



**Local Agency
Formation Commission
of Santa Clara County**
777 North First Street
Suite 410
San Jose, CA 95112
SantaClaraLAFCO.org

Commissioners
Sylvia Arenas
Jim Beall
Rosemary Kamei
Yoriko Kishimoto
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Terry Trumbull
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Pamela Campos
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Betty Duong
Zach Hilton
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Executive Officer
Neelima Palacherla

**LAFCO ENVIRONMENTAL JUSTICE WORKSHOP
SPECIAL MEETING**

Chairperson: Rosemary Kamei ▪ Vice Chairperson: Yoriko Kishimoto

San Jose City Hall, 17th Floor, City Manager’s Conference Room (#T-1734)
200 East Santa Clara St., San Jose

APRIL 20, 2026 ▪ 9:30 AM to 2:00 PM

AGENDA

1. WELCOME & ROLL CALL **Chair Kamei**

2. WORKSHOP OVERVIEW **Facilitator**

The workshop is open to the public and designed as a working session for commissioners.

No action will be taken at this workshop, instead input will be obtained on developing a vision and guiding principles for integrating an environmental justice lens in LAFCO’s work, which will be presented to the Commission for their consideration at a future regular LAFCO meeting.

3. LAFCO LAW AND ACTIVITIES RELATED TO ENVIRONMENTAL JUSTICE **Counsel/Staff**

4. PRESENTATION ON PLAN BAY AREA 2050+ **Dave Vautin,
MTC-ABAG**

Overview of MTC-ABAG’s Plan Bay Area 2050+, including the equity component of the Plan and how the Plan overlaps with LAFCO’s mission to curb sprawl, preserve agricultural and open space, and encourage efficient delivery of services.

5. PRESENTATION ON ENVIRONMENTAL JUSTICE: LESSONS FROM THE FIELD	Dr. Khalid Osman, Stanford University
A look at the roots of environmental justice issues in water/sanitation systems and highlighting lessons learned from his work in disadvantaged communities.	
6. DEFINING DISADVANTAGED COMMUNITIES	Facilitator
There are different definitions for disadvantaged communities. Discussion on which elements of these different definitions are important for Santa Clara LAFCO.	
7. BREAK & LUNCH (15 minutes)	
8. ENVIRONMENTAL JUSTICE SCAN OF SANTA CLARA COUNTY	Facilitator
The nature and extent of environmental justice issues in Santa Clara County.	
9. LAFCO ENVIRONMENTAL JUSTICE VISION AND GUIDING PRINCIPLES	Facilitator/ Commissioners
Exercises and discussion to create a rough draft vision and guiding principles for LAFCO's role in environmental justice, based on LAFCO authority and work.	
10. CONCLUSION AND NEXT STEPS	Facilitator/Staff
11. ADJOURN	Chair Kamei

NOTICE TO THE PUBLIC

- Pursuant to Government Code §84308, no LAFCO commissioner shall accept, solicit, or direct a contribution of more than \$500 from any party, or a party's agent; or any participant or the participant's agent if the commission knows or has reason to know that the participant has a financial interest, while a LAFCO proceeding is pending, and for 12 months following the date a final decision is rendered by LAFCO. Prior to rendering a decision on a LAFCO proceeding, any LAFCO commissioner who received a contribution of more than \$500 within the preceding 12 months from a party or participant shall disclose that fact on the record of the proceeding. If a commissioner receives a contribution which would otherwise require disqualification returns the contribution within 30 days from the time the commissioner knows or should have known, about the contribution and the proceeding, the commissioner shall be permitted to participate in the proceeding. A party to a LAFCO proceeding shall disclose on the record of the proceeding

any contribution of more than \$500 within the preceding 12 months by the party, or the party's agent, to a LAFCO commissioner. For forms, visit the LAFCO website at www.santaclaralafco.org. No party, or the party's agent and no participant, or the participant's agent, shall make a contribution of more than \$500 to any LAFCO commissioner during the proceeding and for 12 months following the date a final decision is rendered by LAFCO.

- Pursuant to Government Code Sections 56100.1, 56300, 56700.1, 57009 and 81000 et seq., any person or combination of persons who directly or indirectly contribute(s) a total of \$1,000 or more or expend(s) a total of \$1,000 or more in support of or in opposition to specified LAFCO proposals or proceedings, which generally include proposed reorganizations or changes of organization, may be required to comply with the disclosure requirements of the Political Reform Act (See also, Section 84250 et seq.). These requirements contain provisions for making disclosures of contributions and expenditures at specified intervals. More information on the scope of the required disclosures is available at the website of the FPPC: www.fppc.ca.gov. Questions regarding FPPC material, including FPPC forms, should be directed to the FPPC's advice line at 1-866-ASK-FPPC (1-866-275- 3772).
- Pursuant to Government Code §56300(c), LAFCO adopted lobbying disclosure requirements which require that any person or entity lobbying the Commission or Executive Officer in regard to an application before LAFCO must file a declaration prior to the hearing on the LAFCO application or at the time of the hearing if that is the initial contact. In addition to submitting a declaration, any lobbyist speaking at the LAFCO hearing must so identify themselves as lobbyists and identify on the record the name of the person or entity making payment to them. Additionally, every applicant shall file a declaration under penalty of perjury listing all lobbyists that they have hired to influence the action taken by LAFCO on their application. For forms, visit the LAFCO website at www.santaclaralafco.org.
- Any disclosable public records related to an open session item on the agenda and distributed to all or a majority of the Commissioners less than 72 hours prior to that meeting are available for public inspection at the LAFCO Office, 777 North First Street, Suite 410, San Jose, California, during normal business hours. (Government Code §54957.5.)
- In compliance with the Americans with Disabilities Act, those requiring accommodation for this meeting should notify the LAFCO Clerk 24 hours prior to meeting at (408) 993- 4709.

FOR THE GOOD
OF THE WHOLE

SANTA
CLARA
LAFCO

Local Agency Formation Commission
of Santa Clara County

ENVIRONMENTAL JUSTICE WORKSHOP

APRIL 20, 2026

orderly growth

**efficient delivery
of services**

**resource
conservation**

WHAT DOES LAFCO DO?

OUR MISSION

Promote sustainable growth and good governance in Santa Clara County by:

- » Preserving agricultural lands and open space;
- » Curbing urban sprawl;
- » Encouraging efficient delivery of services;
- » Exploring and facilitating regional opportunities for fiscal sustainability; and
- » Promoting public accountability and transparency of local agencies.



REGULATES BOUNDARIES AND SERVICE EXTENSIONS

- » City/District boundary changes:
 - Annexations & detachments
 - Consolidations & mergers
 - Incorporation of new cities
 - Formation of new districts
 - Dissolution of districts
 - Disincorporation of cities
- » Urban Service Area and Sphere of Influence Amendments
- » Service extensions outside an agency's boundaries
- » Exercise of new or different functions or services or divestiture of powers for special districts



What does LAFCO do?

PLANS FOR SUSTAINABLE GROWTH AND GOOD GOVERNANCE

- » Conducts service reviews to identify and address governance and service issues
- » Conducts special studies
- » Reviews and updates Spheres of Influence every 5 years, as necessary
- » Facilitates collaborative discussions with local agencies re. logical and orderly boundaries and services
- » Serves as an information resource for local agencies and the general public





LAFCO LAW RELATED TO ENVIRONMENTAL JUSTICE

ENVIRONMENTAL JUSTICE IS A FACTOR THAT LAFCO MUST CONSIDER IN A PROPOSAL REVIEW:

"The extent to which the proposal will promote environmental justice. As used in this subdivision, 'environmental justice' means the **fair treatment** and **meaningful involvement** of people of **all races, cultures, incomes, and national origins**, with respect to the location of public facilities and the provision of public services, to ensure a healthy environment for all people such that the effects of pollution are not disproportionately borne by any particular populations or communities." GC §56668(p)

DISADVANTAGED UNINCORPORATED COMMUNITIES (DUCs) DEFINED

A DUC is an inhabited territory constituting all or part of a disadvantaged community with an annual median household income that is less than 80% of the statewide median household income (i.e., less than \$60,188 in 2021). GC §56033.5

2023 COUNTYWIDE FIRE SERVICE REVIEW

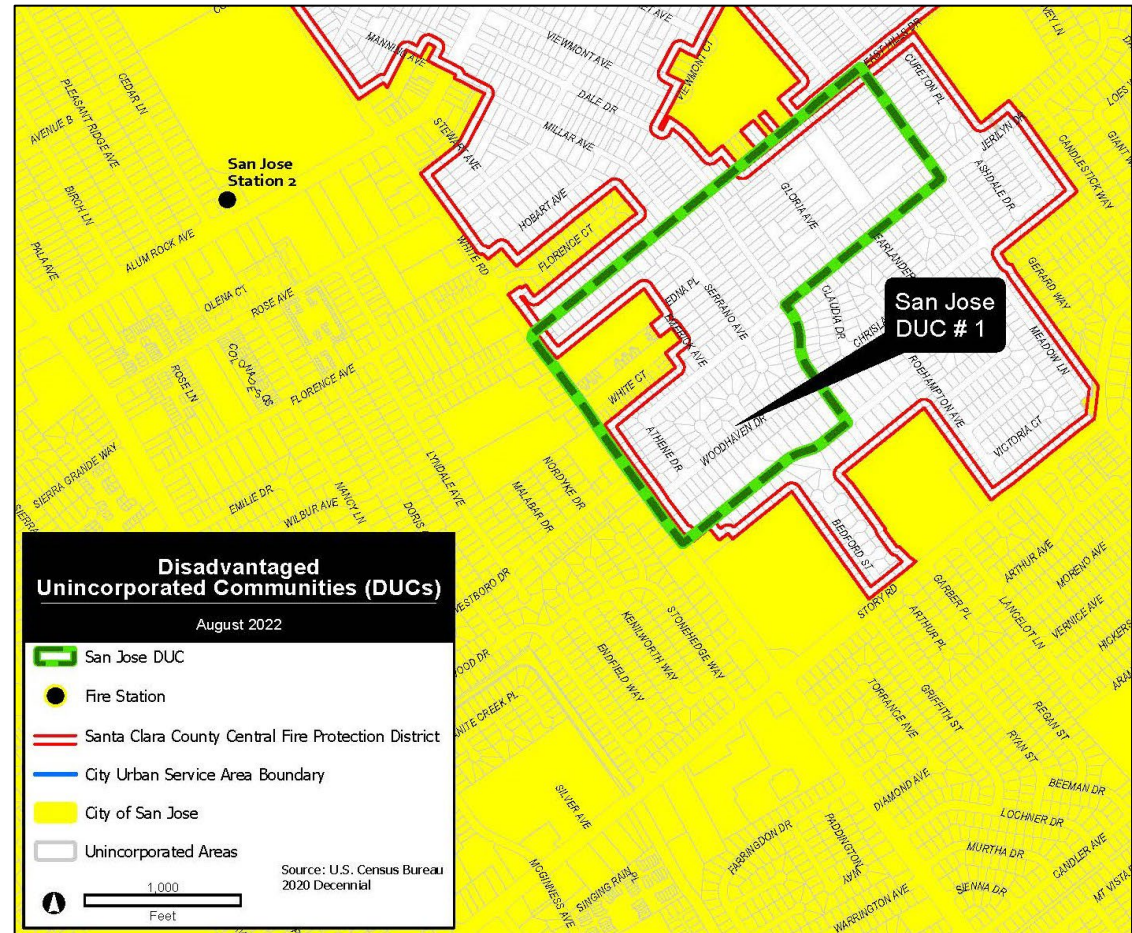
San Jose DUC #1

Census Block Group: 5041.02.3

Median Household Income: \$54,917

Population: 1,656 persons

Served by San Jose via CCFD Zone 1 contract



DUCs MUST BE ANALYZED IN SERVICE REVIEWS & SPHERE OF INFLUENCE UPDATES

FOR SERVICE REVIEWS:

- » Identify the location and characteristics of DUCs within or contiguous to the SOI
- » Make written determinations on the present and planned capacity of public facilities, adequacy of public services, and infrastructure needs or deficiencies related to sewers, water, and structural fire protection in DUCs within or contiguous to the SOI *GC § 56430*

FOR SPHERE OF INFLUENCE UPDATES OF AGENCIES PROVIDING SEWER, WATER, OR STRUCTURAL FIRE PROTECTION:

- » Make written determinations on the present and probable need for public facilities and services for DUCs *GC § 56425*

DUCS MUST BE CONSIDERED FOR ANNEXATION WHEN THEY ARE CONTIGUOUS TO AN AREA PROPOSED FOR CITY ANNEXATION

Except for authorized streamlined island annexations, and except under certain circumstances, a commission shall not approve an annexation to a city of any territory greater than 10 acres, or smaller as determined by commission policy, where there exists a DUC that is contiguous to the area of proposed annexation, unless an application to annex the DUC to the subject city has been filed.

GC §56375(a)(8)



RECENT ENVIRONMENTAL JUSTICE RELATED ACTIVITIES

LOCAL POLICIES RELATED TO ENVIRONMENTAL JUSTICE

Adopted as part of 2024 Comprehensive Review and Update of LAFCO Policies

- » Adopted local policy adding environmental justice as a factor to consider in evaluating USA amendment proposals (mirrors state law) (*Urban Service Area Policies 3.3.4.13*)
- » Adopted local policies to give special consideration to proposals for agricultural worker housing that meet certain conditions, recognizing that agricultural workers are an essential component of Santa Clara County's agricultural industry. [*Urban Service Area Policies 3.3.4.15.(a) and Out-Of-Agency Service by Contract Policies 3.5.3.3.(b)(i)*]

SPANISH LANGUAGE SERVICES AT COMMUNITY MEETINGS: 2023 COUNTYWIDE FIRE SERVICE REVIEW

- » Community meeting flyers/post cards translated to Spanish
- » Provided Spanish simultaneous interpreter services at the community meetings
- » Administered the Community Survey on fire services in Spanish

INVITACIÓN...

ENCUESTA SOBRE LOS SERVICIOS DE BOMBEROS
A LAFCO le gustaría conocer su opinión

Complete esta breve encuesta para evaluar los servicios de bomberos y determinar el nivel de preparación para hacer frente a incendios forestales. Escanee el código QR que aparece a continuación o visite:
<https://bit.ly/FireSurvey-enEspanol>

SANTA CLARA LAFCO
SantaClaraLAFCO.org
Local Agency Formation Commission of Santa Clara County

REUNIÓN COMUNITARIA SOBRE SERVICIOS DE BOMBEROS

La Comisión de la Formación de Agencias Locales (Local Agency Formation Commission, LAFCO) del condado de Santa Clara está llevando a cabo una **Revisión del servicio de bomberos en todo el condado**. Como parte de su revisión exhaustiva de los servicios médicos de emergencia y de bomberos del condado de Santa Clara, LAFCO ha organizado una reunión comunitaria virtual. Esta es una oportunidad para que los miembros del público y otras partes interesadas puedan hacer lo siguiente: :

- Obtener más información sobre la Revisión del servicio de bomberos del condado
- Dar su opinión sobre el servicio de bomberos y el servicio médico de emergencia en su comunidad
- Escuchar a los bomberos locales hablar sobre la prevención de incendios y la preparación para hacer frente a incendios forestales

REUNIÓN COMUNITARIA N.º 1 (por Zoom)

Para las comunidades del sur del condado de Santa Clara: Morgan Hill y Gilroy, y las áreas no incorporadas del sur de San José, lo que incluye San Martín, el área sureste de la cordillera del Diablo y el área suroeste de las montañas de Santa Cruz

Fecha: **17 de agosto de 2021**
Hora: **De 6:00 p. m. a 7:00 p. m.**
Enlace de Zoom: **<https://bit.ly/FireMeeting1>**
Teléfono: **(669) 900-6833** ID de la reunión: **99846011430**

Alojado con/En asociación con:

2024 CALAFCO CONFERENCE SESSION ON ENVIRONMENTAL JUSTICE

EQUITY IN ACTION:

LAFCO'S ROLE IN ENVIRONMENTAL JUSTICE

2024 CALAFCO CONFERENCE
Tenaya Lodge, Fish Camp

October 16, 2024

Moderator

SYLVIA ARENAS, Vice Chair, Santa Clara LAFCO; Supervisor, County of Santa Clara

Speakers

- **BETH ALTSHULER MUÑOZ**, President & Founder, BAM Consulting, Inc.
- **KEENE SIMONDS**, Executive Officer San Diego LAFCO
- **PHOEBE SEATON**, Co-Founder & Co-Exec. Director, Leadership Counsel for Justice and Accountability





PLAN BAY AREA 2050+



Plan Bay Area 2050+: Overview

Dave Vautin, Regional Planning Director – MTC-ABAG
Santa Clara LAFCO Workshop
April 20, 2026

Today: Presentation Overview

❑ Background

- MTC and ABAG
- Plan Bay Area purpose
- Regulatory requirements

❑ Plan Bay Area 2050+

- Overview
- Growth geographies
- Relevant strategies
- Conservation & equity

❑ Up Next: Plan Bay Area 2060



Photo credit: Karl Nielsen

Background: MTC and ABAG



Metropolitan Transportation Commission (MTC)

Federally-designated metropolitan planning organization (MPO) and State-designated regional transportation planning agency (RTPA) for the nine-county San Francisco Bay Area

