

CalEnviroScreen

A Pathway to Address Environmental Justice Issues in California

by **George Alexeeff**
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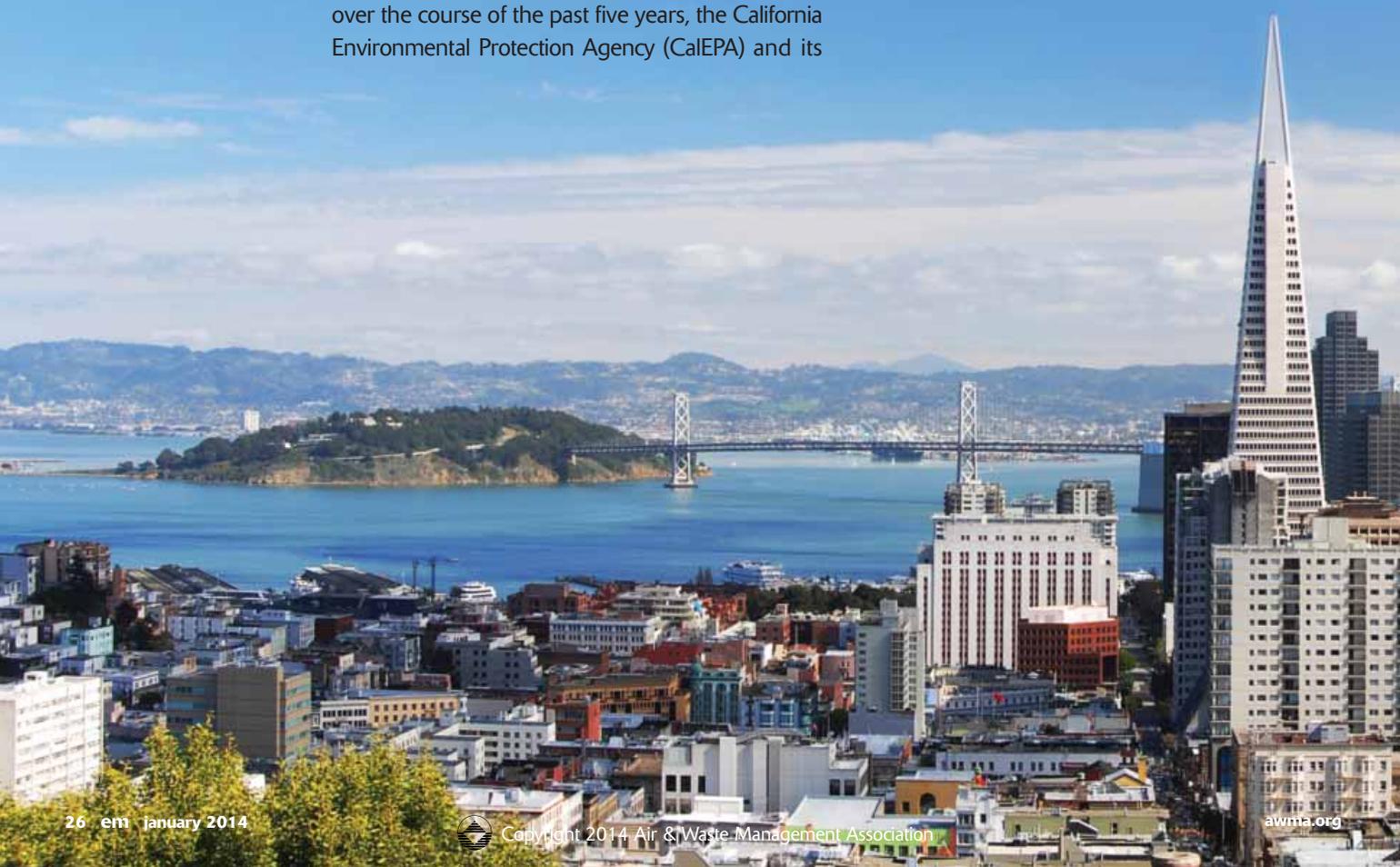
A look at CalEnviroScreen, an environmental health screening tool designed to help decision-makers focus time, resources, and programs to improve the environmental health of Californians living in areas of the state disproportionately burdened by multiple sources of pollution.

