

# Climate Change & Environmental Justice: Community Issues & Concerns in Southern CA



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MANUEL PASTOR



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# OUR RESEARCH TEAM

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- Manuel Pastor, Ph.D. in Economics, responsible for project coordination, statistical analyses, including multivariate and spatial modeling, and popularization



- James Sadd, Ph.D. in Geology, responsible for developing and maintaining geographic information systems (GIS), including location of site and sophisticated geo-processing



- Rachel Morello-Frosch, Ph.D. in Environmental Health Science, responsible for statistical analysis, health end-points, and estimates of risk.

# ENVIRONMENTAL GAPS IN CALIFORNIA & U.S.

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Three main findings:

1. **Disparities in exposures** to environmental hazards between racial and socioeconomic groups are significant and are **linked to adverse health risks**

2. Patterns of inequality are not just attributable to income or land use—**race matters**, too

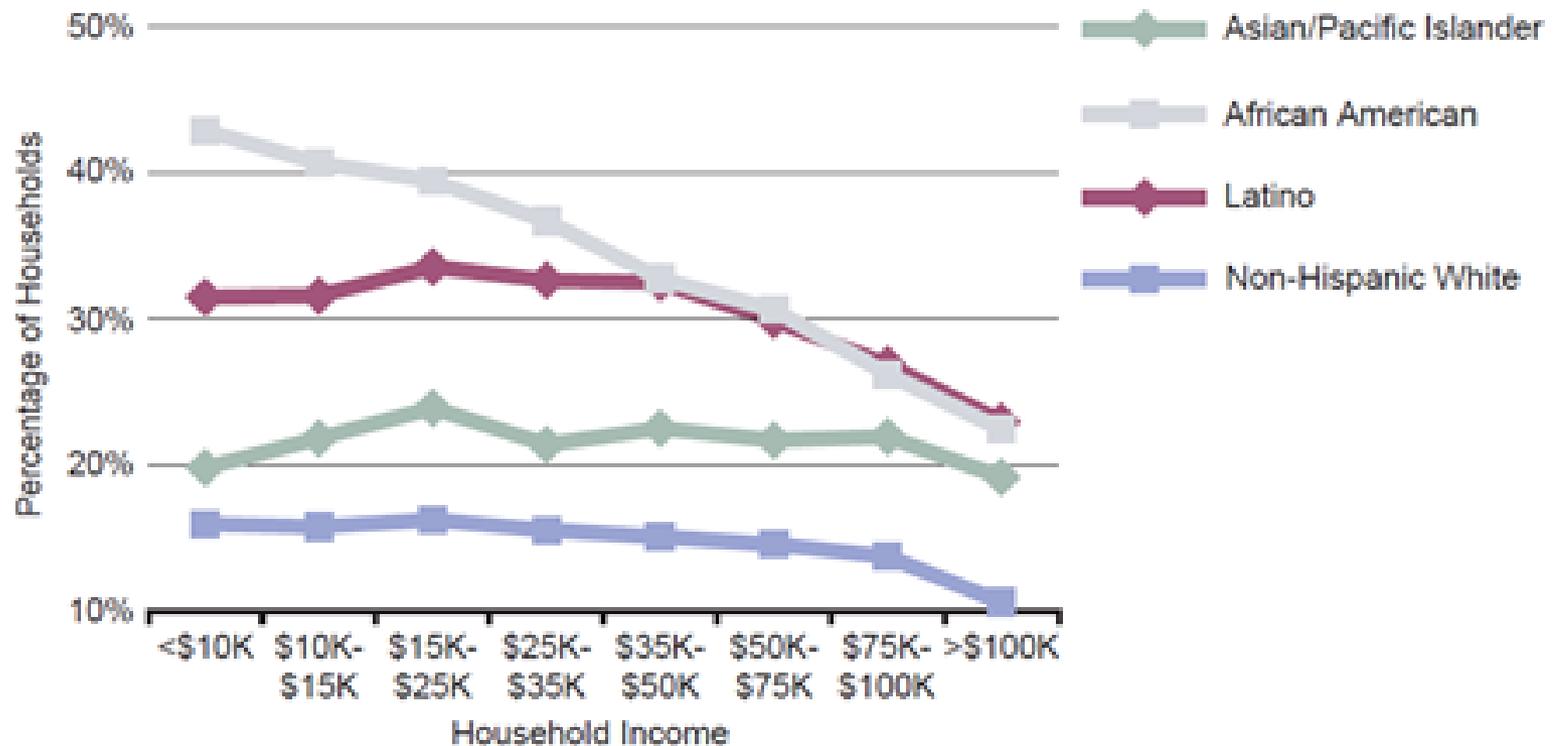
3. This actually matters for everyone:  
**environmental quality**  
is linked to  
**environmental inequality**



Source: [http://www.plataformaurbana.cl/wp-content/uploads/2011/04/1302103641\\_losanjeles\\_pollution.jpg](http://www.plataformaurbana.cl/wp-content/uploads/2011/04/1302103641_losanjeles_pollution.jpg)

# RACE MATTERS

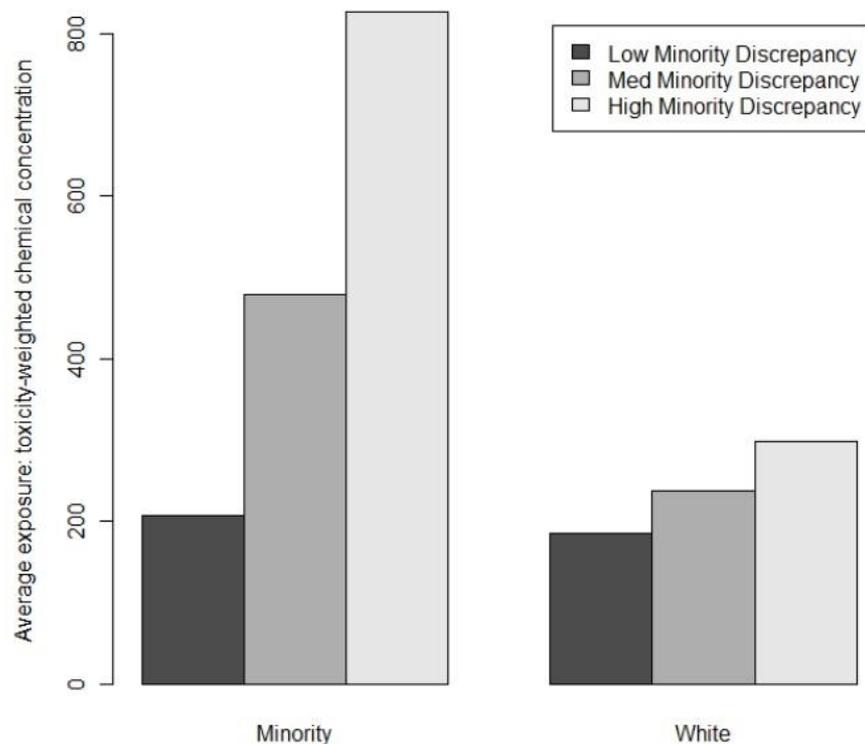
Income is important, but **race** is actually a stronger factor in predicting the degree of environmental inequity.



Source: Manuel Pastor, Rachel Morello-Frosch and James Sadd, *Still Toxic After All These Years: Air Quality and Environmental Justice in the San Francisco Bay Area* (Santa Cruz, CA: Center for Justice, Tolerance and Community, University of California, Santa Cruz, 2007).