Chair: Sue Noack, Pleasant Hill

Vice Chair: Stephanie Moulton-Peters, Marin County

Related Entities: BAHFA, BAIFA, BATA, SAFE



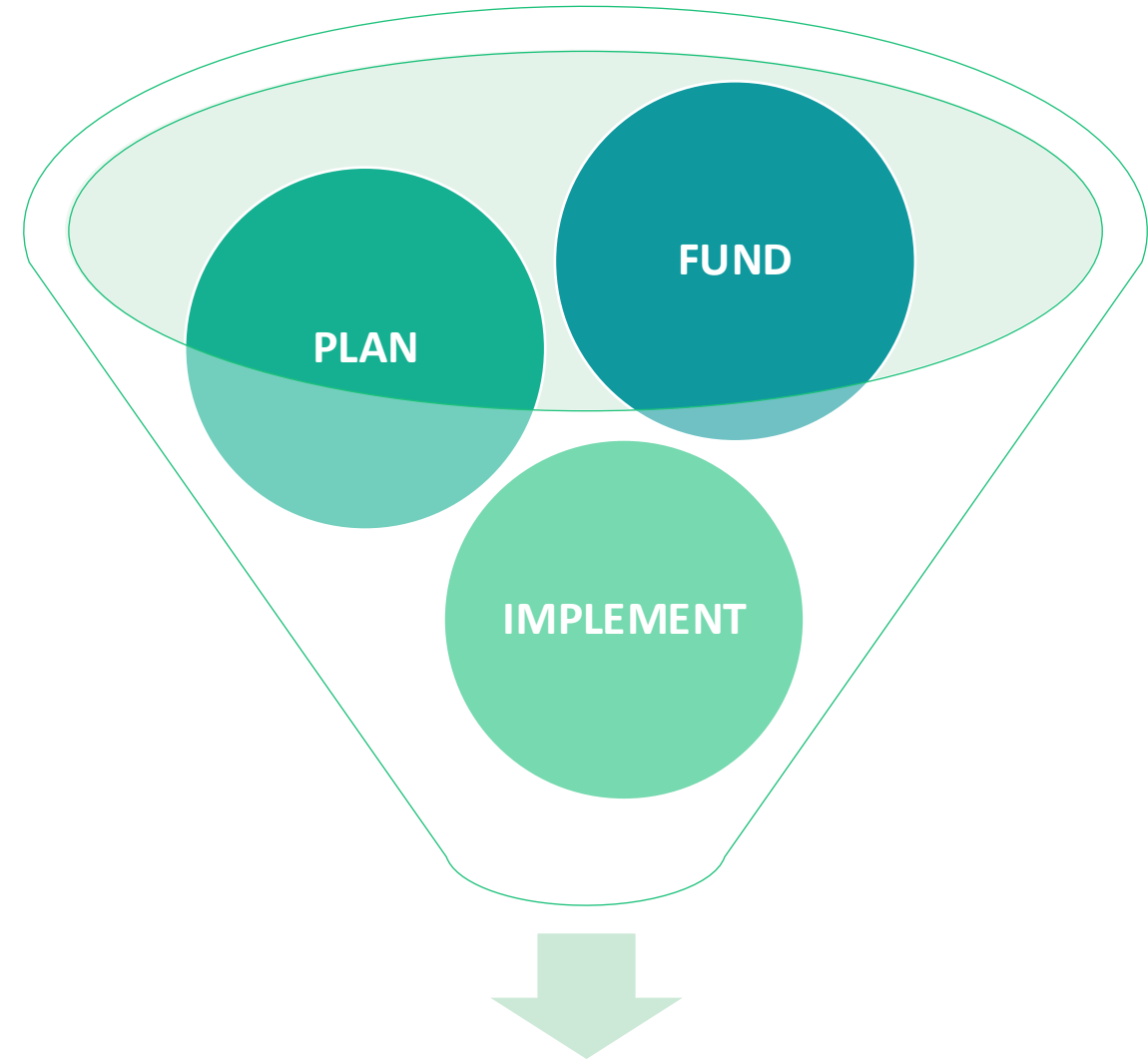
Association of Bay Area Governments (ABAG)

Member-supported council of governments (COG) with statutory responsibilities related to housing and land use, as well as additional environmental programs

President: Belia Ramos, Napa County

Vice President: Carlos Romero, East Palo Alto

Related Entities: BayREN, SFEP



Plan Bay Area

Background: Plan Bay Area Purpose



Photo credit: Karl Nielsen

- ❑ **Plan Bay Area is the Bay Area’s long-range plan** and serves as the federal Regional Transportation Plan (RTP) and state Sustainable Communities Strategy (SCS).
- ❑ **Integrates transportation, land use, and the environment**, focusing growth near transit to foster communities that are complete, connected, affordable, and resilient.
- ❑ **Sets regional priorities – not mandates**, offering a vision and framework while respecting local land use authority.
- ❑ **Evolves with emerging needs**, delivering results through strong partnerships and local leadership.

Background: Plan Bay Area Requirements

Primary State/Federal Regulatory Requirements by Topic Area

<i>Topic Area</i>	<i>Requirement</i>
Timing & Coordination	<ul style="list-style-type: none">✓ Update every four years.✓ Coordinate regional transportation, housing, and land use.
Community Engagement	<ul style="list-style-type: none">✓ Engage community through a robust, collaborative process.
Transportation	<ul style="list-style-type: none">✓ Identify transportation network to serve regional needs.✓ Produce fiscally constrained Transportation Project List.
Housing	<ul style="list-style-type: none">✓ Accommodate future growth across all economic segments.
Environment	<ul style="list-style-type: none">✓ Meet per capita greenhouse gas reduction target.✓ Achieve air quality goals under the Clean Air Act.

Plan Bay Area **does not:**

- Override local land use authority
- Allocate money to projects or strategies
- Impose mandates
- Propose specific legislation

Note: Several additional requirements of the planning process are not shown.

Background: From Long-Range Plans to Reality

Since the adoption of Senate Bill 375 (2008), the region has made notable progress toward long-range planning priorities – increasingly building new homes near high-quality transit in locally-nominated Priority Development Areas (PDAs) while delivering a suite of capital projects that advance mobility and environmental goals.

A Trend Toward Focused Growth

58% New Bay Area homes in PDAs, 2010-2020¹

66% New Bay Area homes in PDAs, 2018-2023¹

¹ California Department of Housing & Community Development, ABAG-MTC

BART to Silicon Valley, Phase 1



Milpitas Transit Area PDA



Berryessa/North San Jose PDA



Photo: Kenneth Rodrigues & Partners

US-101 and SR-85 Express Lanes



Photo: VTA

Tilton Ranch PCA

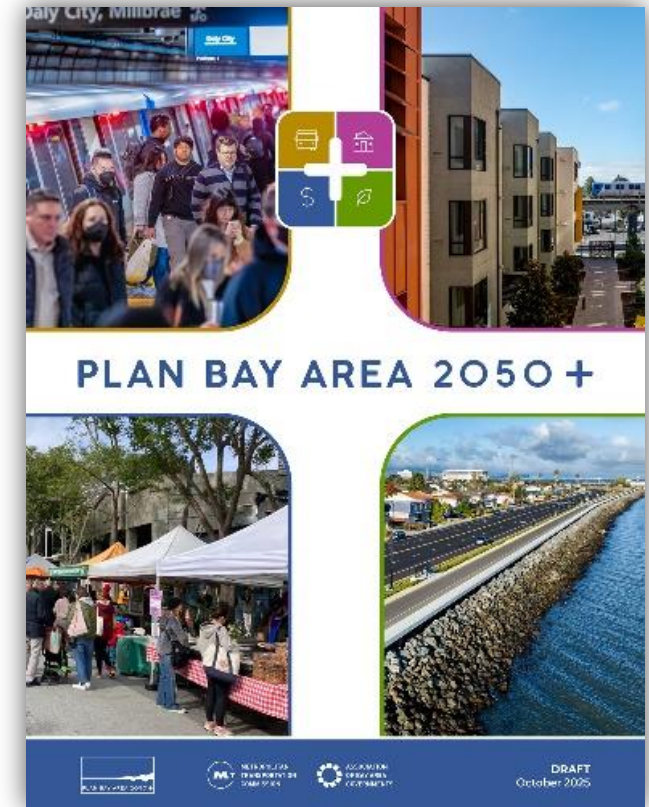


San Jose TDM & Electric Mobility



Plan Bay Area 2050+ Overview

- ❑ Plan Bay Area 2050+, adopted by MTC-ABAG in March 2026, lays out how the region can accommodate over **900,000 new households** and more than **1.3 million new jobs** by 2050.
- ❑ Structured around **4 elements, 11 themes, and 35 strategies**, together directing over **\$1.4 trillion** in investments toward Bay Area transportation, housing, economic development and environmental resilience.
- ❑ Expected to meet **2035 target of 19% per capita reduction** in vehicle emissions compared to 2005.
- ❑ Regionwide outreach solicited input from **17,500+ residents** through various forms of engagement, including 41 pop-up workshops, 3 online surveys, and partnerships with 22 community-based organizations.



Highlighted Strategies from Plan Bay Area 2050+



Photo credit: Joey Kotfica



Photo credit: Noah Berger



Photo credit: Noah Berger

Strategies H3 & EC4 – Allow a Greater Mix of Housing & Land Use Densities & Types in Growth Geographies

Focus growth near Caltrain and VTA stations, frequent transit lines and current or future BART stations with the potential to better connect homes and workplaces.

Strategy EN4 – Maintain Urban Growth Boundaries

Use urban growth boundaries to focus new development within the existing urban footprint or areas otherwise suitable for growth, as established by local jurisdictions.

Strategies EN5 & EN6 – Protect & Manage High-Value Conservation Lands & Expand Urban Greening in Communities

Strengthen biodiversity, improve landscape connectivity, and support a vibrant agricultural sector, as seen in Priority Conservation Areas like Coyote Valley.

These are some of the plan's 35 equitable and resilient strategies to tackle the region's transportation, housing, economic and environmental challenges to advance the vision of a more affordable, connected, diverse, healthy and vibrant Bay Area for all. These strategies focus on Santa Clara County specifically.

Growth Pattern: New Households & Jobs through 2050

Regional Totals Through 2050
New Households: 0.9 million
New Jobs: 1.3 million



Key Growth Statistics



Location of new households

95% in Growth Geographies



Location of new jobs

72% in Growth Geographies



Conservation

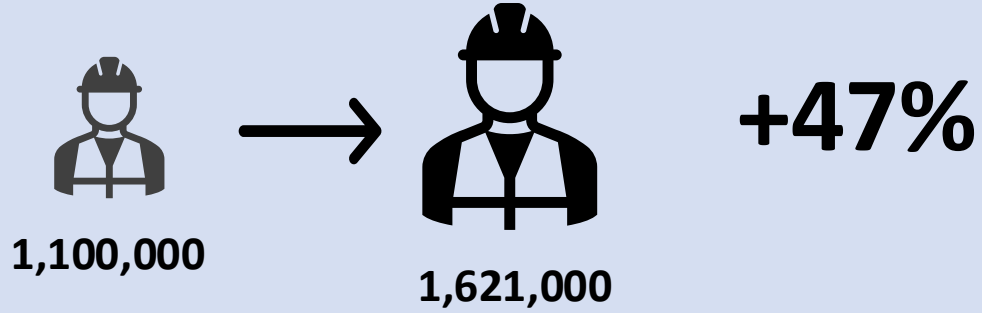
<1% of new development outside local urban growth boundaries

Growth geographies include locally nominated **Priority Development Areas (PDAs)** and **Priority Production Areas (PPAs)**, as well as regionally identified **High-Resource Areas** and **Transit-Rich Areas**.

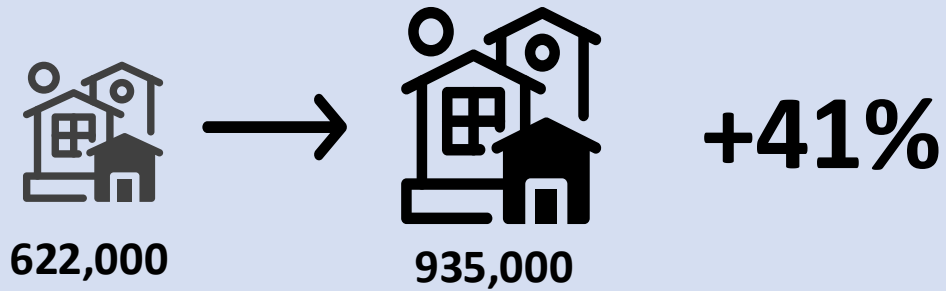
¹ Includes all regional rail extensions in Transportation Project List

Growth Pattern: Projected Growth in South Bay

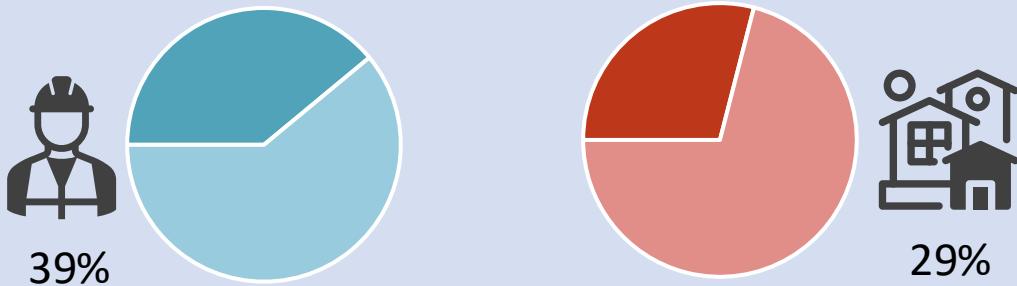
Job Growth (2023-2050)



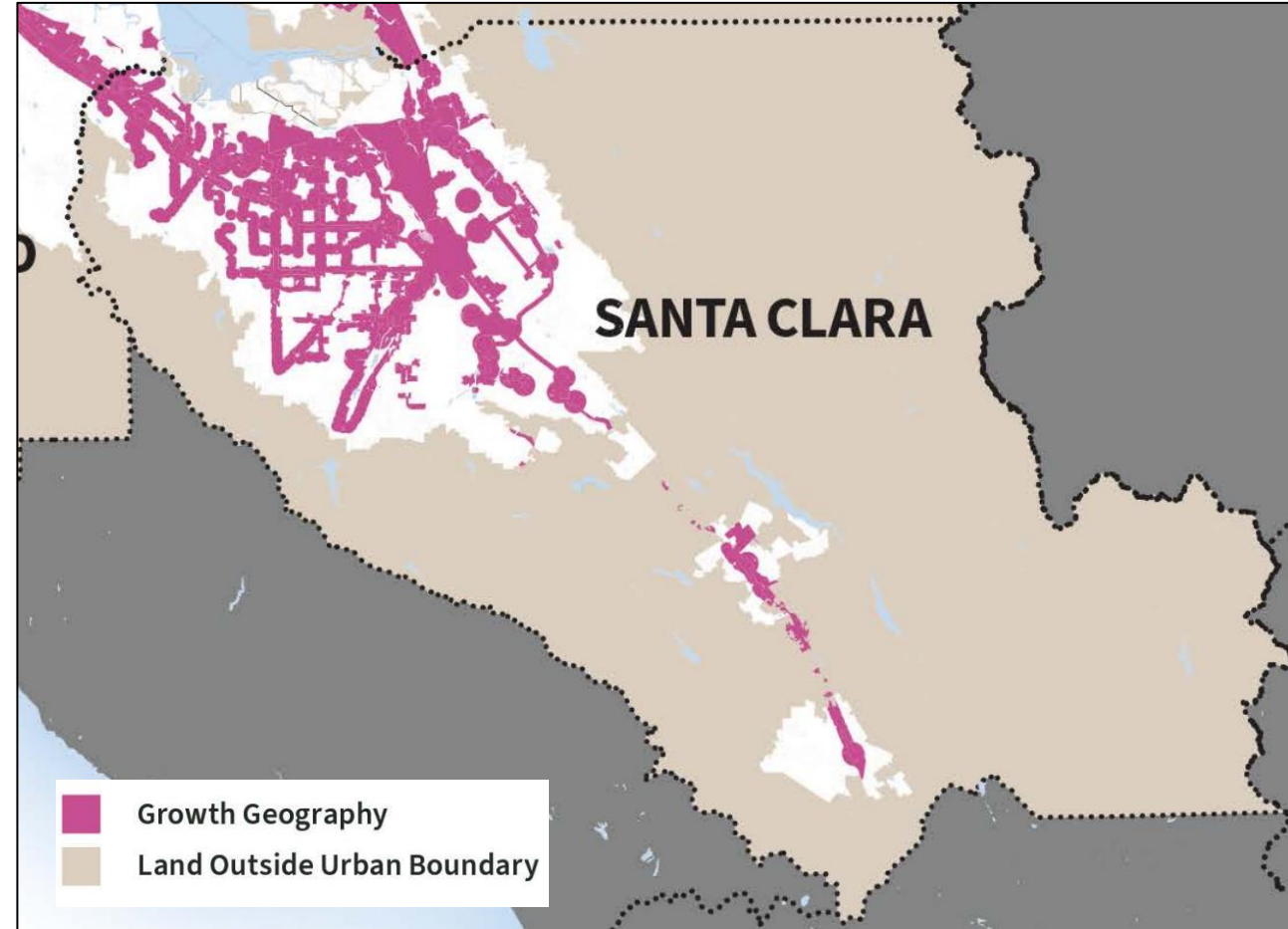
Household Growth (2023-2050)



South Bay Share of Job Growth and Household Growth



Plan Bay Area 2050+ South Bay Growth Geographies

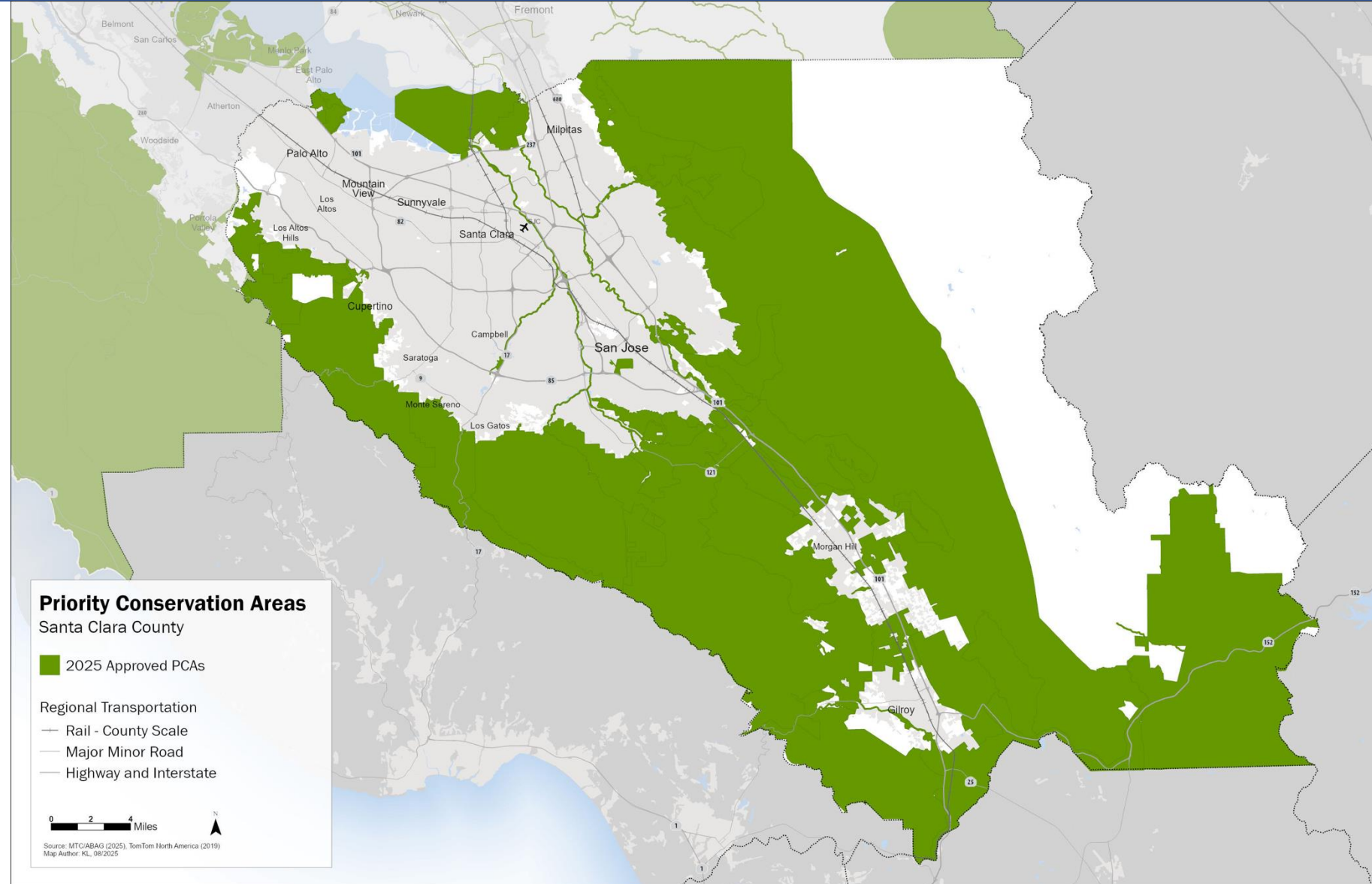


Priority Conservation Areas in Santa Clara County

Priority Conservation Areas (PCAs) are regionally significant lands with ecological, agricultural, recreational, or other conservation values, identified **to be protected and improved.**

Local jurisdictions nominate PCAs and ABAG formally adopts them. **In Santa Clara County, there are 50 PCAs,** comprising most rural lands beyond urban boundaries.