One of the challenges to addressing the concerns of communities disproportionately burdened by multiple sources of pollution is that the current regulatory paradigm primarily focuses on single pollutants, single sources, or single media. However, advancing and ultimately achieving environmental justice requires the consideration of multiple sources and media, along with population characteristics, socioeconomic factors, and geographic boundaries. The efforts undertaken by various institutions across the country to evaluate this issue have focused on: consideration of pollution sources being from a single media such as air;¹ analyses based on location of hazardous sites and industrial facilities only;² or the extent of geographical boundaries.³ In contrast, over the course of the past five years, the California Environmental Protection Agency (CalEPA) and its

Office of Environmental Health Hazard Assessment (OEHHA) have successfully developed a science-based model—CalEnviroScreen—that simultaneously incorporates multiple elements to the extent data is available for the entire state.⁴ The first-in-the-nation environmental health screening tool is intended to help decision-makers focus time, resources, and programs to improve the environmental health of Californians living in areas of the state that have relatively higher total pollution burdens and vulnerabilities.

The CalEnviroScreen Model

The CalEnviroScreen model is place-based and provides information for the entire state of California.

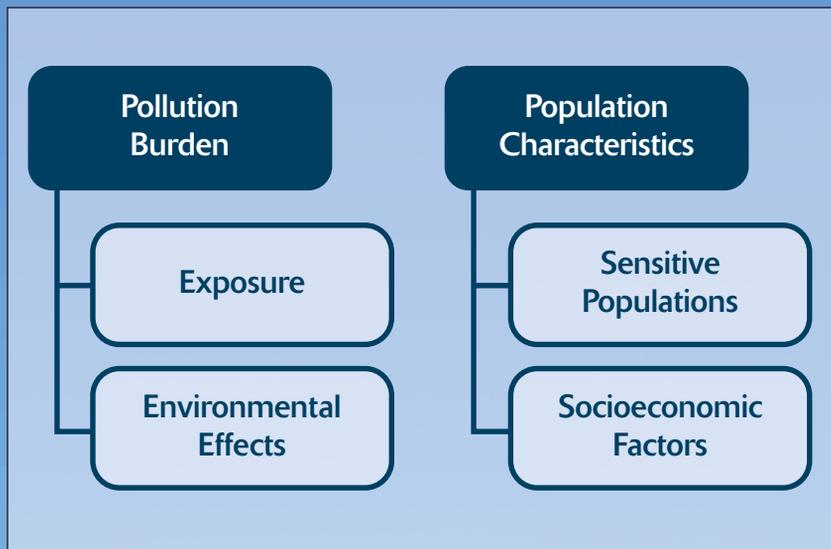


It includes two components representing pollution burden—exposures and environmental effects—and two components representing population characteristics—sensitive populations and socioeconomic factors (see Figure 1).

The model uses 17 indicators (see Figure 2) to assess pollution burden and population characteristics at a ZIP code level. Scores are assigned for each indicator in a given ZIP code and a scoring system weighs and sums each of the indicators within these components.

After the components are scored, they are combined to calculate the overall CalEnviroScreen score using the following formula (see Figure 3). The details are described in the CalEnviroScreen report.⁴ The final score represents a relative, rather than absolute, measure of pollution burden for a given ZIP code.

Indicators were selected based on how well they represent statewide pollution burden and population characteristics, as well as the availability and quality of such information at the ZIP code level. The primary selection criteria were that each indicator should be a measure relevant to its component; represent widespread concerns related to pollution; should be a good representation of each component; have data available for the entire state at the



ZIP code level or translatable to the ZIP code level; and have data that are reliable, complete, accurate, and current.

Figure 1. Components of the CalEnviroScreen model.

Exposure to pollutants generally involves the movement of harmful chemicals from a source through the environment (air, water, soil, food). People may be exposed when they come in direct contact. No data are available statewide on direct exposures. Hence, data relating to pollution sources, environmental concentrations, and releases are used as proxy indicators of pollution exposure.