# CONSIDERING EJ CAN HELP EVERYONE

In regions with higher disparities in exposure rates between whites and people of color, **exposure rates are higher—for everyone.**

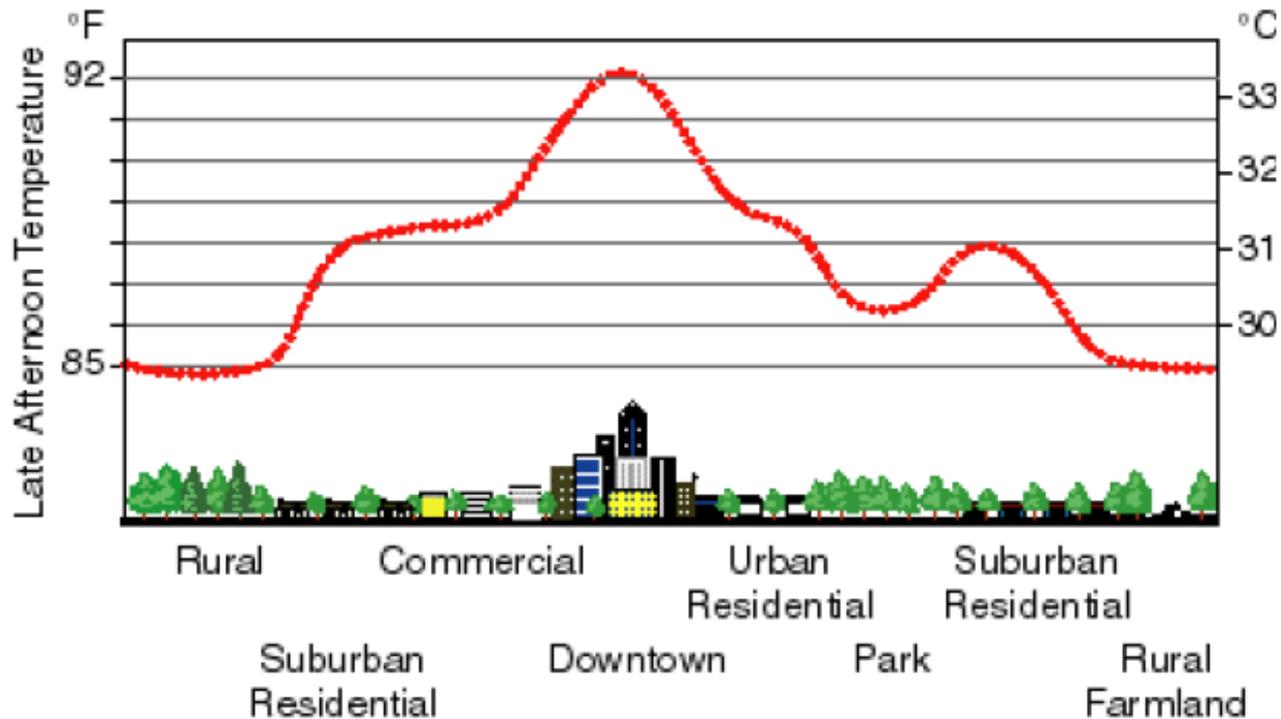


**Average exposure by race/ethnicity in Metros with low, medium and high minority discrepancy scores**

Source: Michael Ash et al., *Is Environmental Justice Good for White Folks?* (Amherst, MA: University of Massachusetts, Amherst, Department of Economics, Working Paper 2010-05, July 2010).

# CLIMATE GAP IS REAL

## Heat Islands

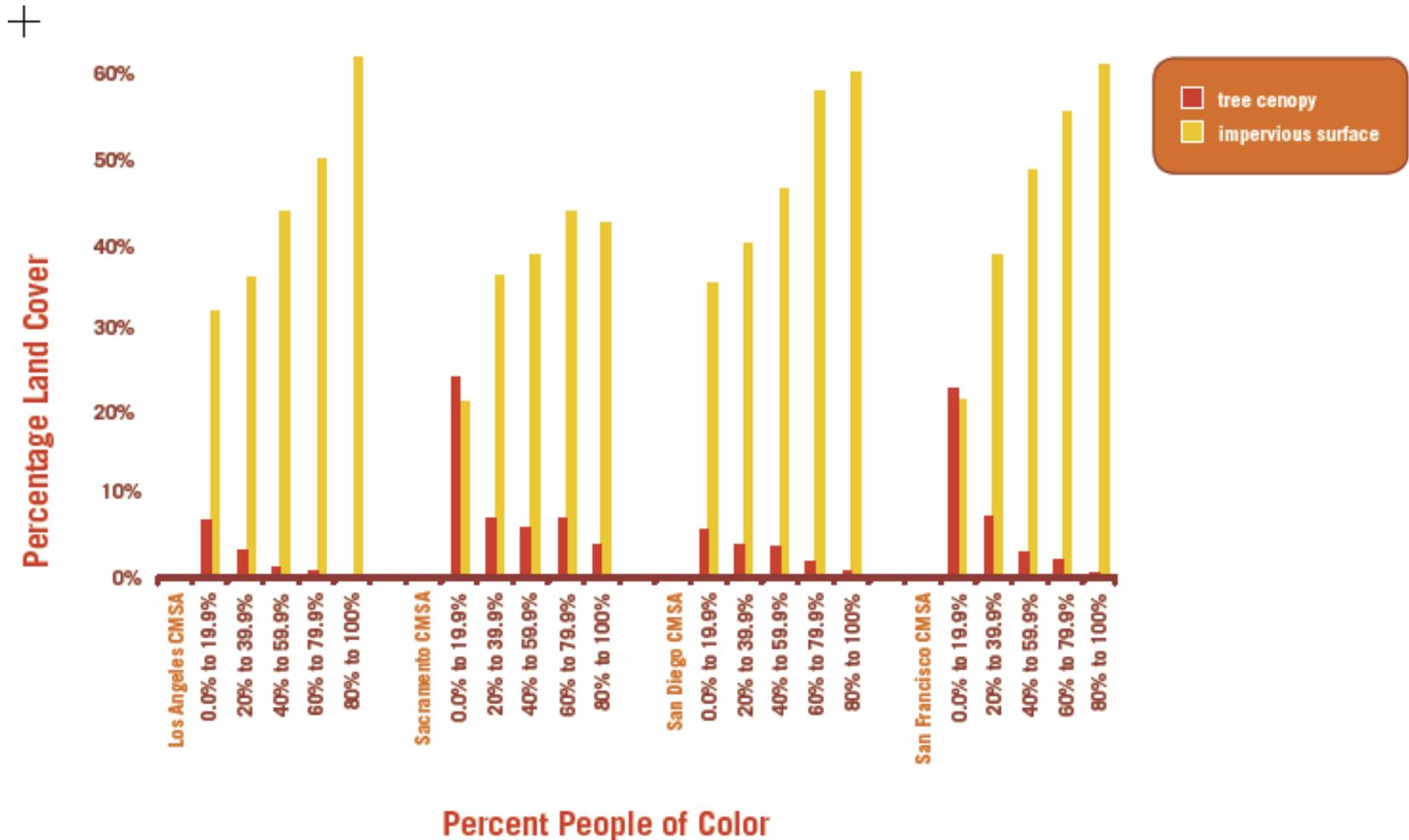


**Figure 2.4: Temperature profile of an urban heat island.**

(<http://www.epa.gov/globalwarming/greenhouse/greenhouse14/reduction.html>)