PCAs complement the plan's land use growth framework and are a key tool for **implementing open space, parks, and climate hazard mitigation strategies.**



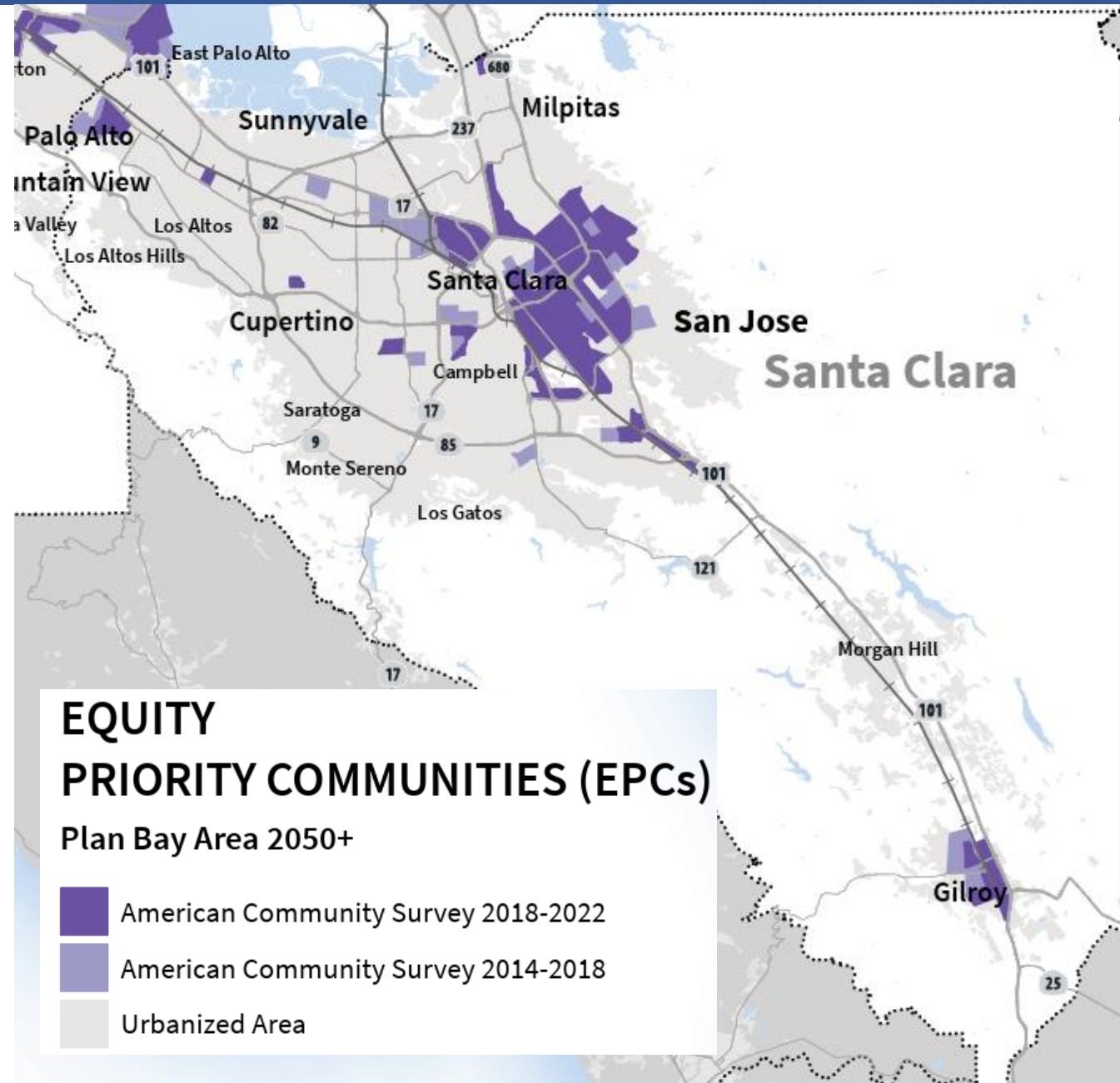
Equity Priority Communities in Santa Clara County

Equity Priority Communities (EPCs) are census tracts with high concentrations of socially and underserved populations, such as low-income households and people of color, **identified to address historical displacement and disinvestment.**

Across the region, roughly **20% of the population** live within EPCs.

The EPC designation is **used to prioritize funding and policy support** for affordable housing, improved transit, and climate resilience within these specific neighborhoods.

EPCs are the basis of the equity framework for Plan Bay Area, including federally-required **Title VI analysis** of transportation investments and a supplemental **equity analysis** to assess disparate distribution of benefits and burdens across Bay Area communities.



Performance and Equity: Key Outcomes by the Year 2050



-25% housing and transportation cost burden for all households and **-50% for low-income households**



+45% share of households **near frequent transit** and **+40% jobs accessible via transit, biking or walking**



+30% homeownership rate for low-income households



+110% share of people **commuting via transit, biking or walking**



+25% publicly accessible **open space** acres per capita



+60% per capita **Gross Regional Product**

Plan Bay Area 2050+ Implementation Plan Highlights



Photo Credit: Karl Nielsen

FUND & ADVOCATE

- ❑ Pursue near-term funding and potential ballot measure to sustain and expand affordable housing programs and respond to local needs.
- ❑ Support reforms to SB 375 and related state planning guidelines to improve cross-government collaboration toward shared climate goals.



Photo Credit: Karl Nielsen

ASSIST & COORDINATE

- ❑ Develop technical assistance that is easy to find, clearly presented, and tailored to local priorities.
- ❑ Help jurisdictions adopt stronger seismic and wildfire safety policies and programs.
- ❑ Support local jurisdictions with Housing Element implementation and prepare for the next RHNA.



Photo Credit: Karl Nielsen

PLAN & DELIVER

- ❑ Update land use framework to support local implementation and better align with regional goals & investments.
- ❑ Analyze post-COVID shifts in travel, remote work, and land use patterns.
- ❑ Build and maintain robust regional databases to support models, maps, and analytics.


PLAN BAY AREA 2050 +



ASSOCIATION OF BAY AREA GOVERNMENTS
METROPOLITAN TRANSPORTATION COMMISSION

Up Next: Plan Bay Area 2060

- Plan Bay Area 2060 will be a **major update**, synced with **RHNA Cycle 7**.
- Analysis of **existing conditions and trends** will ground the plan and set the stage for exploring **future uncertainties and external forces** through multiple growth and funding trajectories.
- **Current strategies and land use framework will be evaluated and updated** to elevate emerging planning priorities like delivering affordability, addressing homelessness, and strengthening resilience.
- The planning process will kick off in **summer 2026** with adoption anticipated in **early 2030**, with ongoing, extensive engagement and outreach with key partners and stakeholders across the region.



Environmental Justice in Water and Wastewater Services

Santa Clara LAFCO

Dr. Khalid K. Osman
Stanford University
Civil & Environmental Engineering

Dr. Khalid K. Osman



Assistant Professor, Civil and Environmental Engineering

B.S. Civil Eng. University of Portland

M.S. Civil Eng. University of Texas at Austin

Ph.D. Civil Eng. University of Texas at Austin

Email: osmank@stanford.edu

Website: osman.science

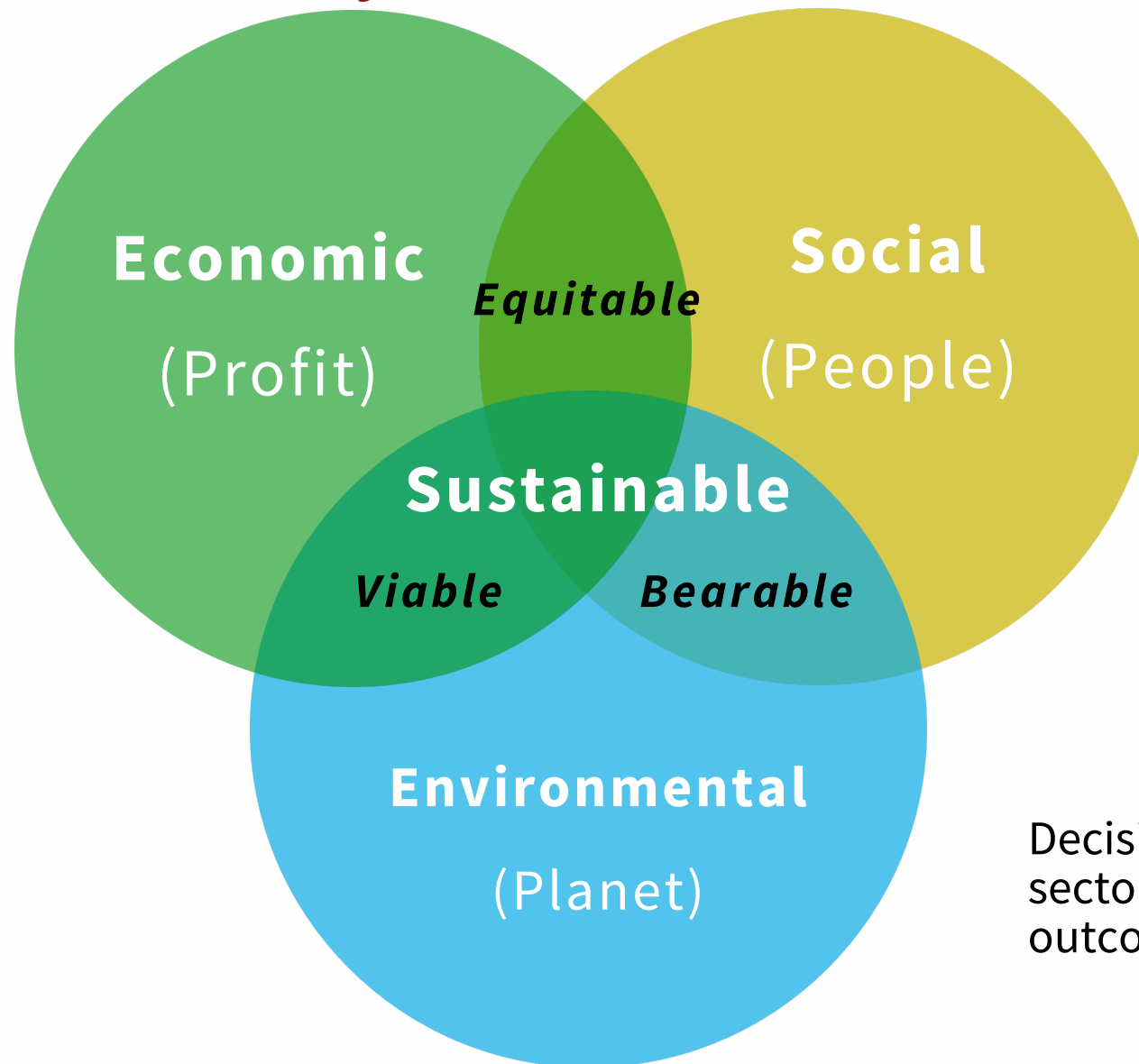
Developing data-driven solutions for integrating equity and environmental justice in the design and management of infrastructure systems.



Osman Lab

EQUITABLE INFRASTRUCTURE SOLUTIONS
FOR A SUSTAINABLE FUTURE

Understanding Sustainability



Decisions made in each sector influence sustainable outcomes.

Adapted from

(Taylor, 2020) & (EconPosts, 2023)

Profit

Economic variables dealing with the bottom line and cash flow.

.....

**Economic
(Profit)**

Equitable

Social

Sustainable

Viable

Bearable

Environmental

Planet

Environmental variables relating to natural resources, water and air quality, energy conservation and land use.



**Environmental
(Planet)**



Viable

**Economic
Sustainable**



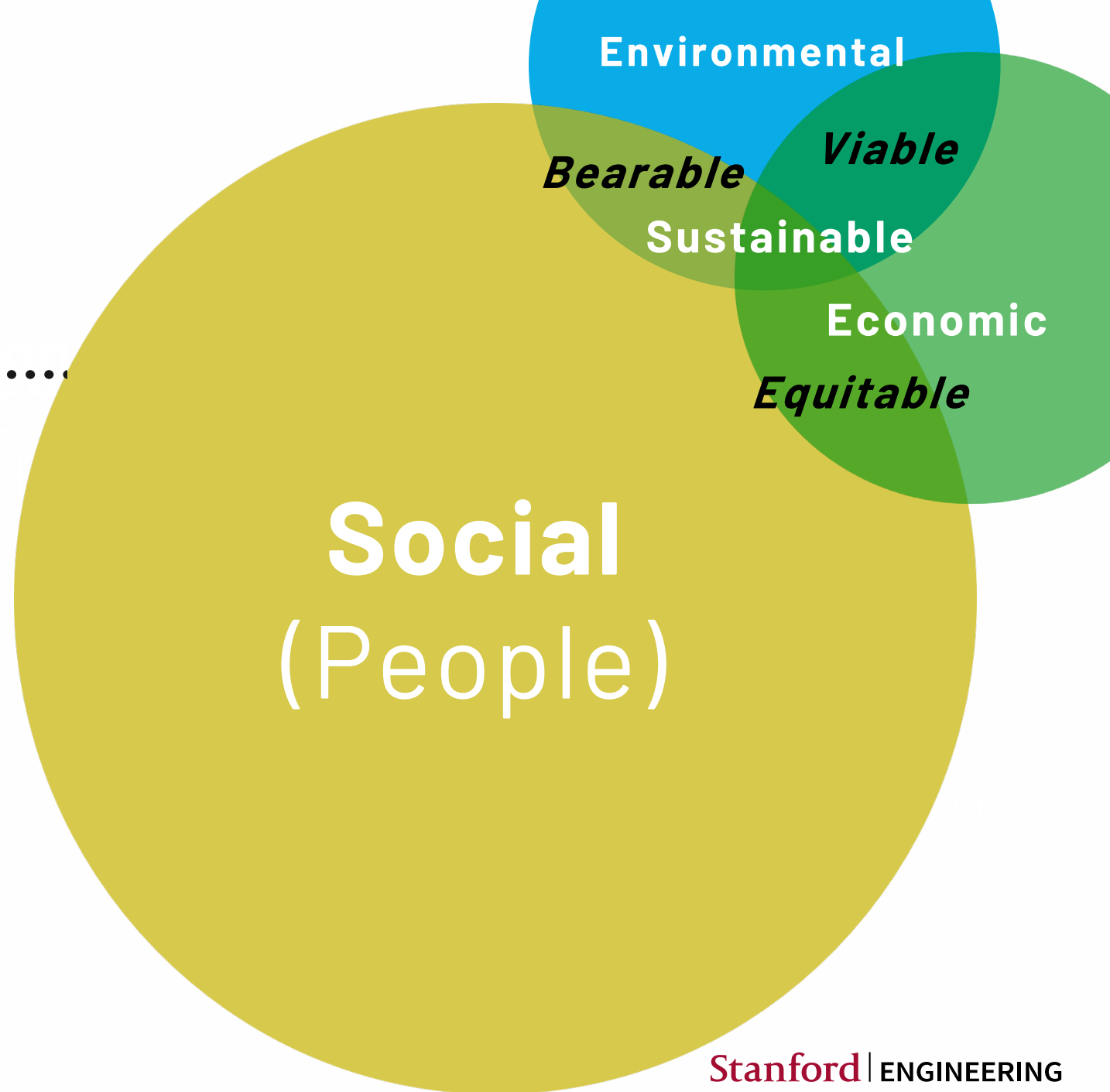
Bearable

Equitable



Social

People
Social variables dealing with community, education, equity, social resources, health, well-being, and quality of life.

