation. Each iteration of CalEnviroScreen represents ongoing work with stakeholders in communities, local governments, the legislature, academia, and business. Our agency receives and processes information, researches methods and data, performs analysis, and presents results, with the knowledge that we will receive further feedback. This process unlocks opportunities for open science, increased buy-in, and robust public participation. If the CalEnviroScreen program continues to be responsive to people who live in impacted California communities, long-term sustainability and ongoing improvements to the tool are ensured.