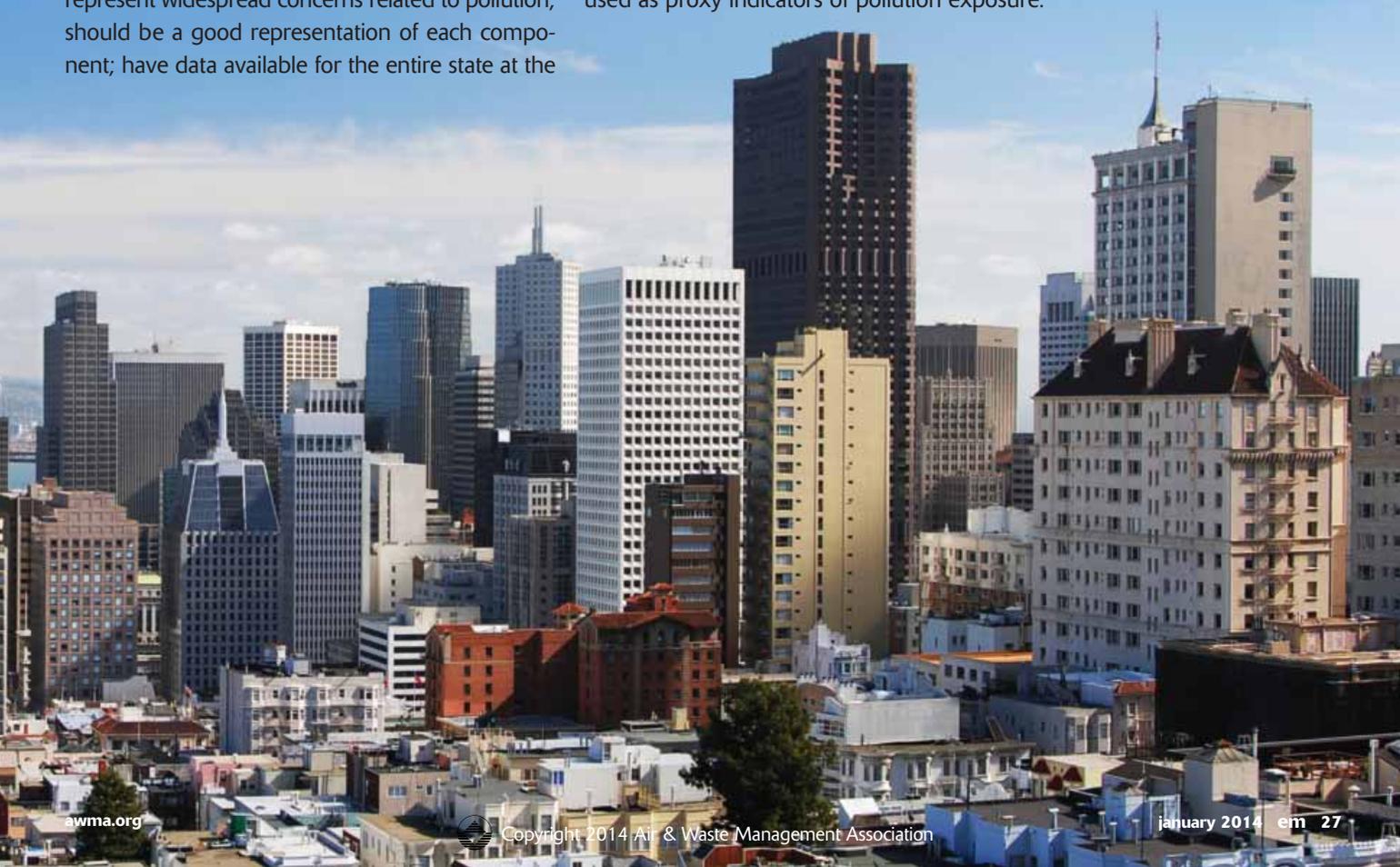
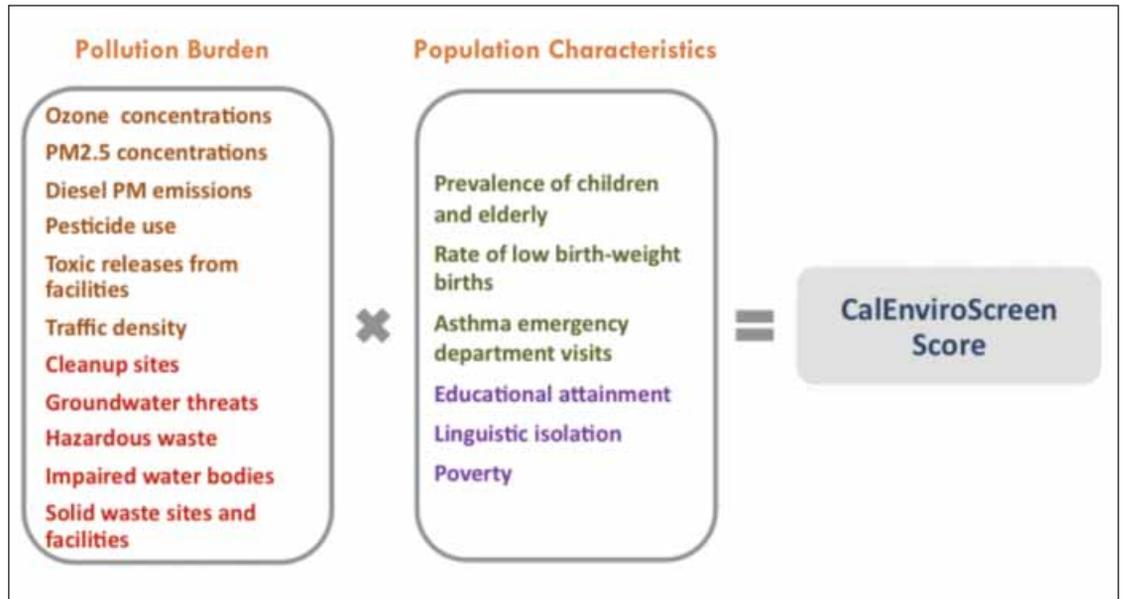