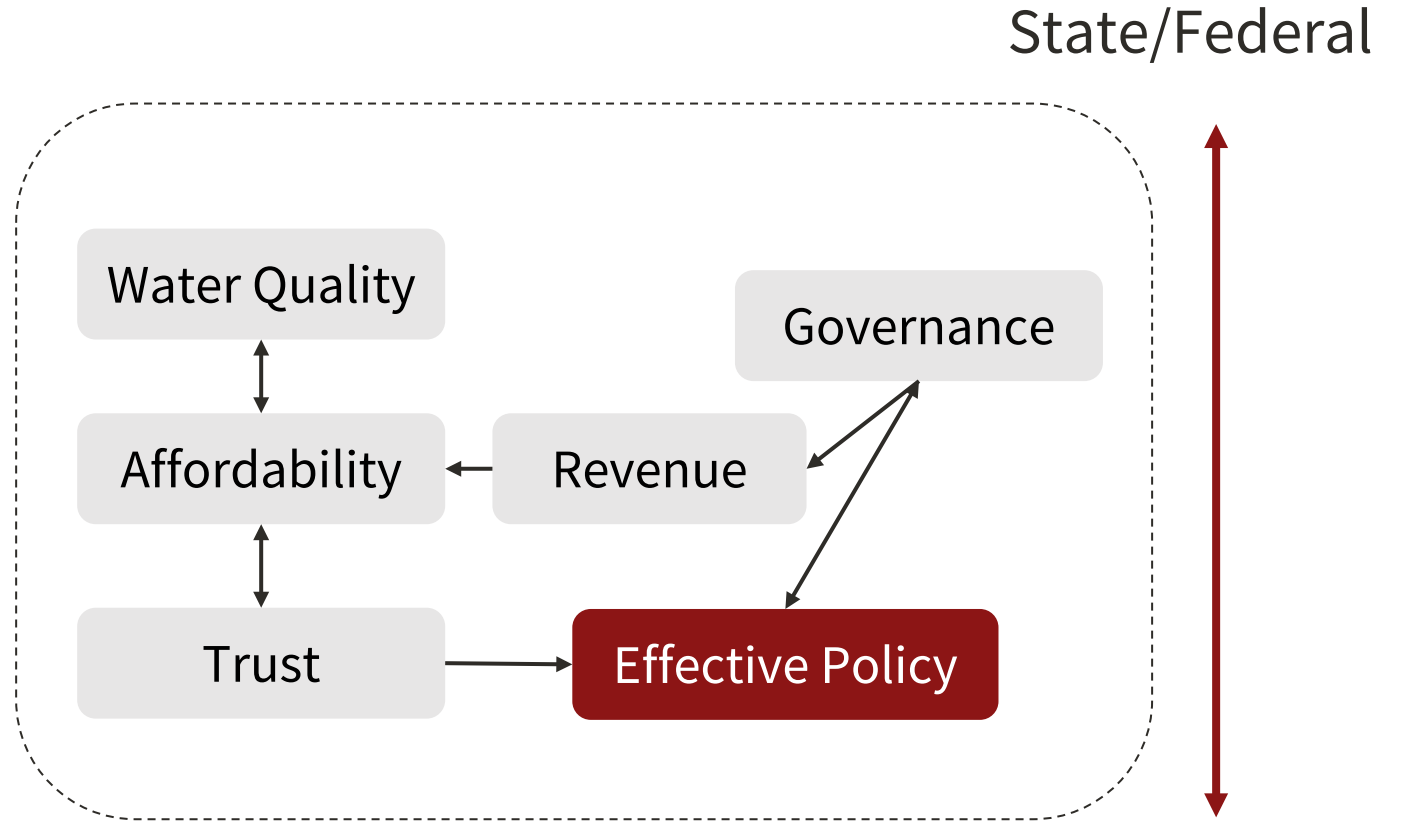


Systems Thinking in my Research

Interconnectedness

Feedback Loops

Multiple Scales

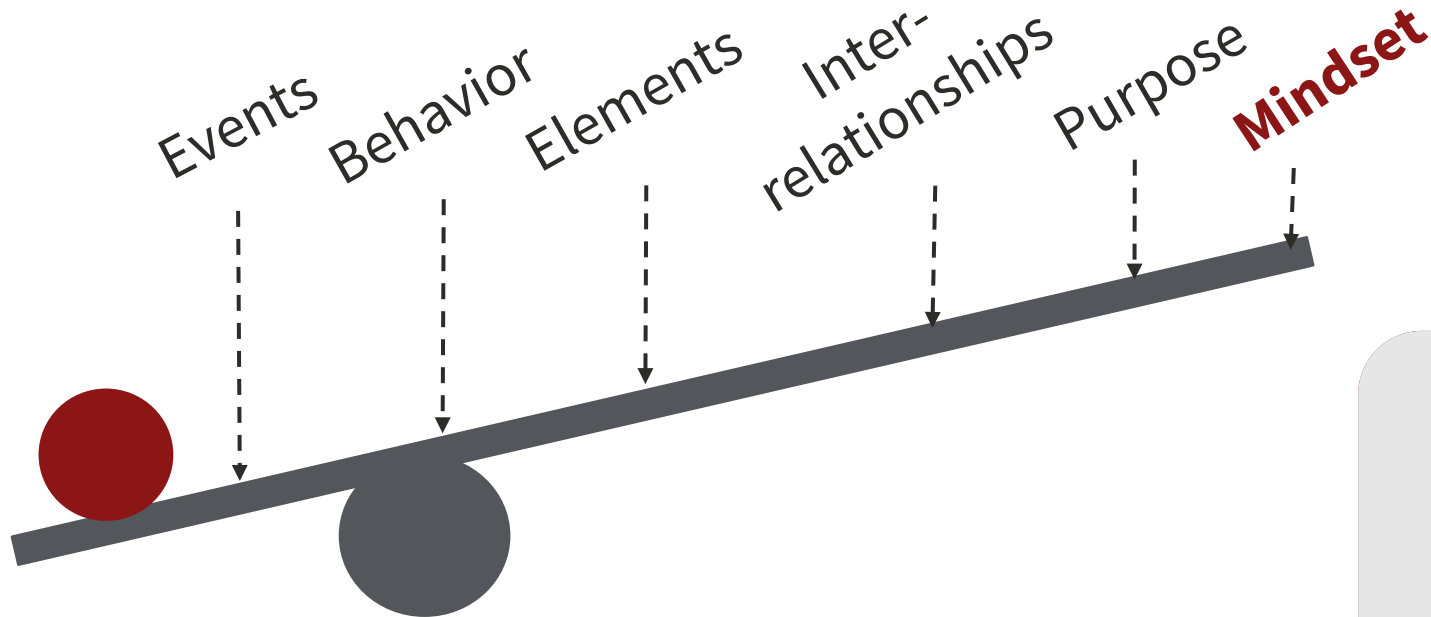


Community trust as both outcome and indicator

Sterman, 2000

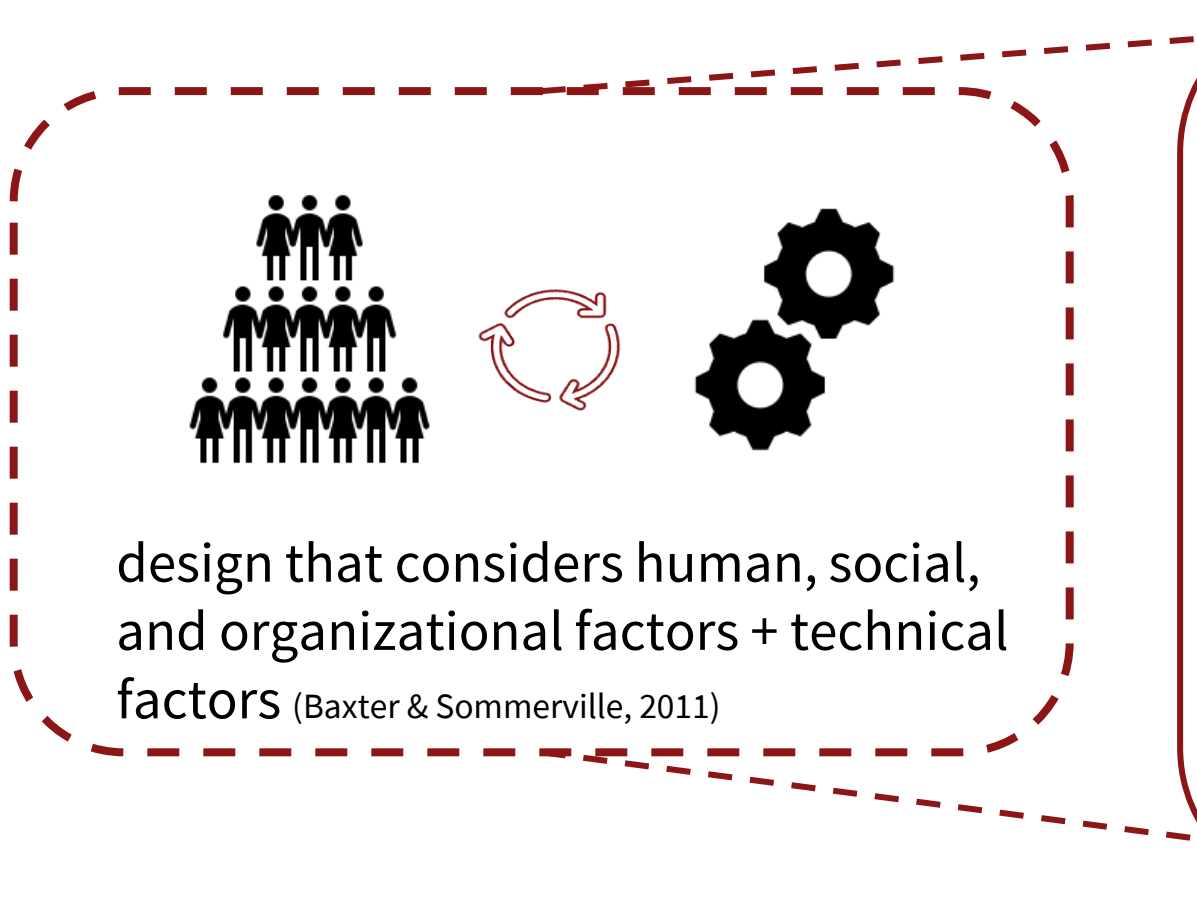
Leverage Points for Change

- Systems learning is hard– we live inside what we must also redesign



Sterman, 2000

Water Systems are Socio-Technical Systems



Inequality

Unequal access
to opportunities



Inequality

Unequal access
to opportunities



Equality?

Evenly distributed
tools and assistance



Inequality

Unequal access
to opportunities



Equality?

Evenly distributed
tools and assistance



Equity

Custom tools that
identify and address
inequality



Inequality

Unequal access
to opportunities



Equality?

Evenly distributed
tools and assistance



Equity

Custom tools that
identify and address
inequality

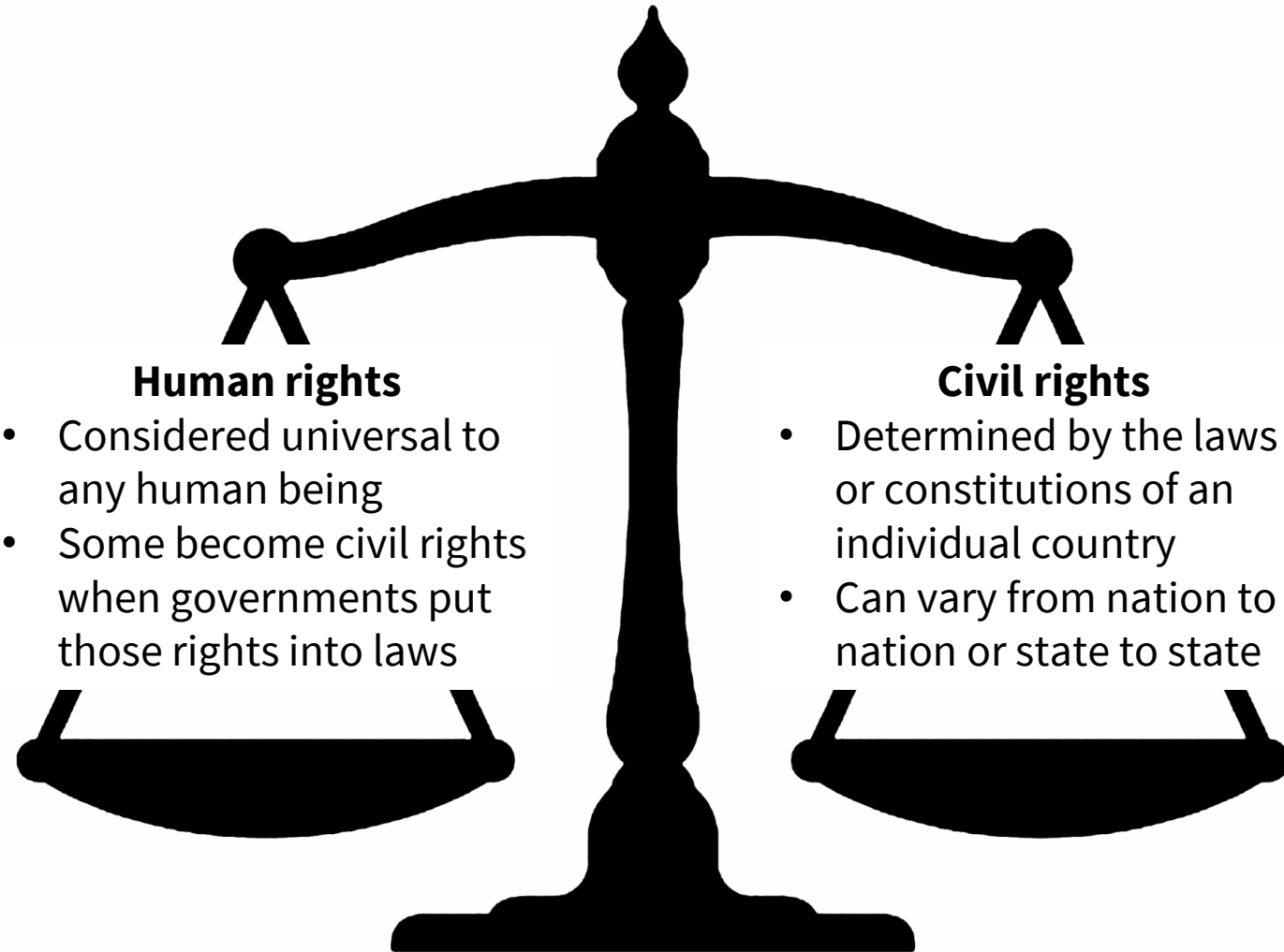


Justice

Fixing the system
to offer equal access
to both tools and
opportunities



Human Rights vs. Civil Rights



Human rights

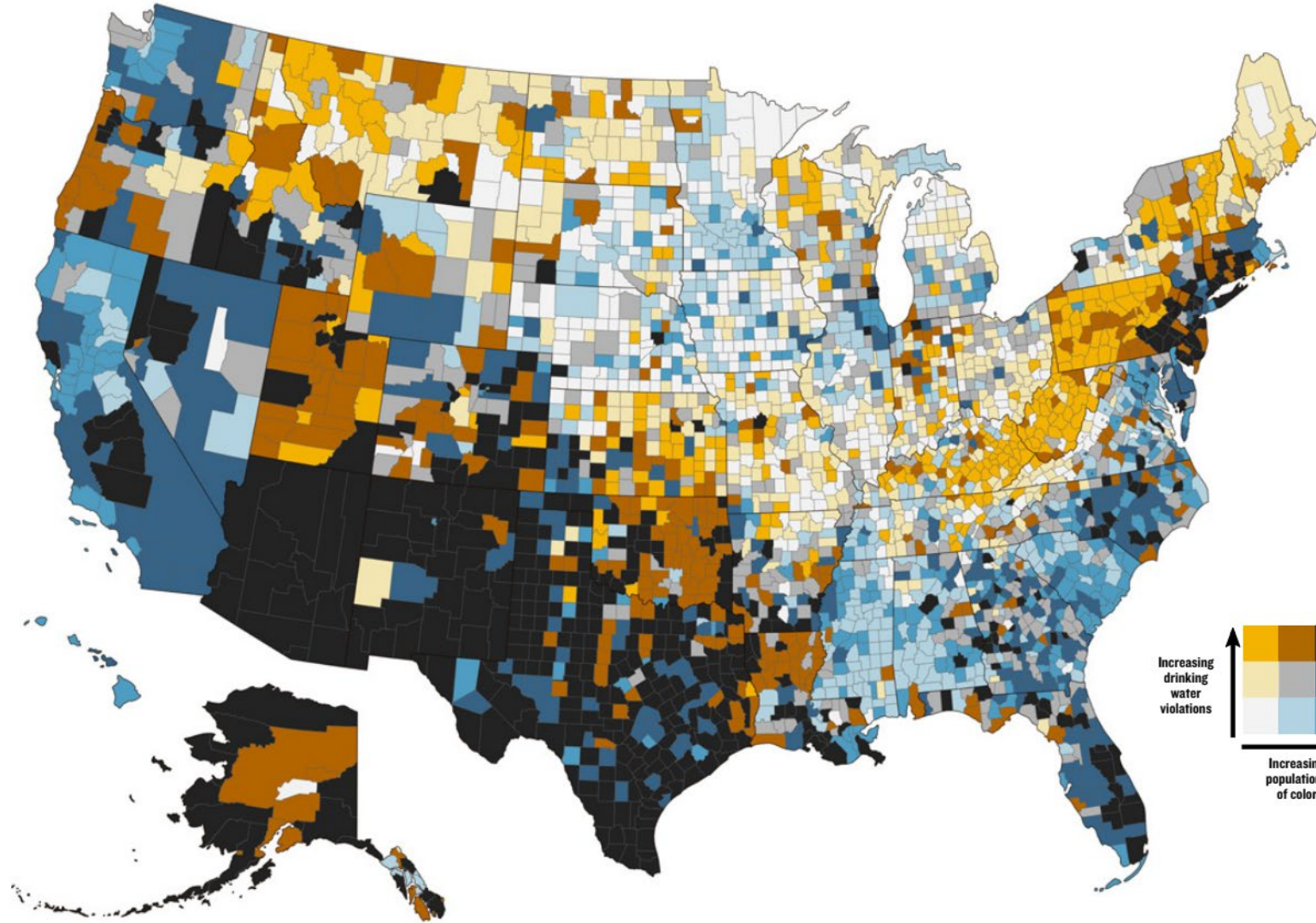
- Considered universal to any human being
- Some become civil rights when governments put those rights into laws

Civil rights

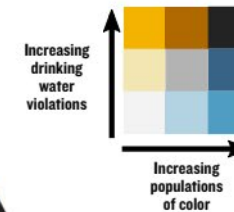
- Determined by the laws or constitutions of an individual country
- Can vary from nation to nation or state to state