# CLIMATE GAP IS REAL

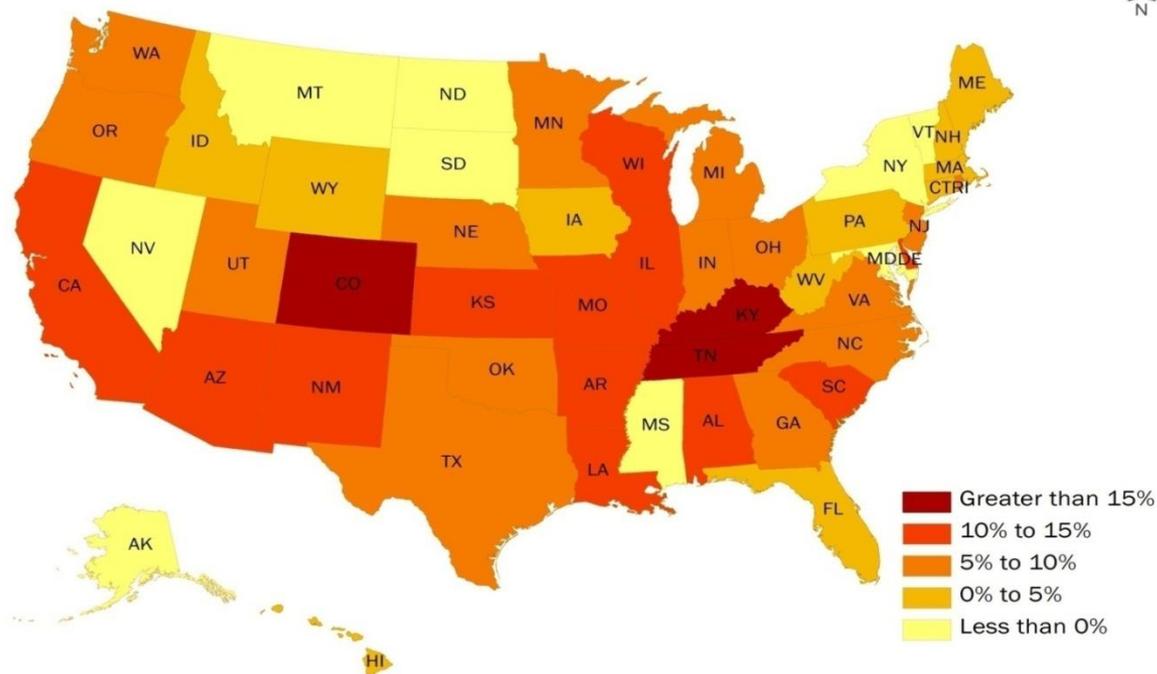
## Heat Islands



# CLIMATE GAP IS REAL

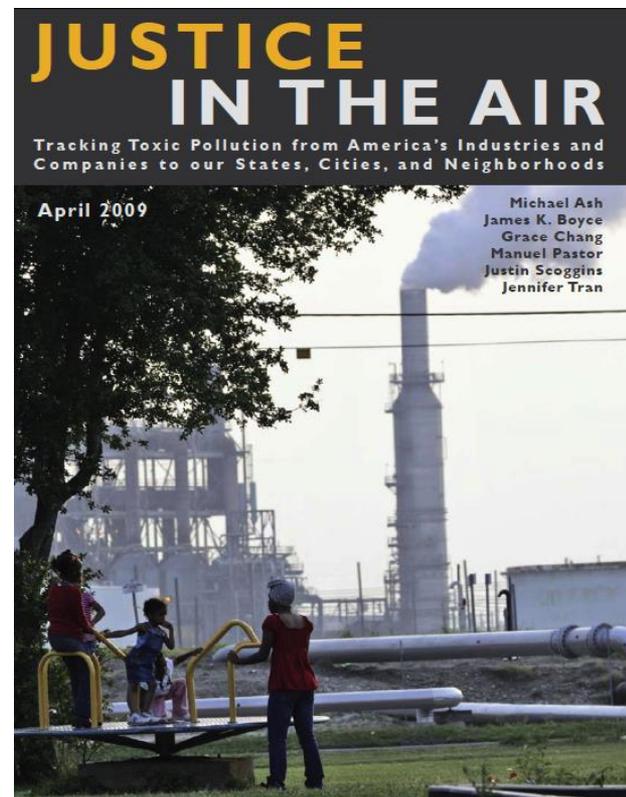
## Already existing disproportionality

Difference between the minority share of health risk from industrial air toxics and the minority share of the population by state



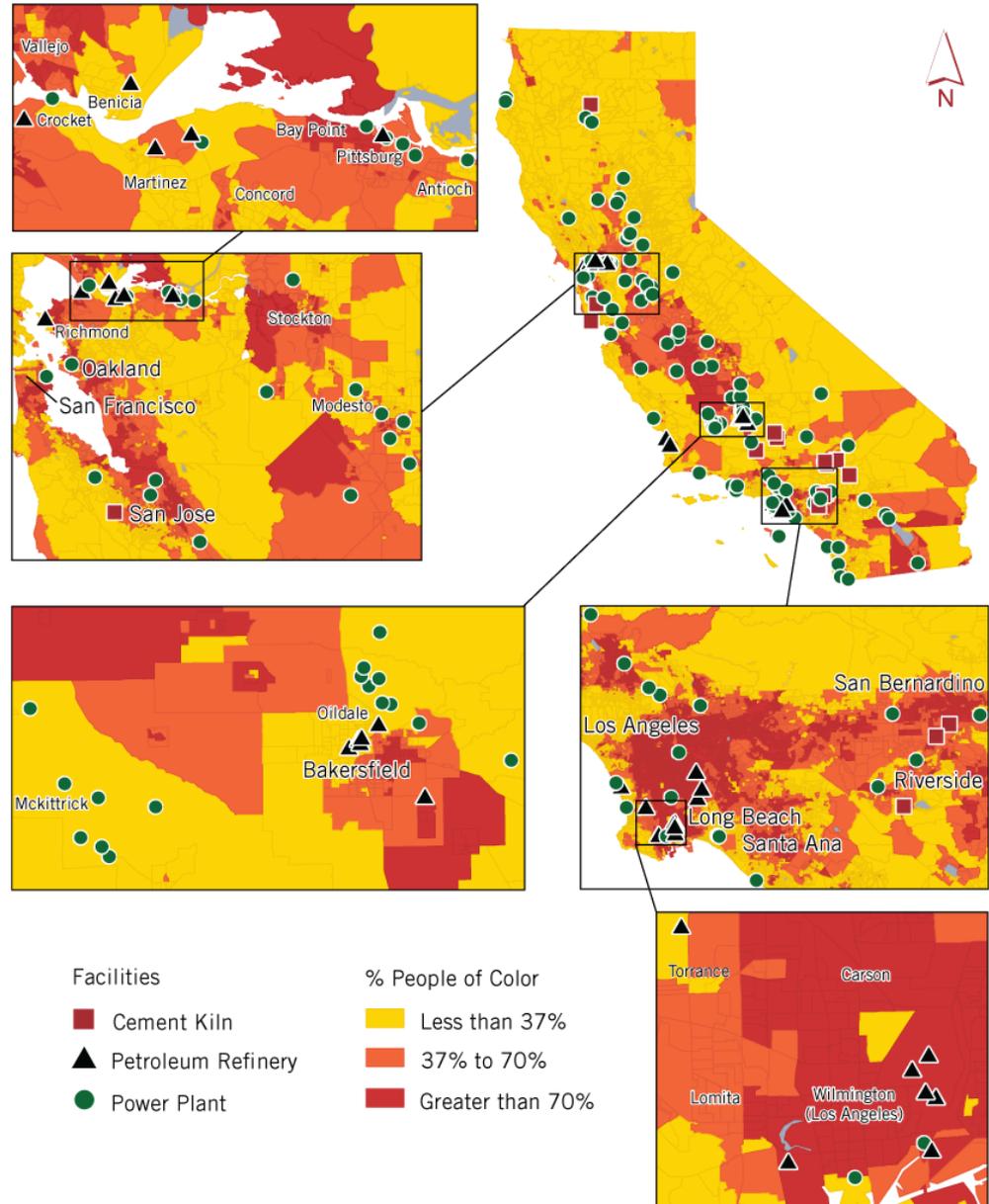
Note: Alaska and Hawaii not to scale

Source: Michael Ash et al., 2009, *Justice in the Air: Tracking Toxic Pollution from America's Industries and Companies to our States, Cities, and Neighborhoods* (Amherst, MA: University of Massachusetts Political Economy Research Institute and University of Southern California Program for Environmental and Regional Equity, 2009).



# CLIMATE GAP IS REAL

Concerns about co-pollutants are significant



## THE CLIMATE GAP

Inequalities in How Climate Change Hurts Americans & How to Close the Gap

Rachel Morello-Frosch, Ph.D., MPH | Marcel Pastor, Ph.D. | James Sahl, Ph.D. | Seth B. Shookoff, MPH

# WHY CO-BENEFITS MATTER

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The intuitive case...