Figure 2. Indicators used in the CalEnviroScreen model.



Environmental effects include environmental degradation, ecological effects, and threats to communities. They may also limit the ability of communities to make use of ecosystem resources (e.g., eating fish or swimming in local water bodies). Also, living in an environmentally degraded community can lead to stress, which affects human health. In addition, the mere presence of a contaminated site or high-profile pollution source or multiple pollution sources may be perceived as a health threat.

Sensitive populations are groups of people with biological traits that result in increased vulnerability to pollution. They may include those undergoing rapid physiological change, such as children, pregnant women and their fetuses, and those with impaired physiologic conditions, or with preexisting diseases such as asthma. While pollutant exposure is a contributor to observed adverse health outcomes such

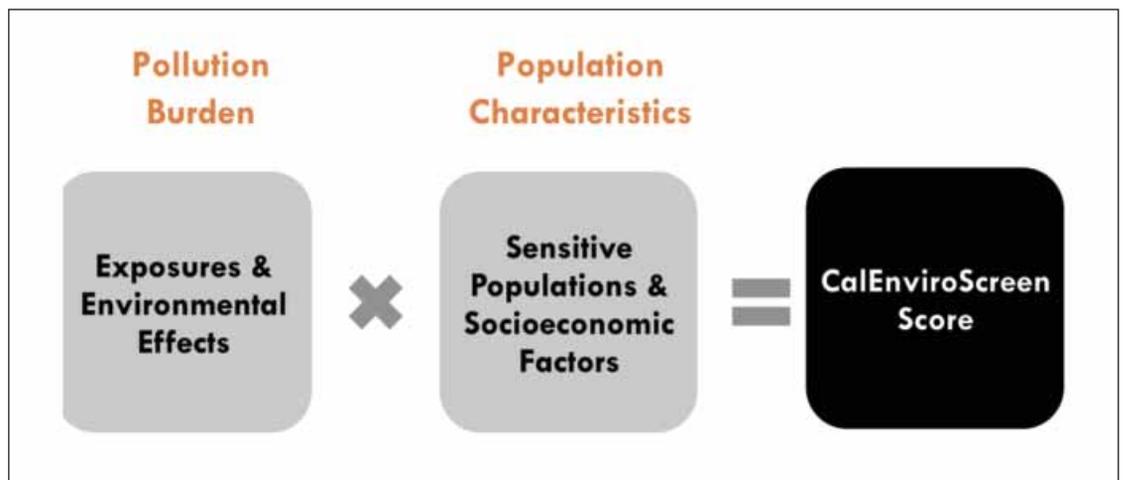
as asthma and low birth weight, persons with these conditions are also more susceptible to pollution.