Both protect against discrimination, injustice, and inequality

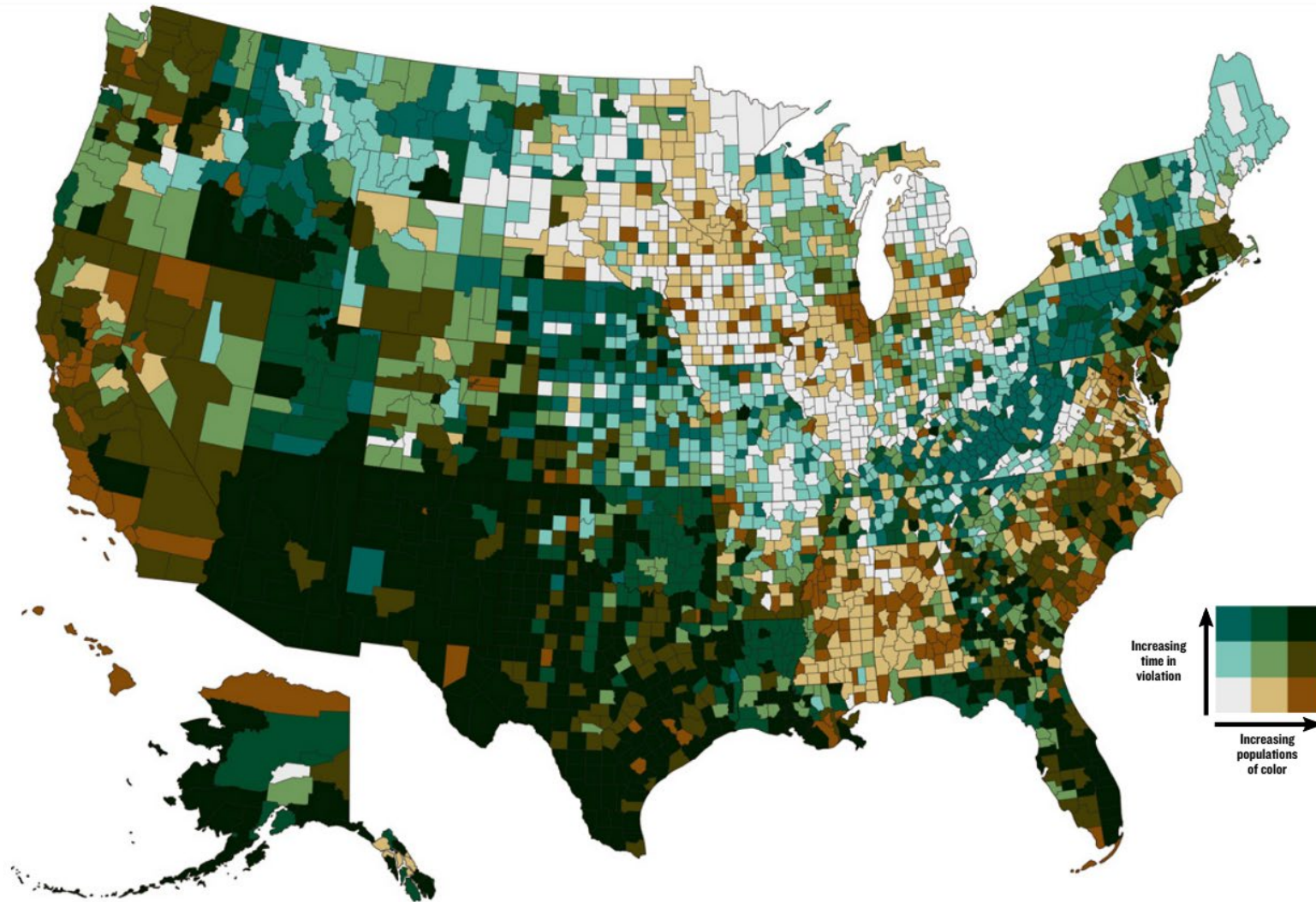
Intersection of Water Violations and Racial Vulnerability



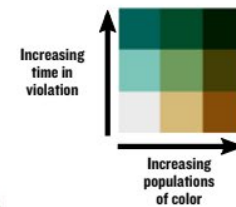
June 2016 – June 2019



Length of Time Out of Compliance and Racial Vulnerability

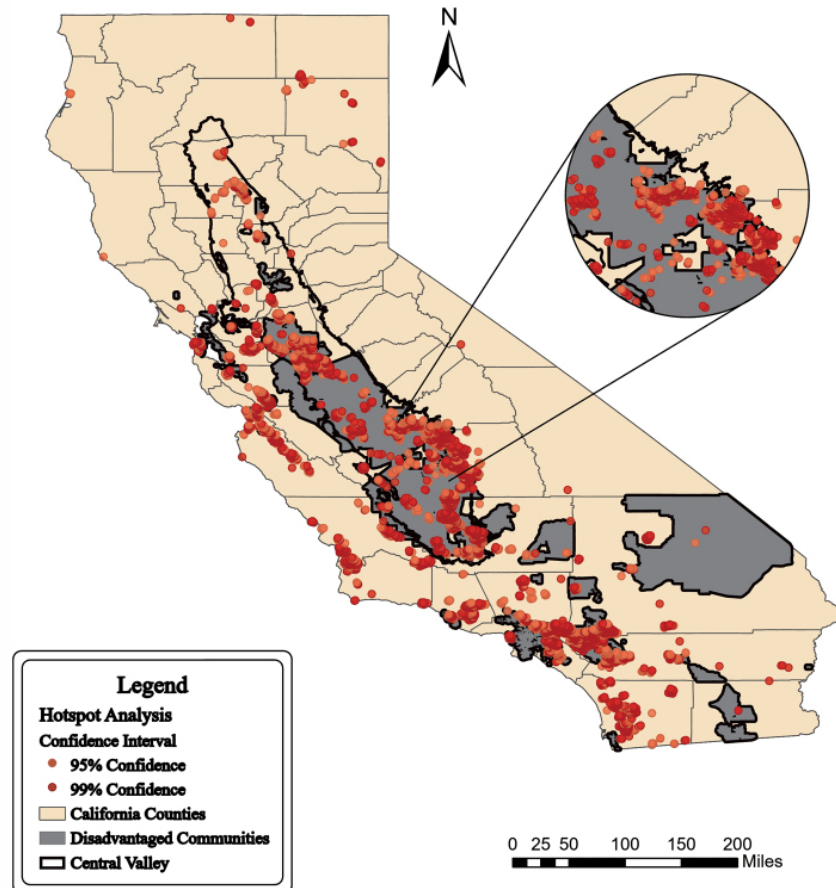


June 2016 – June 2019



California's Water Justice Challenge

California Hotspot Analysis of Nitrate Contamination in Drinking Water Wells over Disadvantaged Communities and Central Valley



- People of color more likely to experience drinking water violations
- In California, most failing water systems in disadvantaged communities
- Rural, tribal, and urban communities most at risk

Racial Segregation Impacts Access to Systems



Image: Man Drinking Water at "Colored" Water Cooler in Bus Terminal, Oklahoma City, Oklahoma, USA, Russell Lee, Farm Security Administration, July 1939 (Photo by: Universal History Archive/ UIG via Getty Images)

- Exclusion from city services
- Adults and children rejecting tap water
- Composite burden from contaminant exposure
- Lack of resources to cope

Required Water System Investments



AWWA ~ **1 trillion** over the next 25 years

Could **triple water bills** in the most affected communities

Estimates do not include **cost of compliance** with the Clean Water Act and Safe Drinking Water Act

Estimates do not include the **effects of climate change**

Racial Segregation Impacts Access to Systems

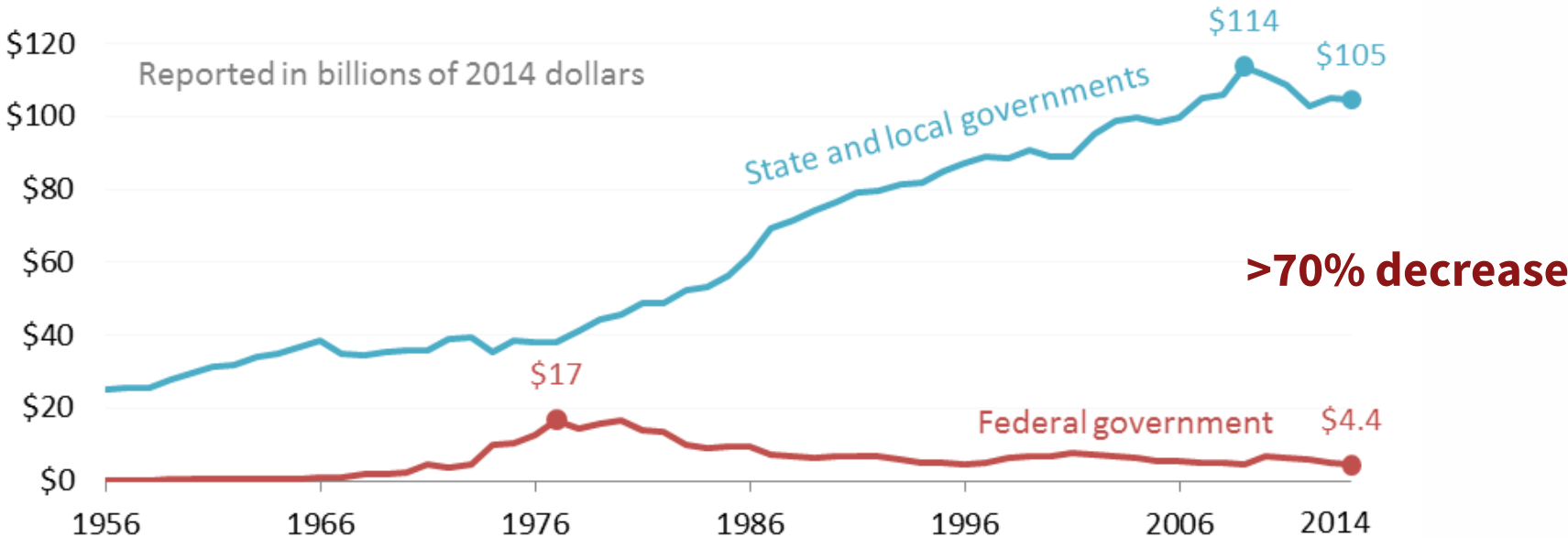


- As water systems were constructed throughout the U.S., Black neighborhoods were delayed in receiving services
- As residential segregation increased throughout the 20th century, Black access to municipal services like water and sewer decreased

Federal Disinvestment in Water Infrastructure

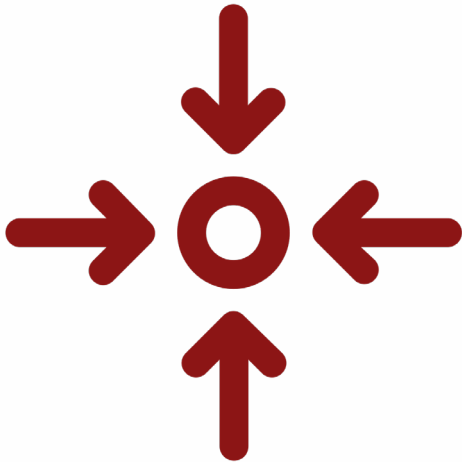
State and local government spending on water and wastewater utilities continued to grow while federal spending declined since the 1980s

State and local governments spent 24 times as much as the federal government in 2014



Graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
Source: Congressional Budget Office supplemental data for the *Public Spending on Transportation and Water Infrastructure, 1956 to 2014* report (March 2015). Displays public spending on supply systems for distributing potable water as well as wastewater and sewage treatment systems and plants. Real spending is shown after adjusting nominal spending to their 2014 dollar equivalent using infrastructure-specific price indexes.

Lack of Data Leads to Injustice



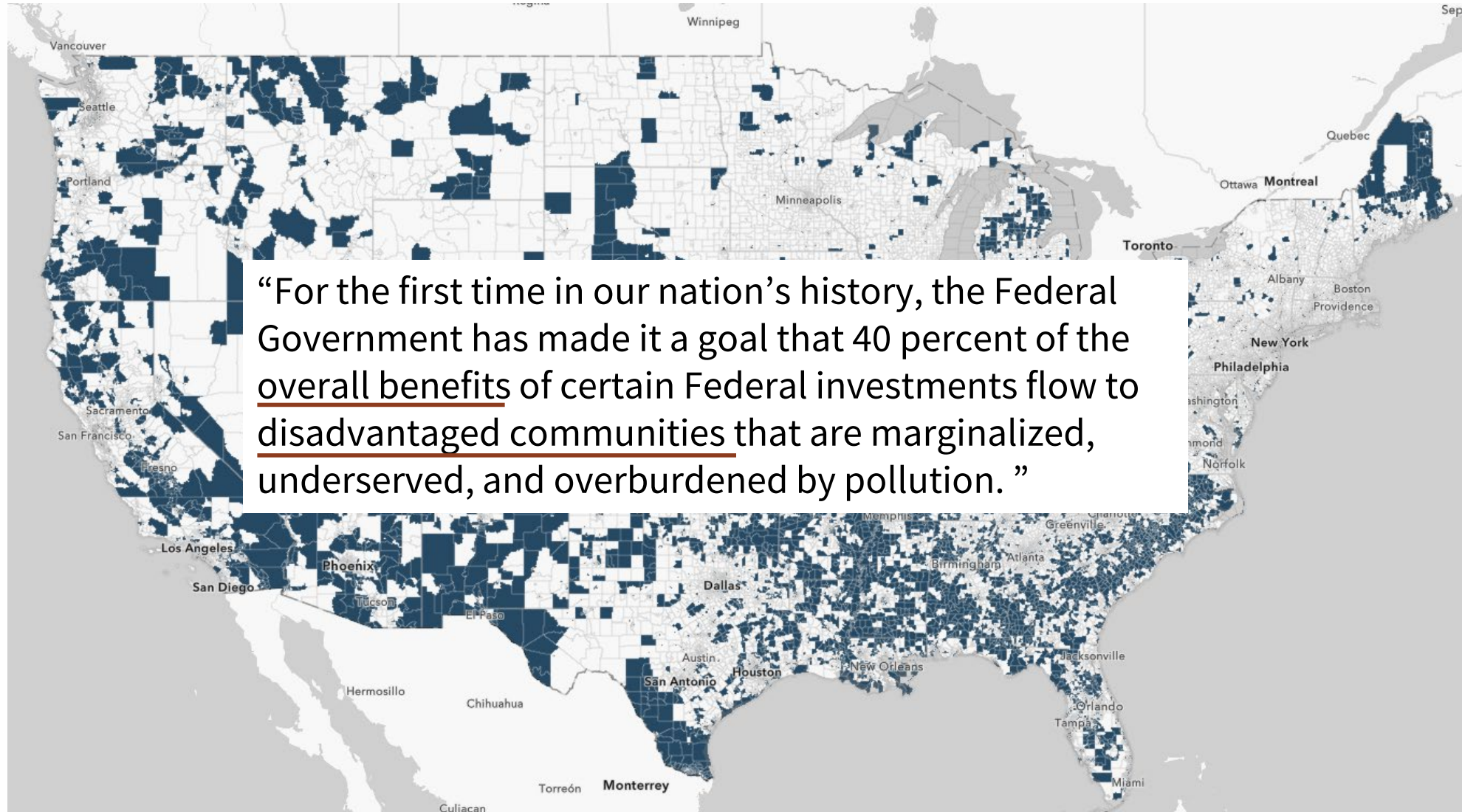
“Similarly, in 2017, the Baltimore Department of Public Works stated that the city does not retain information on the total amount of payments received from residential customers, the average arrears for all residential accounts, the average bill for all residential accounts in arrears, or the number of accounts receiving a notice of disconnection for nonpayment.”

What is the path forward?



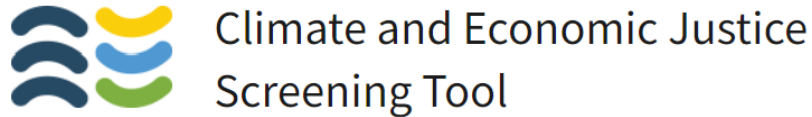
- **Identify** → Identification of underserved, overburdened, disproportionately affected communities is an important first step
- **Engage** → As active partners in setting agendas and priorities that affect their lives
- **Support** → Goal should be to use knowledge and tools for prevention not reaction

Definitions are Important



“For the first time in our nation’s history, the Federal Government has made it a goal that 40 percent of the overall benefits of certain Federal investments flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution. ”

CEJST



8 categories of burden:

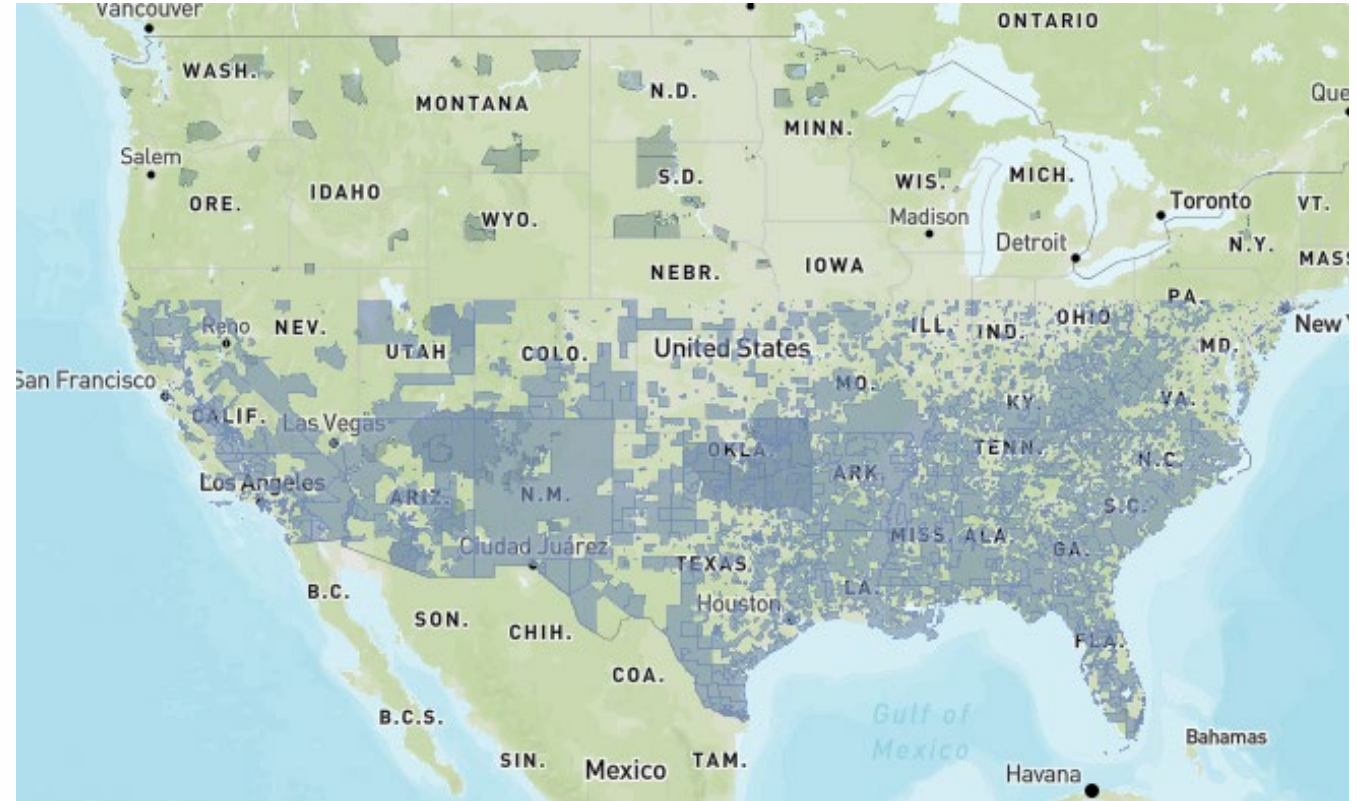
- Climate change
- Energy
- Health
- Housing
- Legacy pollution
- Transportation
- **Water and wastewater**
- Workforce development