Power plant near Bakersfield, California

PM emissions: 50 tons/yr

Population within 6-mi radius: 600



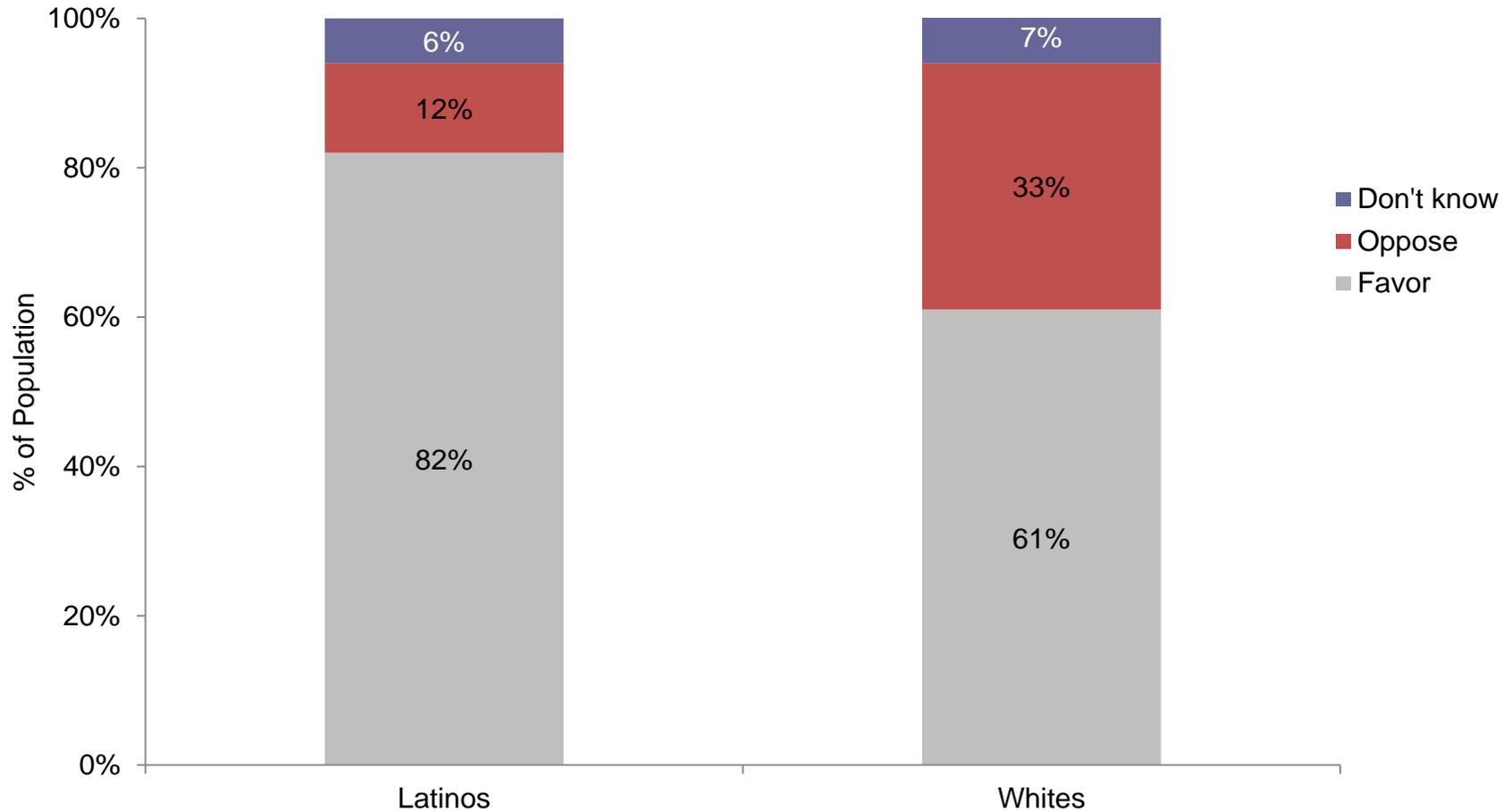
Oil refinery in Torrance, California

PM emissions: 350 tons/yr

Population within 6-mi radius: 800,000

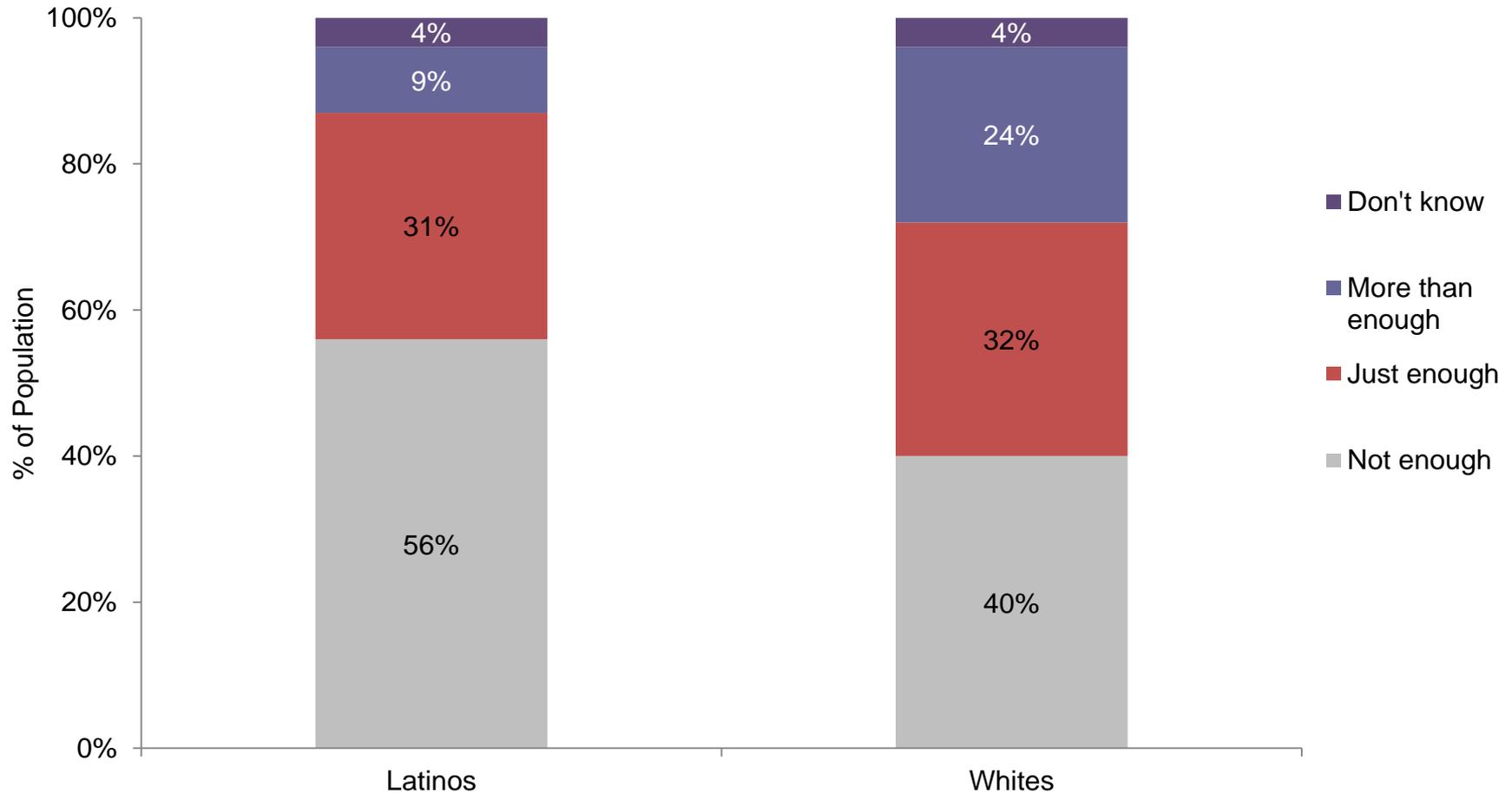
# CLIMATE GAP IS REAL IN ANOTHER WAY

Do you Support California's Law Reducing Emissions to 1990-levels?  
Answers by Race/Ethnicity, 2012



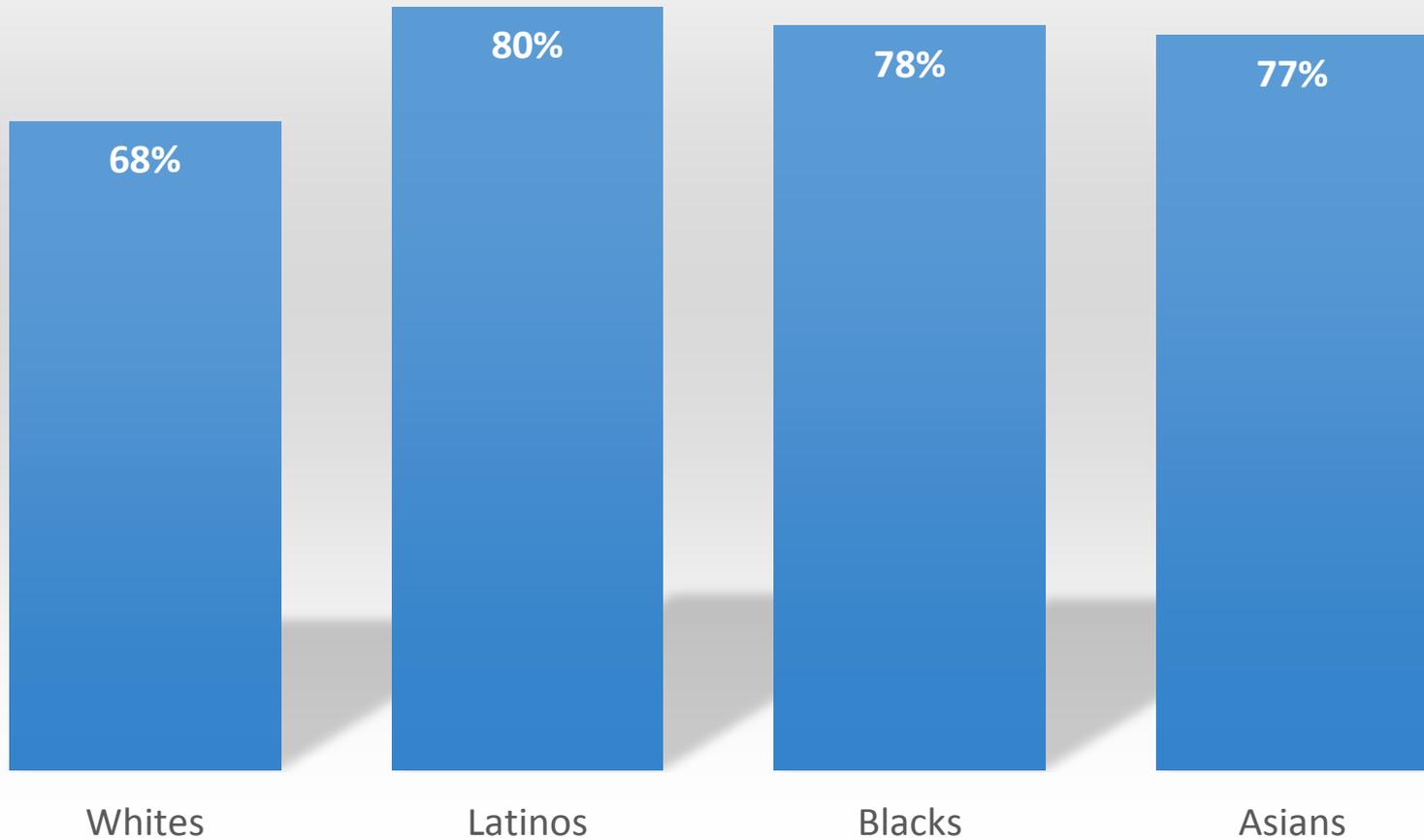
# CLIMATE GAP IS REAL IN ANOTHER WAY

Is the State Government Doing Enough to Address Global Warming?  
Answers by Race/Ethnicity, 2012