Socioeconomic factors are community characteristics that result in increased vulnerability to pollution. The heightened vulnerability of people of color and lower socioeconomic status to environmental pollution is well-documented in the scientific literature.⁵ For example, maternal exposure to particulate pollution is associated with reduced birth weight; this effect is greater in African-American mothers compared to white mothers.⁴

Development of CalEnviroScreen

The public process for the development of CalEnviroScreen followed key elements of the U.S. Environmental Protection Agency's "Interim Guidance on Considering Environmental Justice during the Development of an Action."⁶ The following three

Figure 3. CalEnviroScreen scoring formula.



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questions were asked and addressed at the beginning, at the interim decision-making points, and before finalizing the model.

- 1 How did the public participation process provide transparency and meaningful participation?
- 2 How did you identify and address existing and new disproportionate environmental and health impacts?
- 3 How did actions taken under the above questions impact the outcome or final decision?

These questions focus on outreach efforts and the importance of public involvement in the outcome.

The process included consultation with other state agencies and stakeholders representing a wide cross-section of interest groups, as well as an extensive public participation process. The process was designed to ensure transparency and the meaningful participation of all stakeholders, including low-income and minority populations, by holding workshops at convenient locations and times; providing translation services and facilitated discussions; seeking regular input from the

Cumulative Impacts and Precautionary Approaches Workgroup,⁷ consisting of representatives of business and nongovernmental organizations, academia and government over the course of five years; and documenting and publishing all comments received.

Prior to finalizing CalEnviroScreen, CalEPA and OEHHA released two drafts and held one academic and 12 public workshops in seven regions of the state. These workshops resulted in more than 1,000 oral and written comments and questions. The staff considered all the comments received and prepared and published responses.⁸ As a result, the final report and the model were improved, simplified and substantially different, when compared to the two earlier draft versions.

The model changes influenced by the process include the format, components, and the weighting and scoring of indicators.⁹ Indicators added as the result of public input included linguistic isolation and diesel particulate matter. Some indicators were eliminated (e.g., heart disease and cancer mortality) or modified (e.g., pesticide use). In addition, the rationale for including each indicator was added.