Water and Wastewater Metrics:

- **Density of leaking underground storage tank within 1500 ft of census tract**
- **Modeled toxic wastewater discharges in streams within 500 m of census tract**

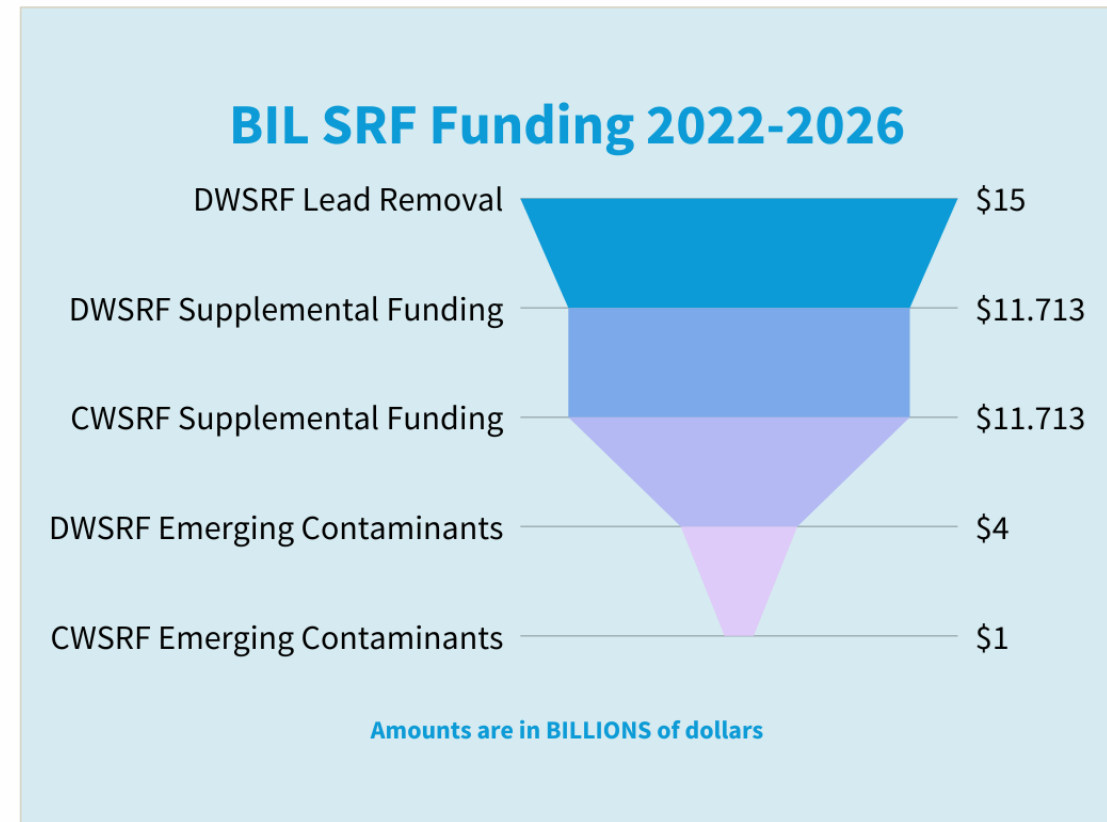
What's Missing?

- Safe Drinking Water Act violations
- Boil order notices
- Water affordability
- Household crowding

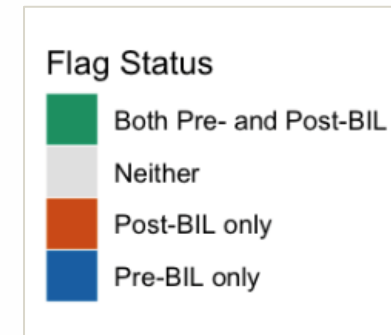
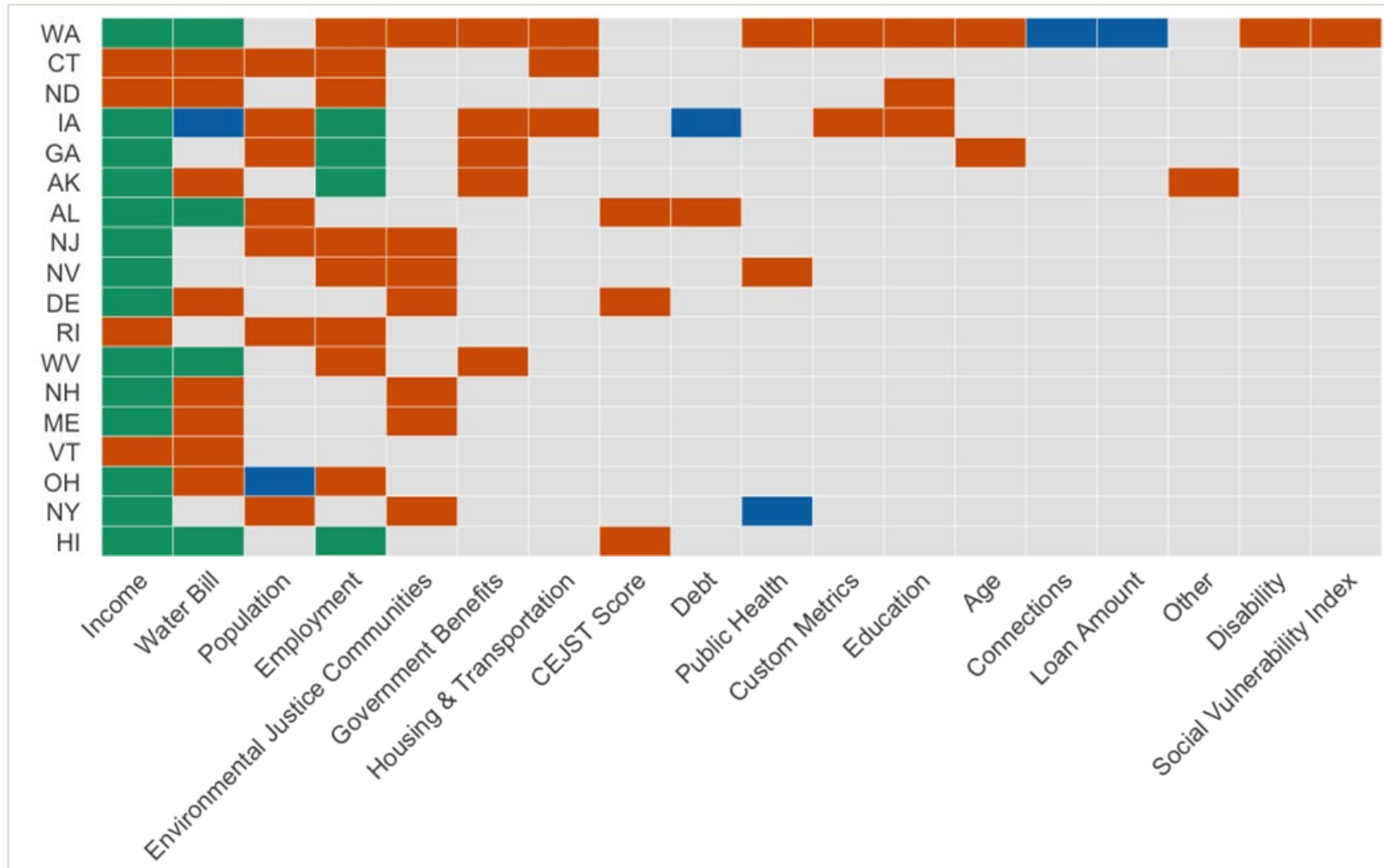


Bipartisan Infrastructure Law and the DWSRF

- \$30.7 billion directed towards safe drinking water programs through the DWSRF
- 49% of funds provided through the DWSRF General Supplemental Funding and DWSRF Lead Service Line Replacement Funding must be provided to **disadvantaged communities**
- States are expected to “evaluate and revise, as needed, [their] DWSRF disadvantaged community definition[s]”



Qualitative Changes to Definitions



BIL Conclusions

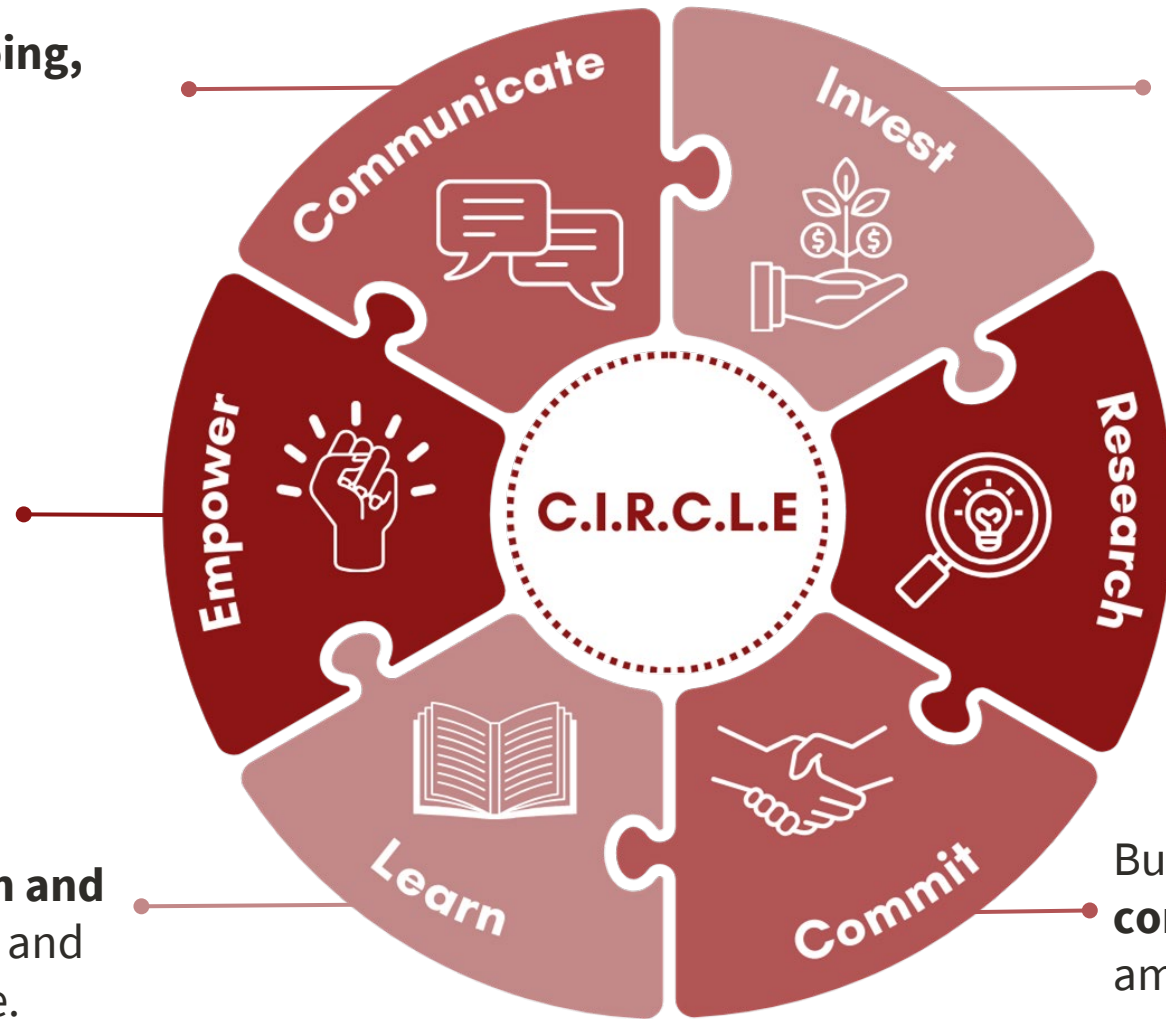
- Under BIL, many states are **broadening disadvantaged criteria** beyond income to incorporate sociodemographic and environmental factors
- This expansion has **increased formal eligibility** for previously overlooked water systems
- However, **funding outcomes remain uneven**, with limited progress from an environmental justice perspective

Expanding definitions is an important first step, but structural and institutional constraints continue to shape who ultimately benefits.

C.I.R.C.L.E Framework for CBPR Implementation

Transparent, ongoing, and iterative communication.

Shared responsibility and dedicated **time, resources, and effort.**



Sustain research through **community leadership and continuity.**

Community-centric research that **drives change** and advances knowledge.

Ability to **both learn and teach**, using formal and informal knowledge.

Build **long-term commitment** and **trust** among collaborators.

(Adapted from Wilson et al, 2025)

Our Team



Monica Lewis-Patrick



Skyler Kriese



Dr. Emily Kutil



Kelly Hunt



Jennifer Adams



Oswaldo Macias



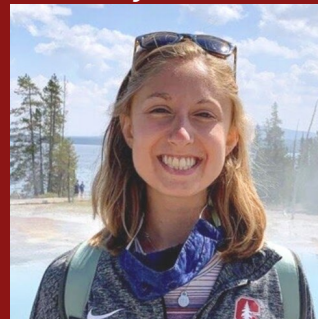
Allisa Hastie



Dr. Sarah Fletcher



Jenny Skerker



Dr. Greg Pierce



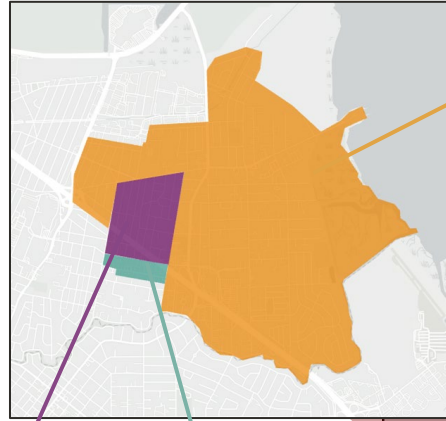
Ariana Hernandez



Research Partnerships



Research Partnerships



**City of EPA/Veolia
(surface water)**

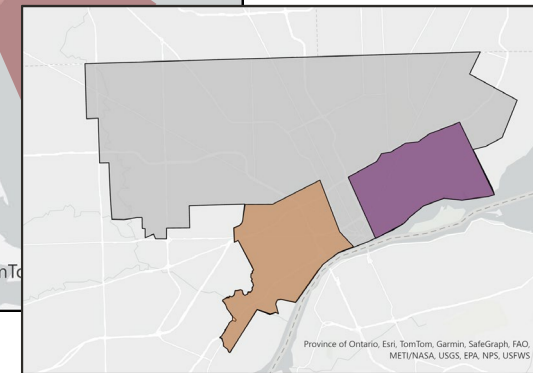
**Private water
companies
(groundwater)**

East Palo Alto, CA

Detroit, MI



**Detroit Water and
Sewerage Dept.
(surface water)**



Community-Based Participatory Approach

We the People of Detroit



Community Research Collective

Nuestra Casa

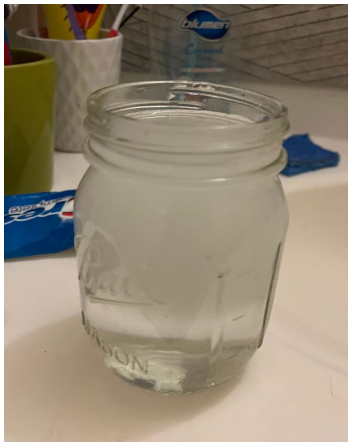
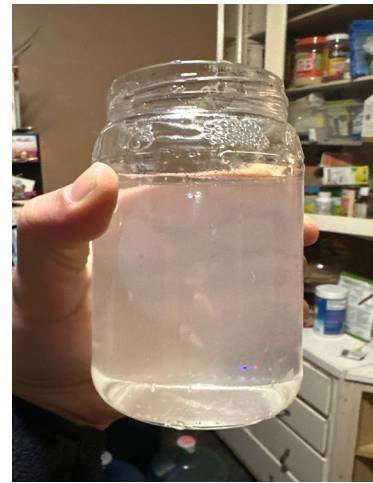
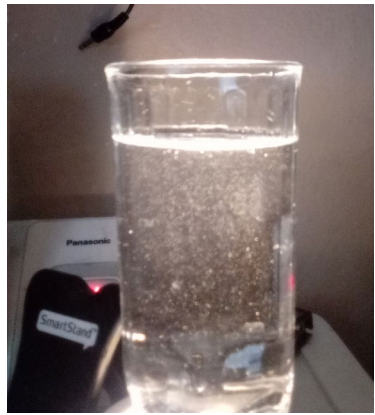


Community Water Task Force



Promotoras

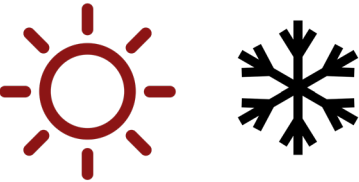




Water Quality Data



50 homes in East Palo Alto (3 separate utilities) and Detroit (2 neighborhoods, same utility)



2 month-long data collection sessions for each city to compare between seasons



simplelab

First draw of 150 mL lab-tested for 49 common contaminants

Water Sample Collection

simplelab

First Draw

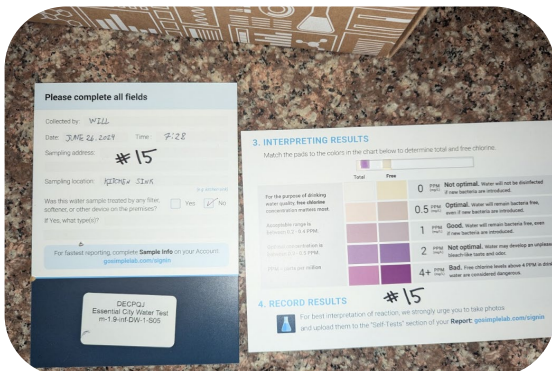
Chlorine Strip Test

- Inorganics
- Metals
- Minerals



Essential City Kit Contents

Easy Sampling Instructions | Sampling Container
Prepaid Shipping Back To Lab | Chain of Custody | Bonus: Chlorine Strip



Physico-Chemical Parameters	Contaminants		
Alkalinity (as CaCO3)	Boron	Chromium (Total)	Strontium
Chloride-to-Sulfate Mass Ratio	Chloride	Cobalt	Thallium
Chlorine (Free)	Fluoride	Copper	Tin
Chlorine (Total)	Nitrate (as N)	Iron	Titanium
Grains per gallon	Phosphorus	Lead	Uranium
Hardness	Sulfate	Lithium	Zinc
Hardness (Ca,Mg)	Aluminum	Manganese	Bicarbonate
Hardness (Total)	Antimony	Mercury	Calcium
Langelier Saturation Index	Arsenic	Molybdenum	Carbonate
pH	Barium	Nickel	Magnesium
Sodium Adsorption Ratio	Beryllium	Selenium	Potassium
Total Dissolved Solids	Cadmium	Silver	Sodium

Participant Surveys

“Mini - Observations”

Risk and Perception Assessment

Aesthetic Observations

Health Observations

Behavioral Adaptations

3x/week

Do you believe your tap water is safe to drink?