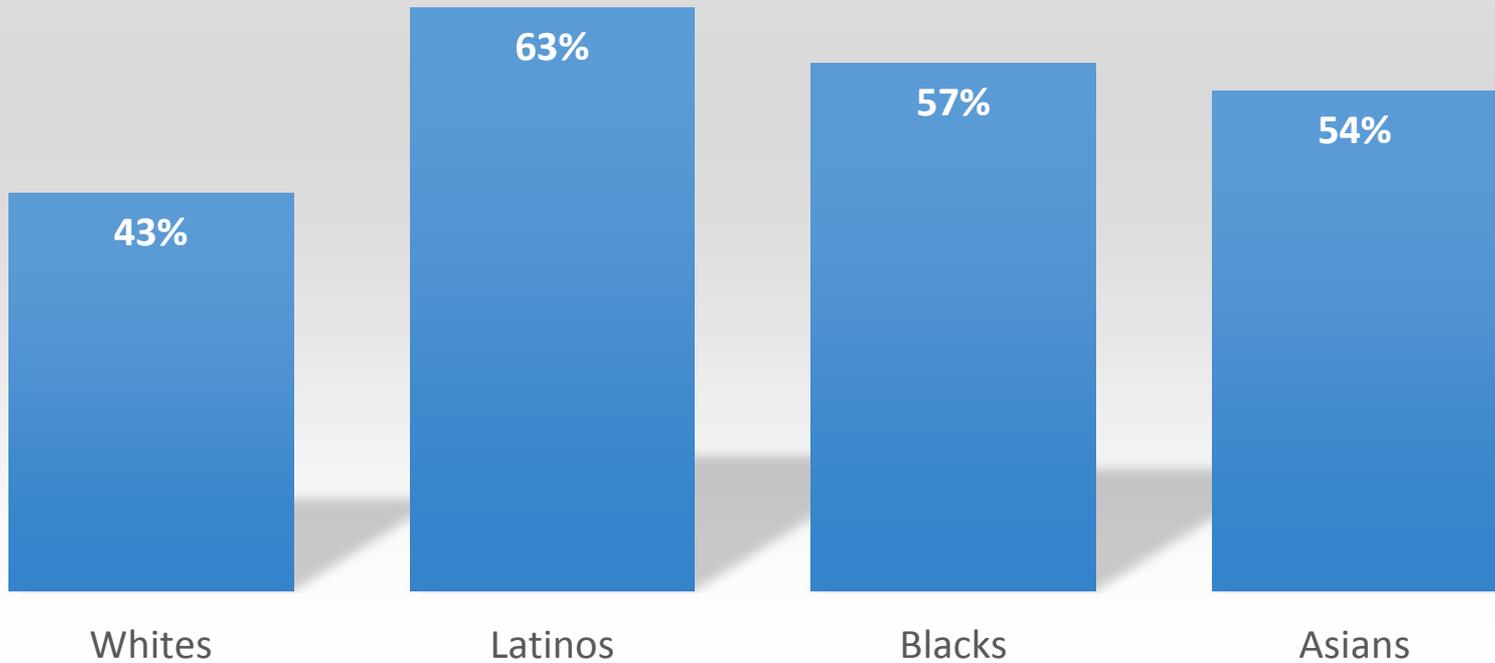
# CLIMATE GAP IS REAL IN ANOTHER WAY

Percent In Favor of Stricter Limits on Power Plants



# CLIMATE GAP IS REAL IN ANOTHER WAY

Percent Who Believe Global Warming is a Serious Threat to California's Economy & Quality of Life



# LOOKING FORWARD

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## RECOMMENDATION 1: STRENGTHEN CARBON EMISSION REDUCTION TARGETS

Reducing reliance on fossil fuels is especially important. In addition, air-quality co-benefits should be counted in setting policy objectives for carbon emissions reduction.



# LOOKING FORWARD

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## RECOMMENDATION 2: CO-POLLUTANT MONITORING

Climate-policy implementation should be accompanied by monitoring of co-pollutant emissions. Remedial policies should be introduced if monitoring reveals the widening of disproportional co-pollutant impacts on low-income communities and minorities.

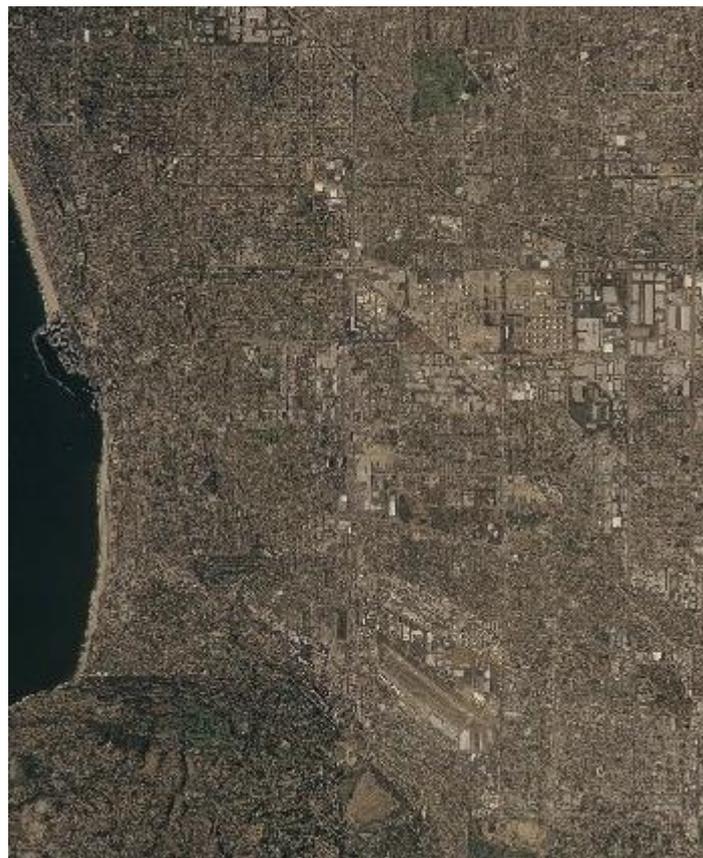


# LOOKING FORWARD

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## RECOMMENDATION 3: REFINE HIGH-PRIORITY ZONES

Climate-policy design has included identification of high-priority zones where air-quality co-benefits are especially large. CalEnviroScreen is a strong tool but could perhaps be improved by adding proximity metrics, regional scoring (as a check) and climate vulnerability layers.