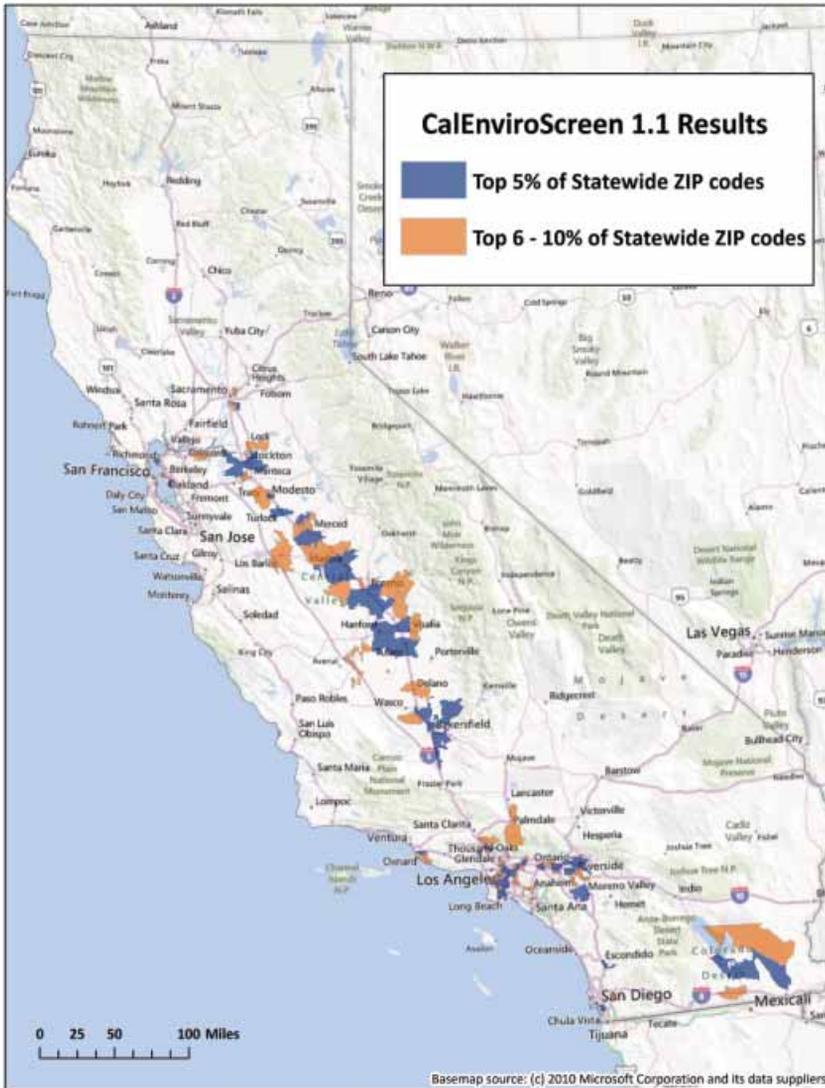


Figure 4. Map of California showing ZIP codes identified as disadvantaged using CalEnviroScreen 1.1.

Observation From CalEnviroScreen

One of CalEnviroScreen's initial uses was to identify disadvantaged communities based on geographic, socioeconomic, public health, and environmental hazard criteria, pursuant to state legislation (see Figure 4). CalEPA identified the 10% most burdened ZIP codes, or those scoring in the 91st to 100th percentile in CalEnviroScreen, as disadvantaged. This represents 176 of the 1,769 ZIP codes in the state and includes 7.7 million people or 21% of all Californians.

These identified ZIP codes differ significantly from the state as a whole: 37% of the population over age 25 lacks a high school diploma, compared to 19% statewide; and 51% lives below two times the federal poverty level, compared to 34% statewide. While these ZIP codes contain 21% of the state's population, they have 41% of the state's permitted

hazardous waste sites and facilities and 32% of the state's cleanup sites.

Another significant finding is that Hispanic and African-American Californians disproportionately reside in ZIP codes with the highest pollution impacts. In contrast, the less impacted ZIP codes are predominately white and contain fewer residents (see Figure 5). The least burdened 50% of ZIP codes contain approximately 26% of the state's population, whereas the most burdened 50% contain the remaining 74% of the population.

Applying CalEnviroScreen in Decision-Making

Aristotle explained that justice is a sort of proportion—"that which is just, then in this sense is that which is proportionate, and that which is unjust is that which is disproportionate." California's statutes define environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect the development, adoption, implementation and enforcement of environmental laws, regulations, and policies." Environmental justice advocates typically see the term as meaning that environmental benefits and burdens should be distributed evenly in all communities. Also, all communities should be afforded substantive access to decision-makers and decision-making processes.¹⁰

By any definition, the disparities identified by CalEnviroScreen call out for focused attention. In an attempt to address these disparities, the state is taking a number of steps that incorporate CalEnviroScreen, including:

- 1 Recent state law requires at least 10% of the proceeds from the carbon auctions conducted under California's Global Warming Solutions Act of 2006 to be directly allocated to projects in communities identified by CalEPA;¹¹
- 2 CalEPA is using CalEnviroScreen to identify areas where it will focus efforts to improve compliance with state environmental laws;
- 3 The state's Strategic Growth Council is planning to set aside a portion of its sustainable communities grant funding for communities identified by CalEnviroScreen; and
- 4 CalEPA is collaborating with other state agencies to assist them in using CalEnviroScreen data to tailor their programs for the benefit of the identified communities.