Does your water have a noticeable or off-looking appearance, taste or odor?

Since your last report has anyone in your household experienced symptoms you believe are caused by your water?

Did you replace your tap water with anything else today?

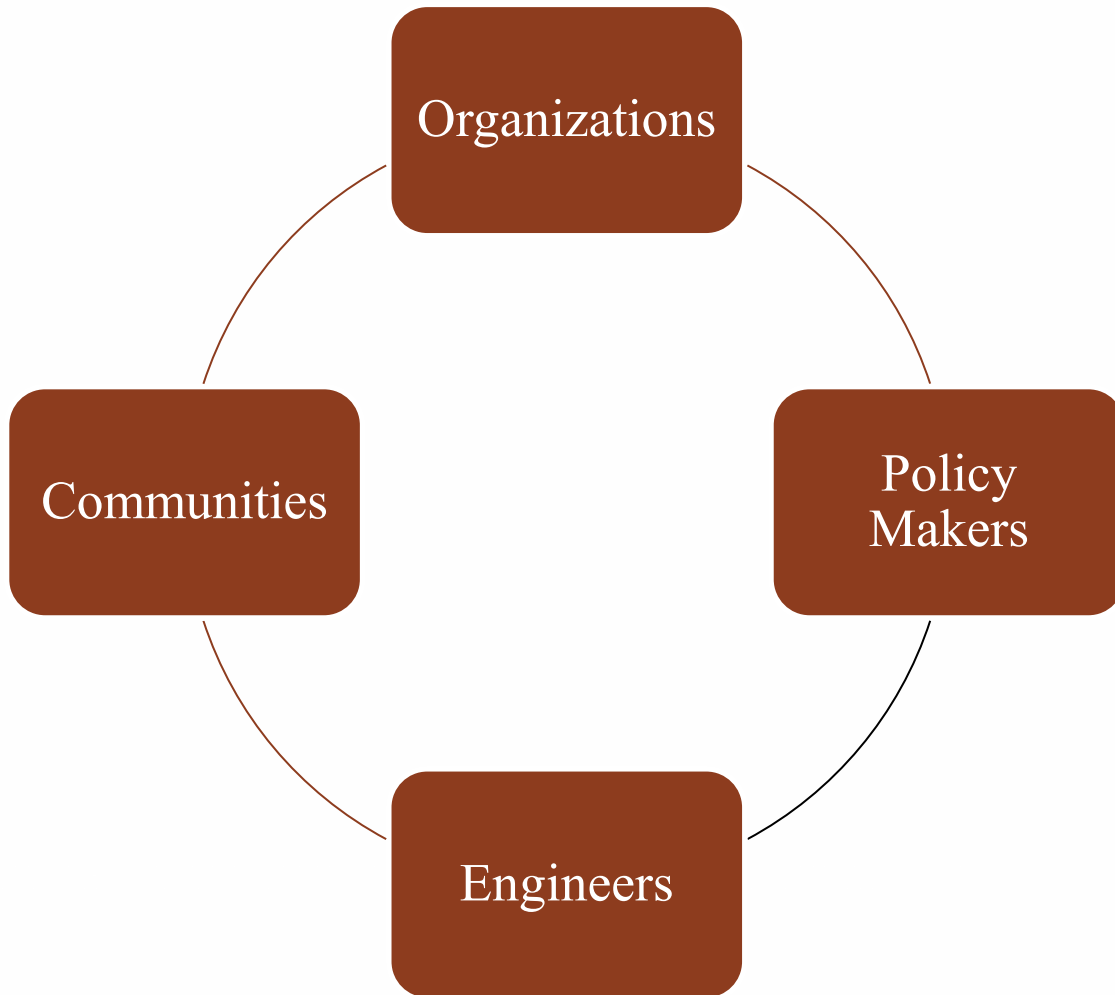
Focus on aesthetic contaminants



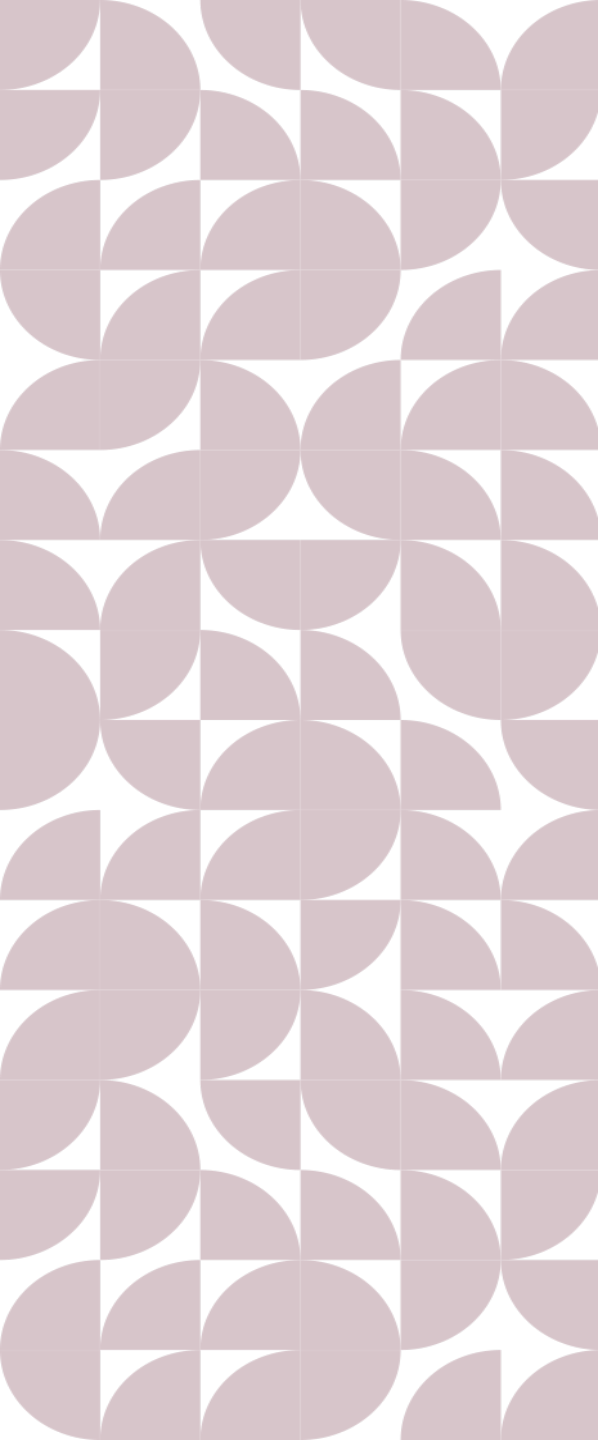
88% of households had at least 1 Secondary MCL exceedance

Contaminant	Secondary MCL	Noticeable Effects above the Secondary MCL
Aluminum	0.05 to 0.2 mg/L*	colored water
Chloride	250 mg/L	salty taste
Color	15 color units	visible tint
Copper	1.0 mg/L	metallic taste; blue-green staining
Corrosivity	Non-corrosive	metallic taste; corroded pipes/ fixtures staining
Fluoride	2.0 mg/L	tooth discoloration
Foaming agents	0.5 mg/L	frothy, cloudy; bitter taste; odor
Iron	0.3 mg/L	rusty color; sediment; metallic taste; reddish or orange staining
Manganese	0.05 mg/L	black to brown color; black staining; bitter metallic taste
Odor	3 TON (threshold odor number)	"rotten-egg", musty or chemical smell
pH	6.5 - 8.5	low pH: bitter metallic taste; corrosion high pH: slippery feel; soda taste; deposits
Silver	0.1 mg/L	skin discoloration; graying of the white part of the eye
Sulfate	250 mg/L	salty taste
Total Dissolved Solids (TDS)	500 mg/L	hardness; deposits; colored water; staining; salty taste
Zinc	5 mg/L	metallic taste

From Anecdotal to Empirical



- Capturing anecdotal data is important – we are not the experts on communities experiences
- Ensure that underserved communities have the knowledge and capacity necessary for self-advocacy



Dr. Khalid K. Osman

Civil and Environmental Engineering

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<https://osman.science>

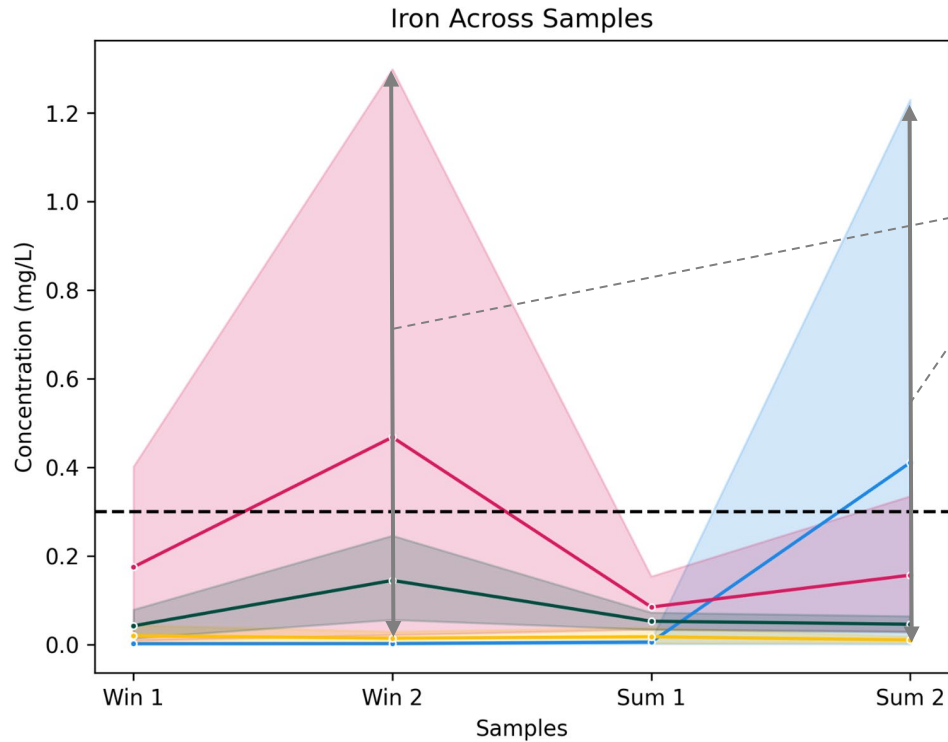


Stanford
School of Engineering &
Doerr School of Sustainability
Civil & Environmental Engineering

Stanford | Community Engagement
OFFICE OF EXTERNAL RELATIONS

Stanford University

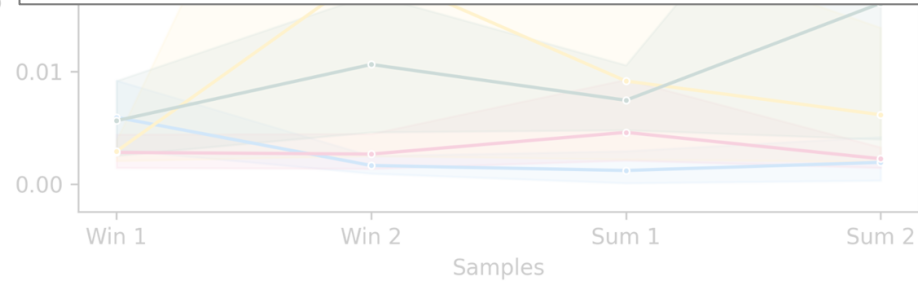
High Variability between Households



95% confidence interval from samples

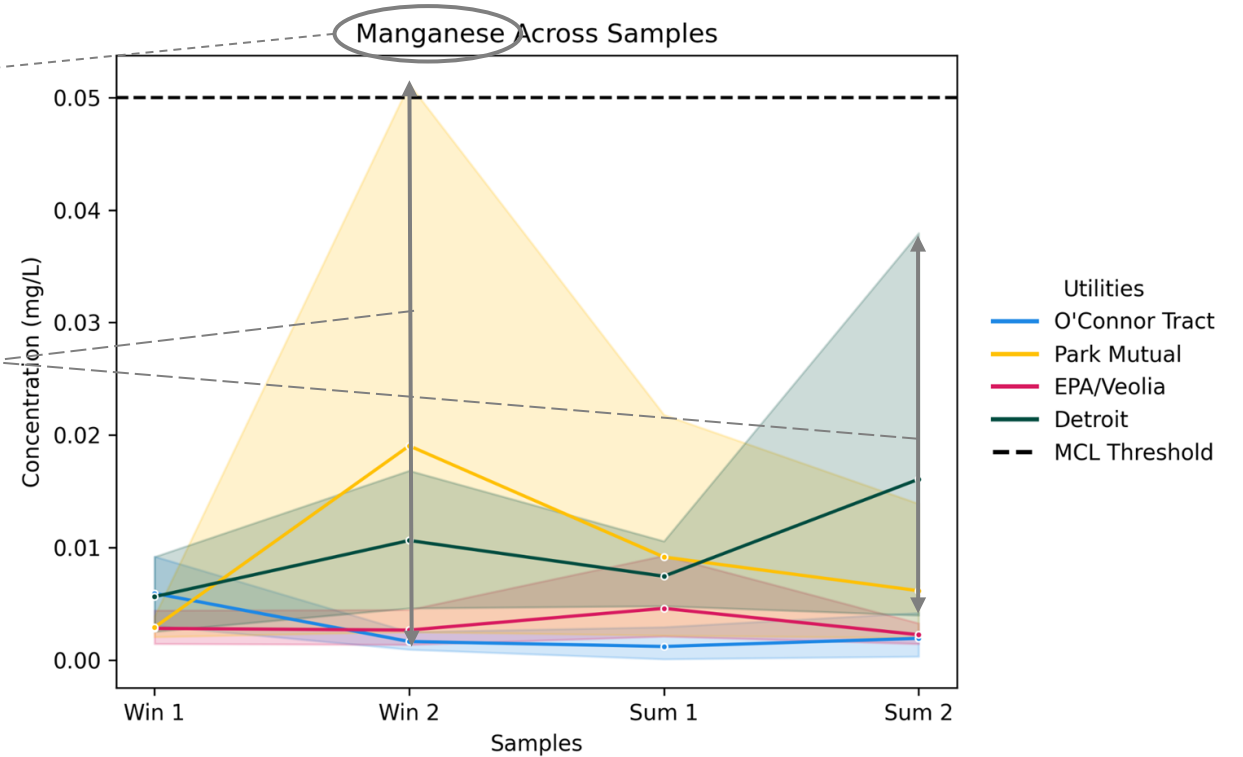
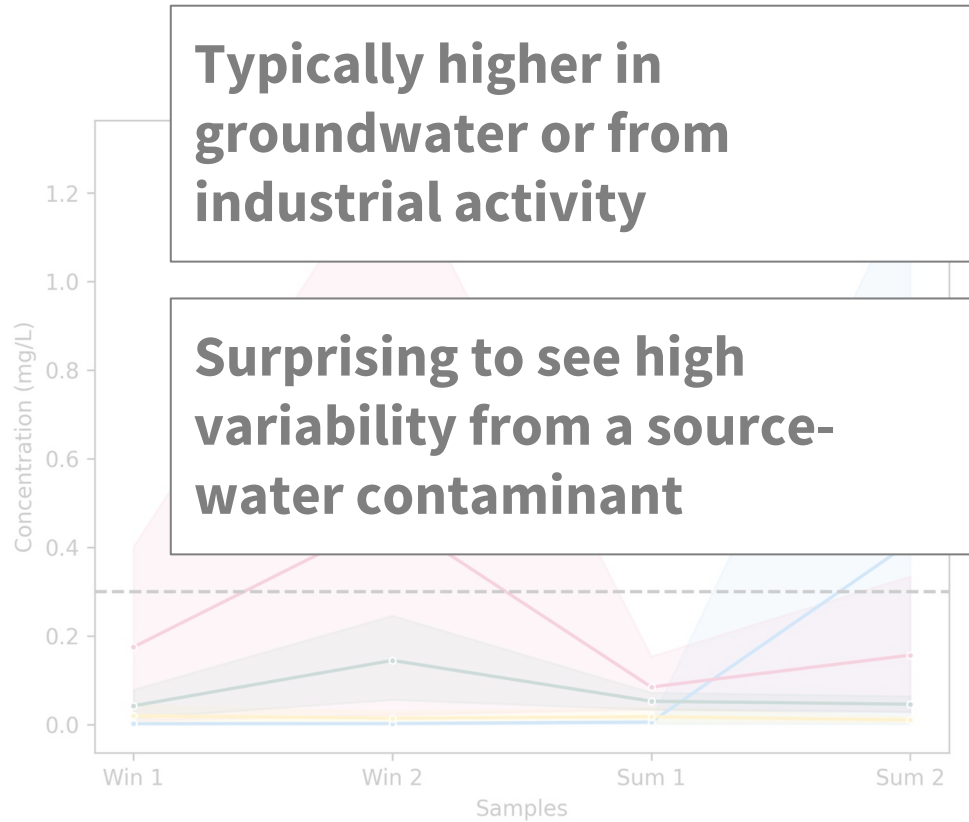
- Larger range indicates greater variability in water quality between households
- Potentially explained by plumbing differences

Concentration (mg/L)