# SCREENING FOR JUSTICE

A interactive map from OEHHA. [f](#) [t](#) [l](#)

## CalEnviroScreen 2.0

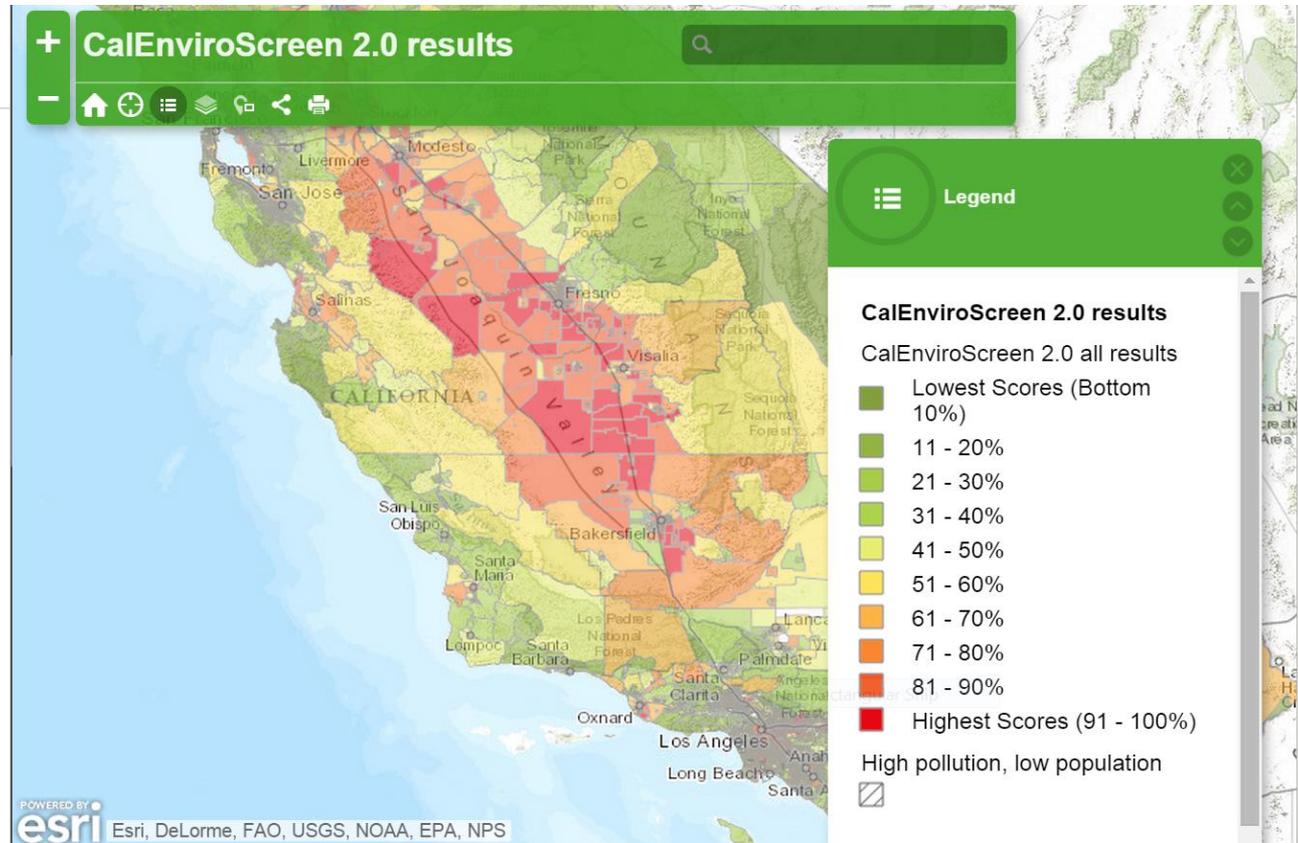
### CalEnviroScreen 2.0 scores

This map shows the CalEnviroScreen 2.0 score for each census tract in California. The scores are calculated by combining the scores for 19 individual indicators that make up CalEnviroScreen. These indicators relate to pollution exposures, environmental conditions, and population characteristics.

The indicators and methodology for combining the scores are described in detail in the [CalEnviroScreen report](#). Results are also available as an Excel spreadsheet, Google Earth file, and ArcGIS geodatabase.

To explore the map, zoom to or type a location into the search bar. Clicking on a census tract shows a popup window with the individual results for each of the 19 indicators that make up its CalEnviroScreen score.

Map tools available here include finding your current location, viewing the legend, changing base maps, viewing a regional overview map,



CalEnviroScreen <http://oehha.ca.gov/ej>

# EJSM OVERVIEW

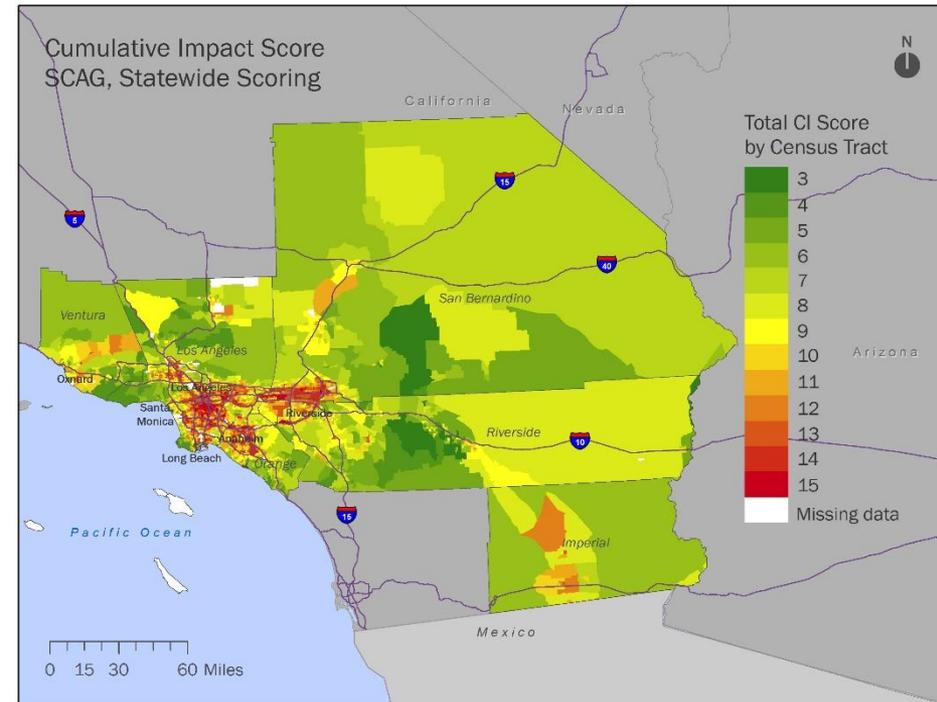
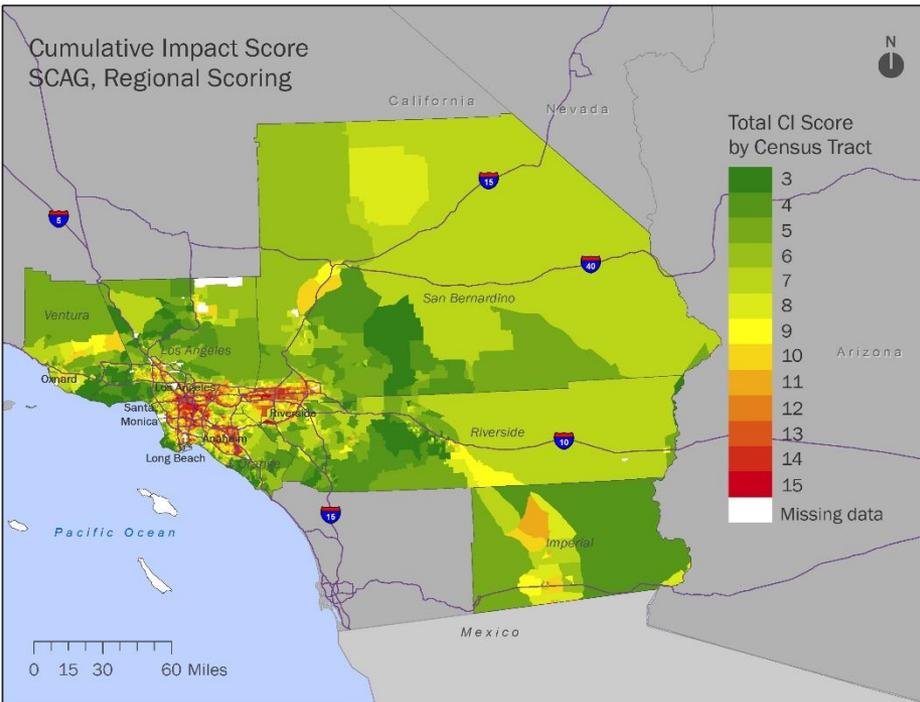
- Screens for “cumulative impact” using a variety of indicators
- Combines environmental burdens and social vulnerability
- Includes hazard proximity, of key concern to EJ communities
- Statewide coverage, but regional scoring
- Includes climate change vulnerability