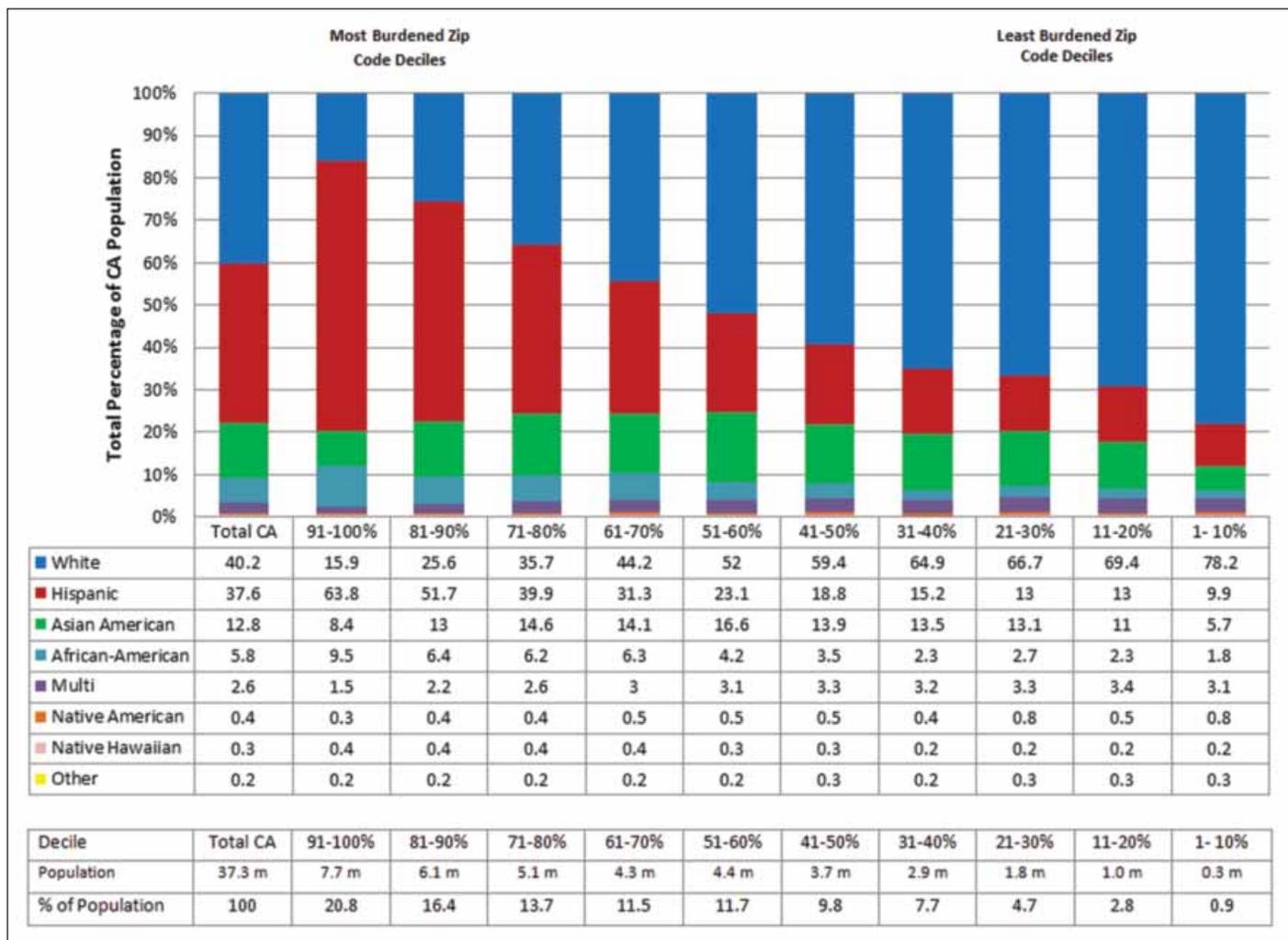


Figure 5. Race/ethnicity profile of Californians in each decile of CalEnviroScreen.

Much work remains to fully achieve the intent and requirements of California’s statutory definition of environmental justice. Still, CalEnviroScreen’s identification of disadvantaged communities and its ability to assess multiple pollution burdens has served as a catalyst for many important initiatives.

CalEnviroScreen is helping California take concrete steps to improve the environment in which its residents live, work, and play. We hope the tool and the model it provides can assist other states and regions as they work to advance environmental justice. **em**

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