# EJSM: SCAG – NO CLIMATE VULNERABILITY

## Regional Scoring

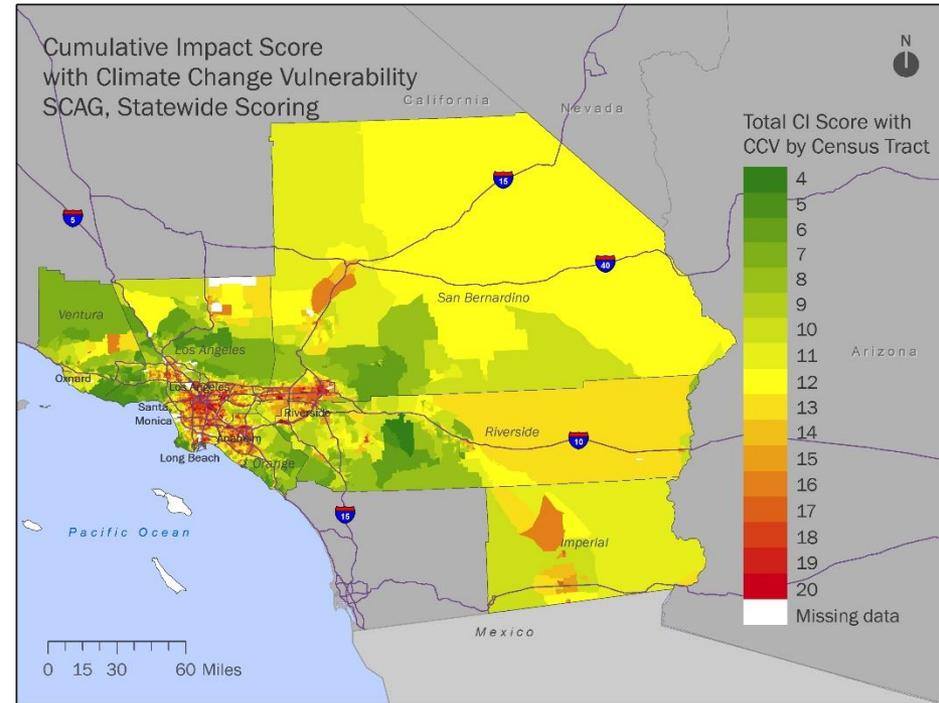
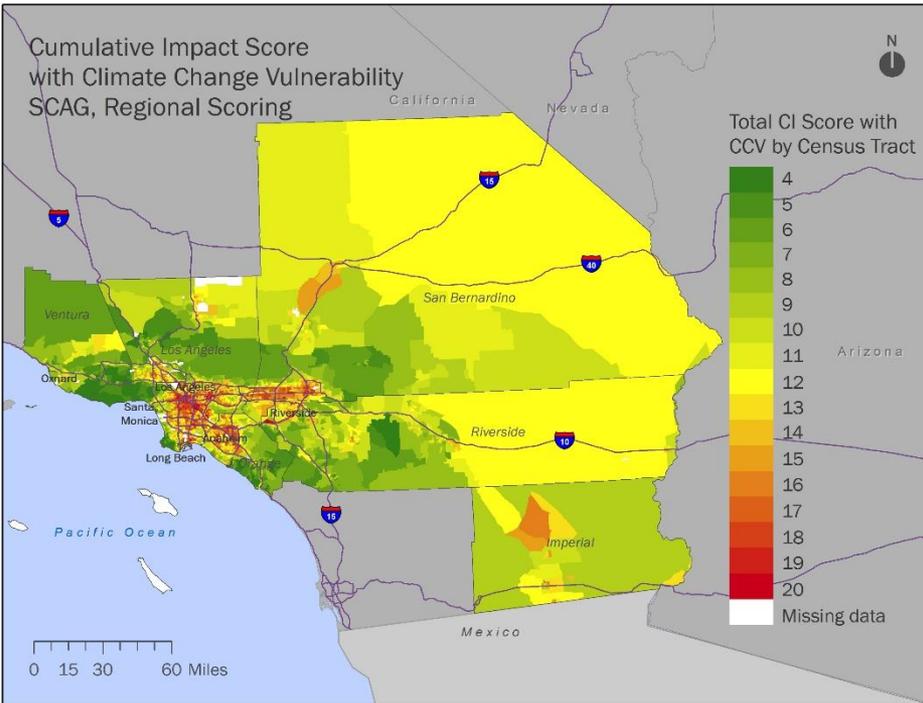
## Statewide Scoring



# EJSM: SCAG – WITH CLIMATE VULNERABILITY

## Regional Scoring

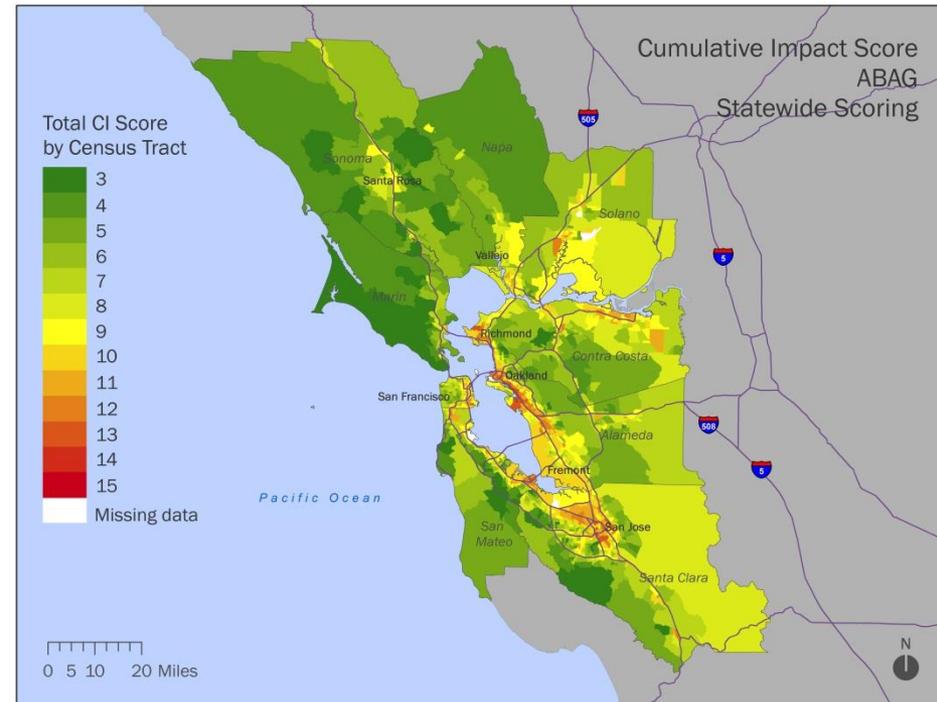
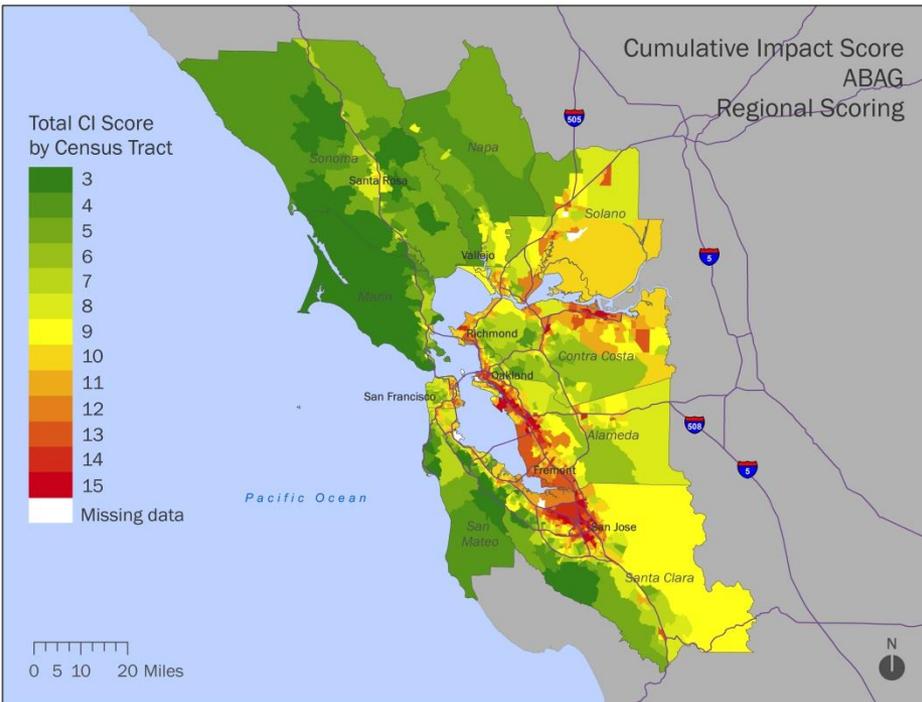
## Statewide Scoring



# EJSM: SF BAY AREA – NO CLIMATE VULNERABILITY

## Regional Scoring

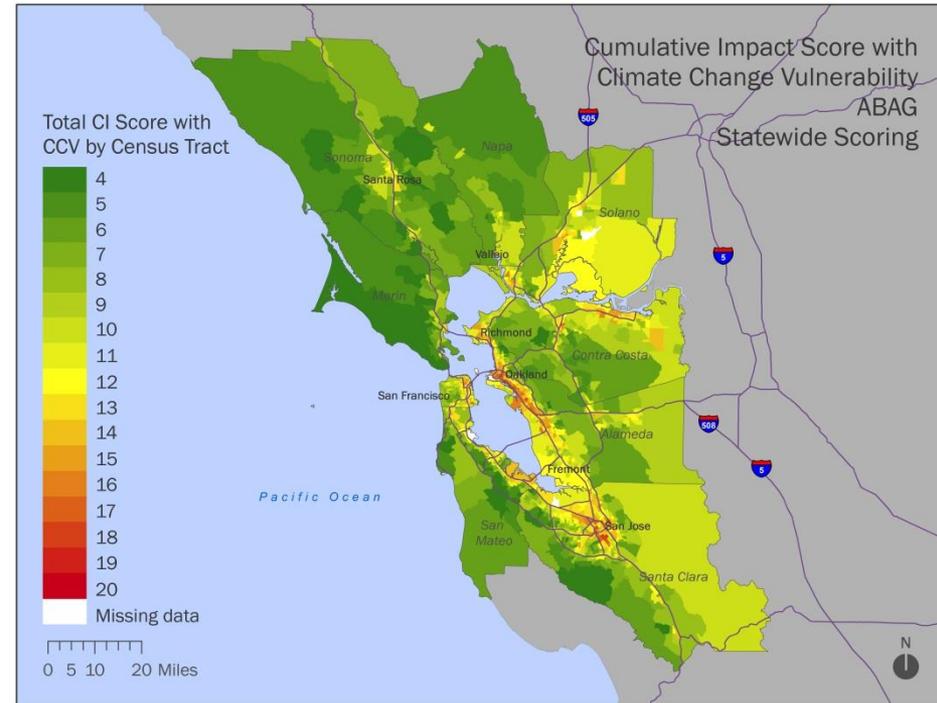
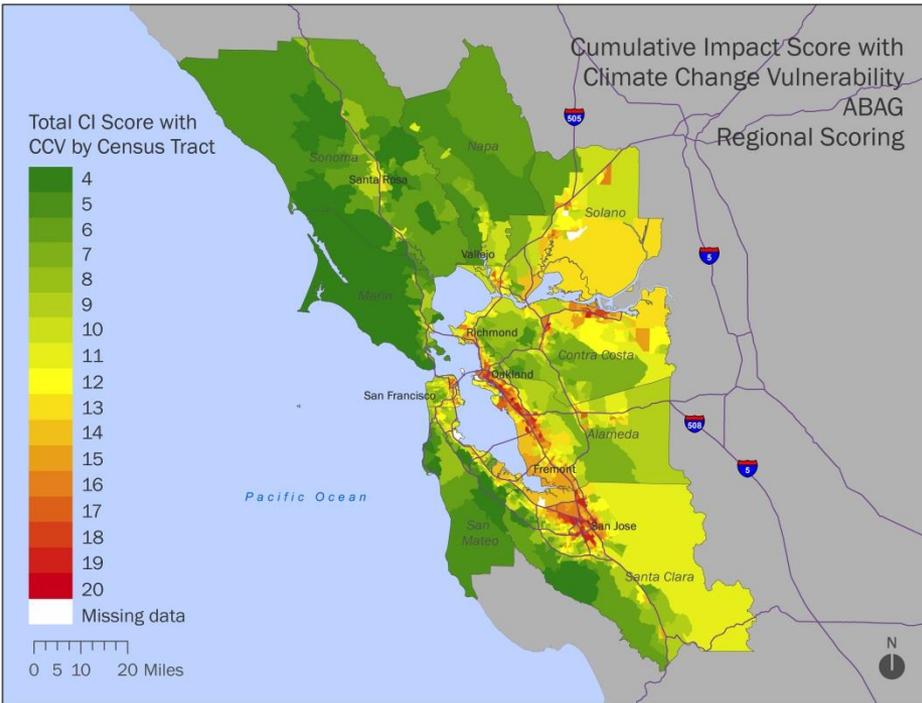
## Statewide Scoring



# EJSM: SF BAY AREA – WITH CLIMATE VULNERABILITY

## Regional Scoring

## Statewide Scoring



# CLEAN UP, GREEN UP INITIATIVE

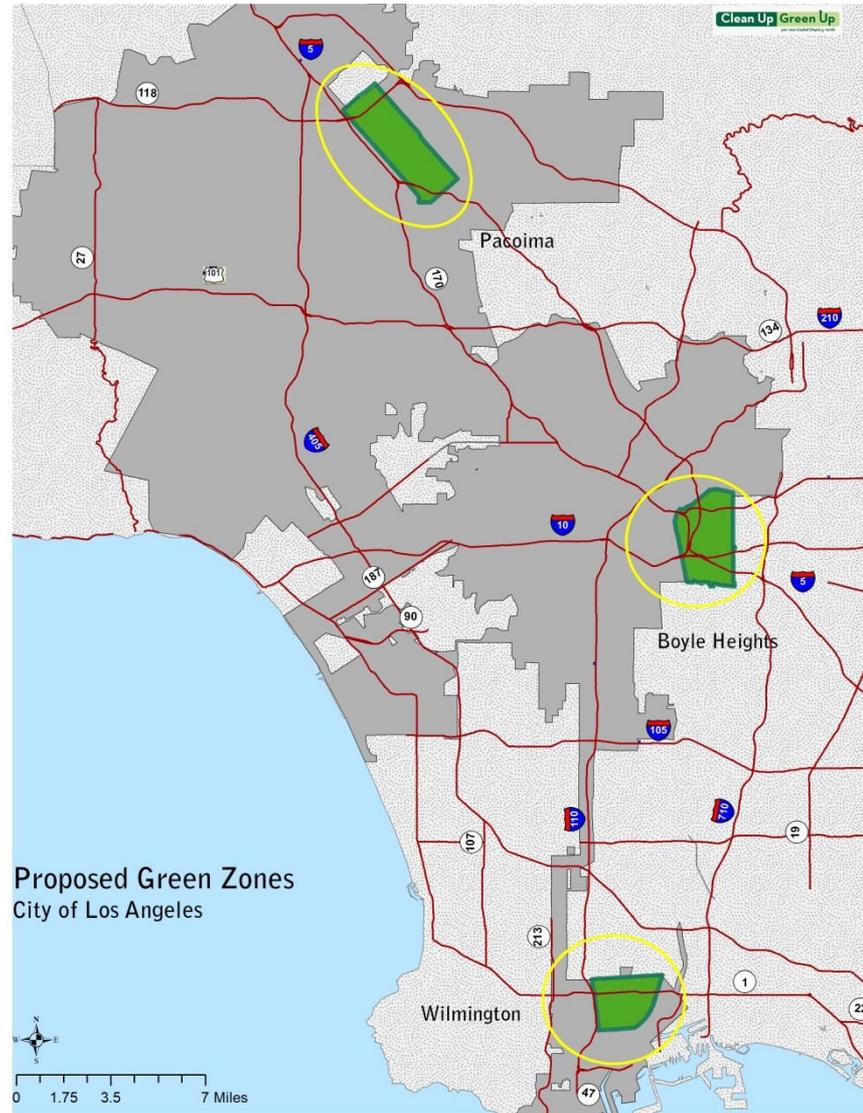
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- Campaign aims to provide special assistance to prevent new siting while also helping businesses convert to safer, cleaner processes
- EJSM helped identify environmentally overburdened and socially vulnerable communities
- Researchers have also trained and collaborated with community on data gathering, analysis, and presentation



# CLEAN UP, GREEN UP INITIATIVE

Creates pilot “Green Zones” in three target communities



# LOOKING FORWARD

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## RECOMMENDATION 4: TARGET HIGH-PRIORITY SECTORS & FACILITIES

Priority for carbon emissions reductions should be assigned to industrial sectors & facilities that pose high co-pollutant burdens and have disproportionate impacts on minorities and low-income communities. Policy should ensure that emissions reductions in high-priority sectors and facilities equal or exceed the average reductions achieved by the policy as a whole.



# LOOKING FORWARD

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## RECOMMENDATION 5: TRACK COMMUNITY BENEFIT FUNDS

Part of the carbon rent generated by price-based climate-policy instruments is being devoted to public investments to support environmental and public-health improvements in disadvantaged communities; tracking is key.



# LOOKING FORWARD

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## RECOMMENDATION 6: DEVELOP NEW METRICS FOR PROGRESS

As state increasingly turns its attention to reducing VMT, needs to pay attention to co-pollutant issue as well as potential side effect of compact development, including concentrations of emissions and unintended displacement from transit-oriented development.





## RECOMMENDATION 7: ENSURE EQUITY IN NEW OPPORTUNITIES

Work to make sure that both location of projects and employment and training opportunities reflect workforce of future and bring benefits to local levels.



FOR MORE . . .

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**USC Dornsife**  
*Program for Environmental  
and Regional Equity*

**USC Dornsife**  
*Center for the Study of  
Immigrant Integration*



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