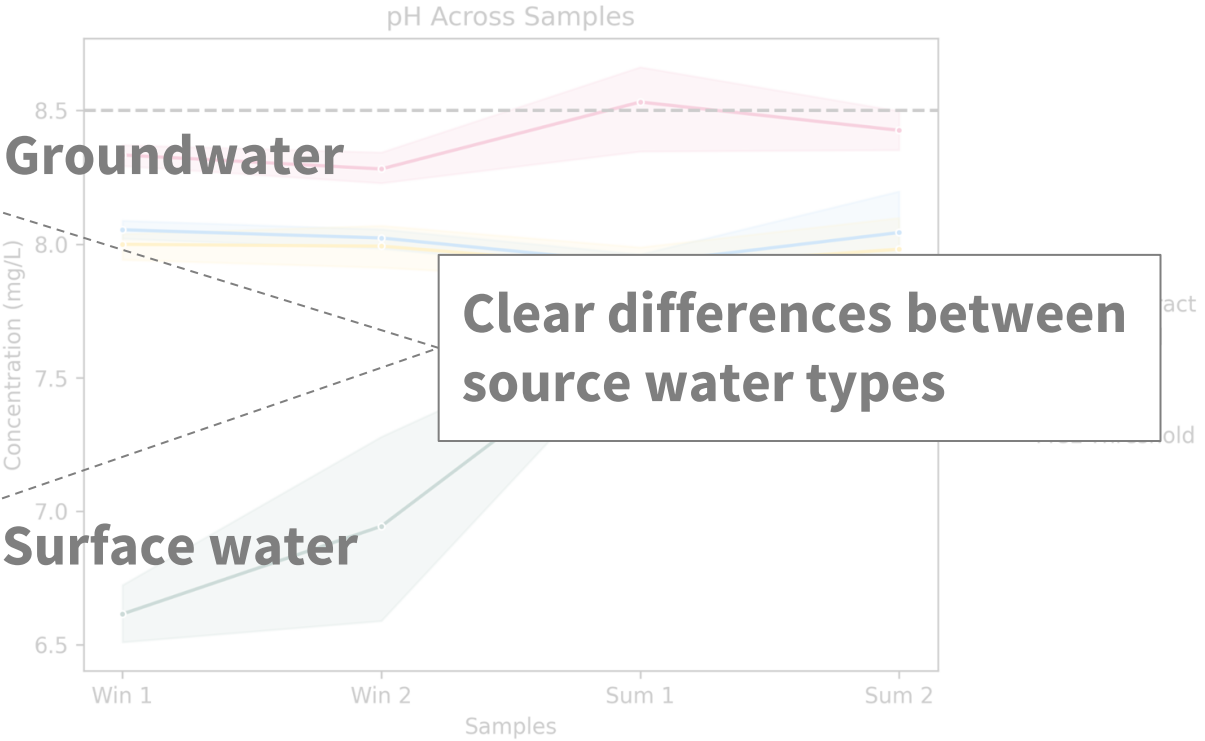
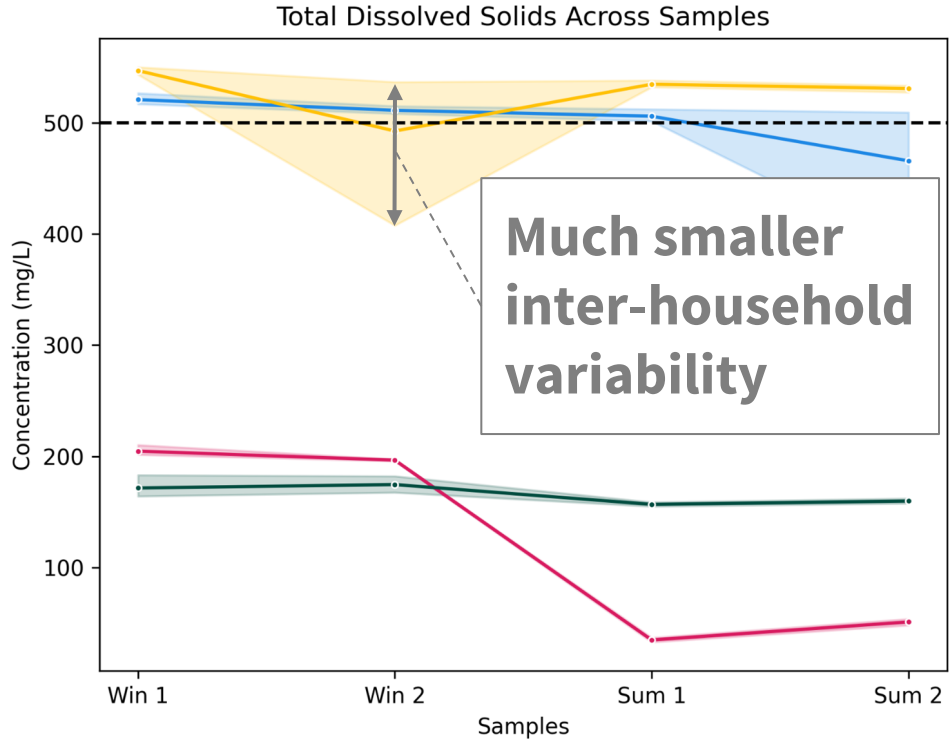
[Hastie et al., 202X, (in prep) Water Resources Research]

High Variability between Households



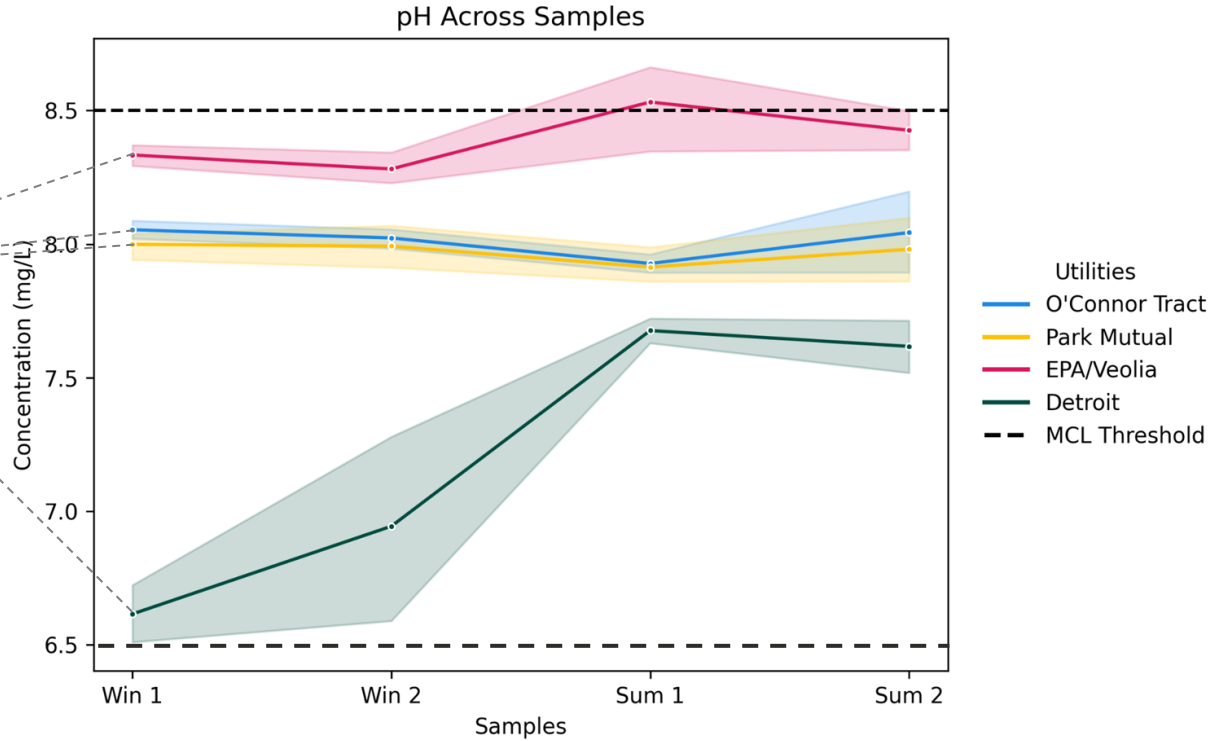
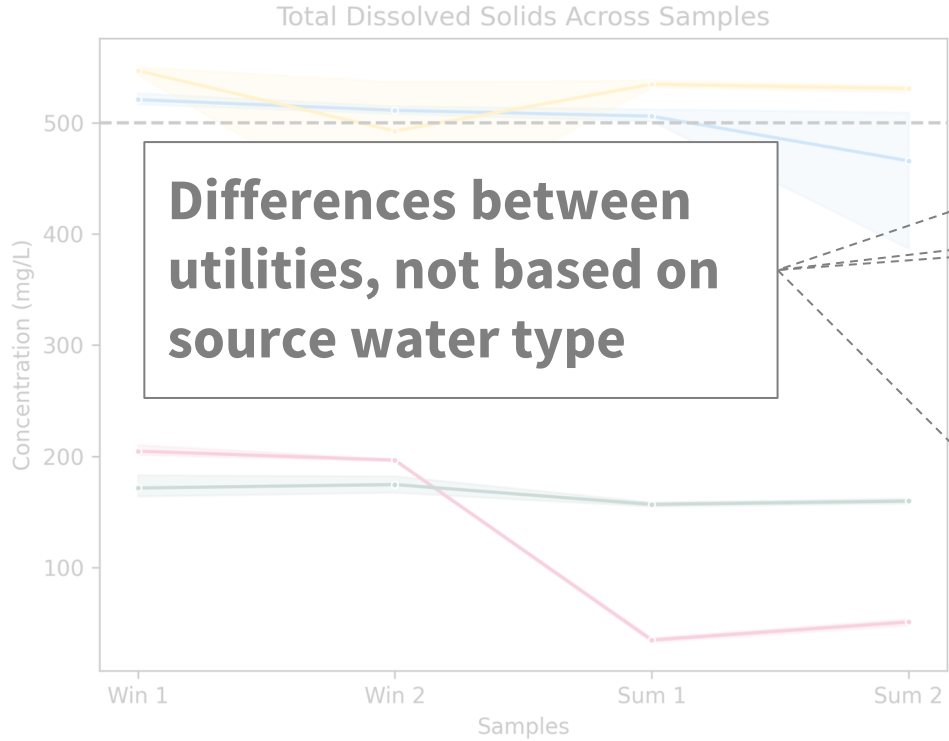
[Hastie et al., 202X, (in prep) Water Resources Research]

Source Water and Treatment



[Hastie et al., 202X, (in prep) Water Resources Research]

Source Water and Treatment



[Hastie et al., 202X, (in prep) Water Resources Research]

Santa Clara LAFCO Environmental Justice Workshop

The Nature and Extent of the Issue in Santa Clara County



**California Environmental
Protection Agency (CalEPA)
CalEnviroScreen**



Four Major Components

Pollution Burden

Measures **exposure to environmental hazards**

Exposures (direct contact with pollutants)

- PM2.5 (fine particulate matter)
- Ozone
- Diesel particulate matter
- Traffic density
- Drinking water contaminants

Environmental Effects (presence of hazards)

- Toxic release sites
- Hazardous waste facilities
- Impaired water bodies
- Solid waste sites

Population Characteristics

Measures **who is more vulnerable to harm**

Sensitive Populations

- Asthma rates
- Cardiovascular disease
- Low birth weight

Socioeconomic Factors

- Poverty
- Unemployment
- Educational attainment
- Linguistic isolation

How the Final Score Works

CalEnviroScreen calculates:

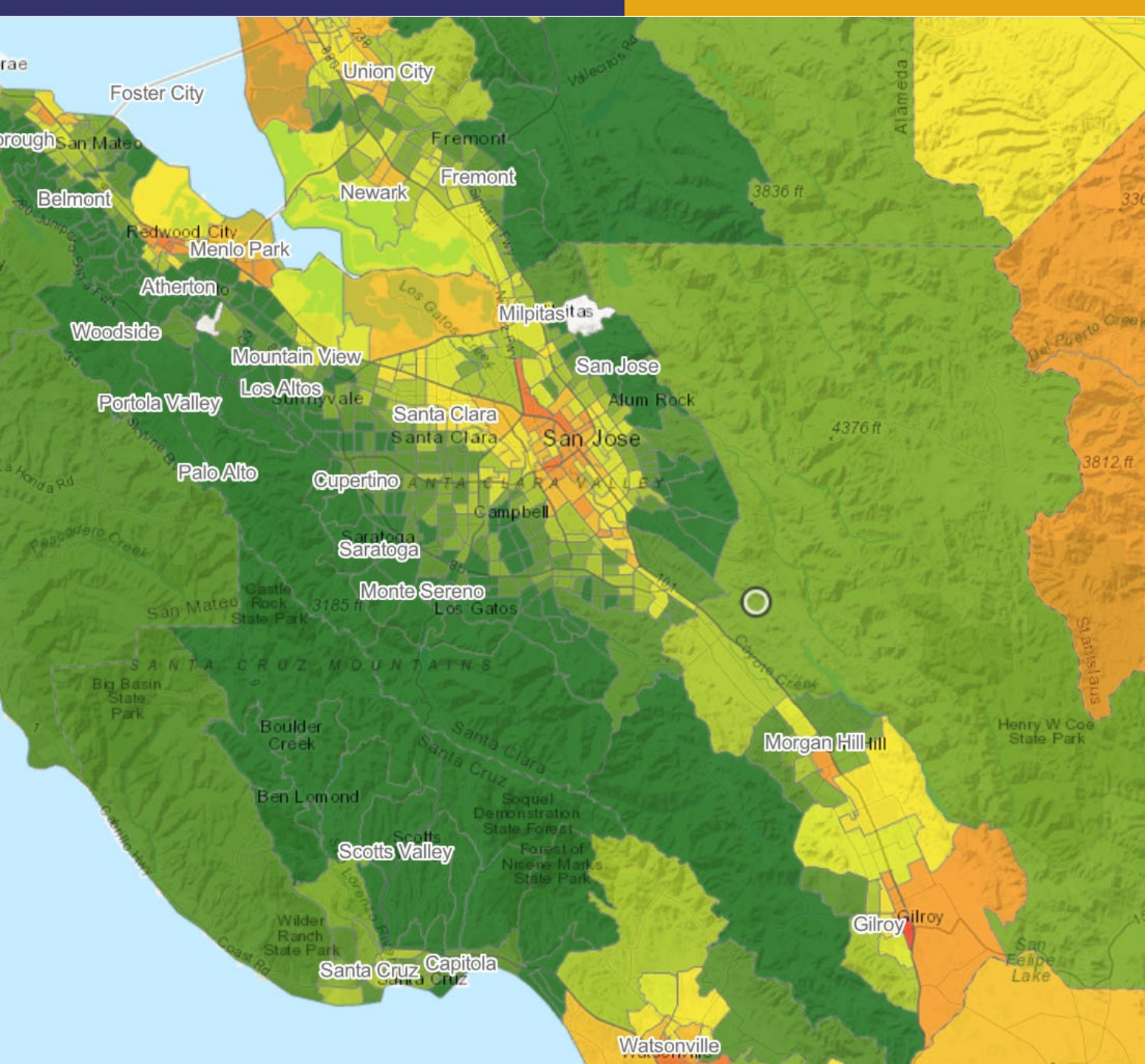
- **Pollution Burden score** (weighted average)
- **Population Characteristics score** (weighted average)

Then:

Final Score = Pollution Burden × Population Characteristics

- Scores are converted into **percentiles (0–100)** across the state
- Higher percentile = greater cumulative burden

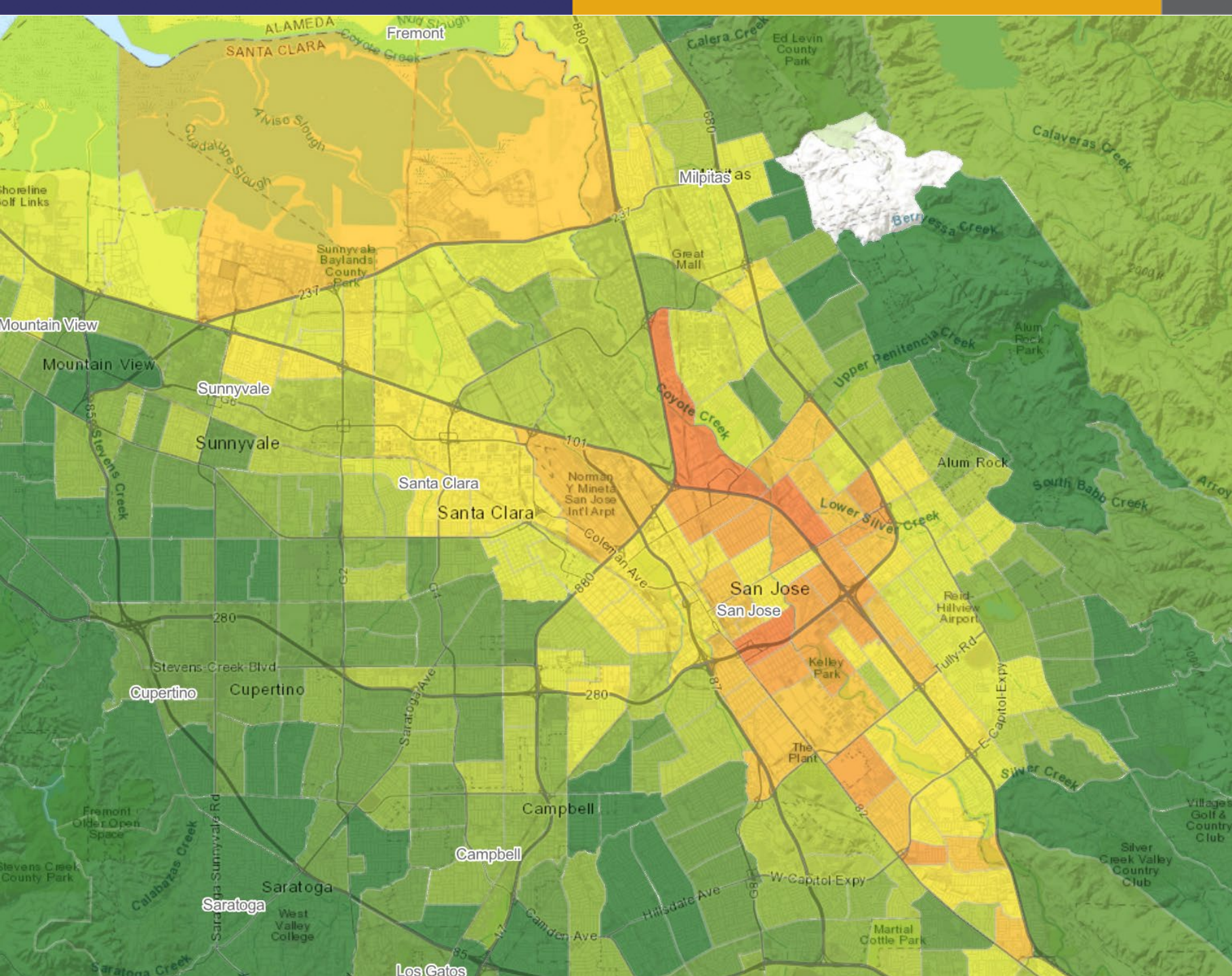
Santa Clara County Maps



Overall Percentile

CalEnviroScreen 4.0 Results

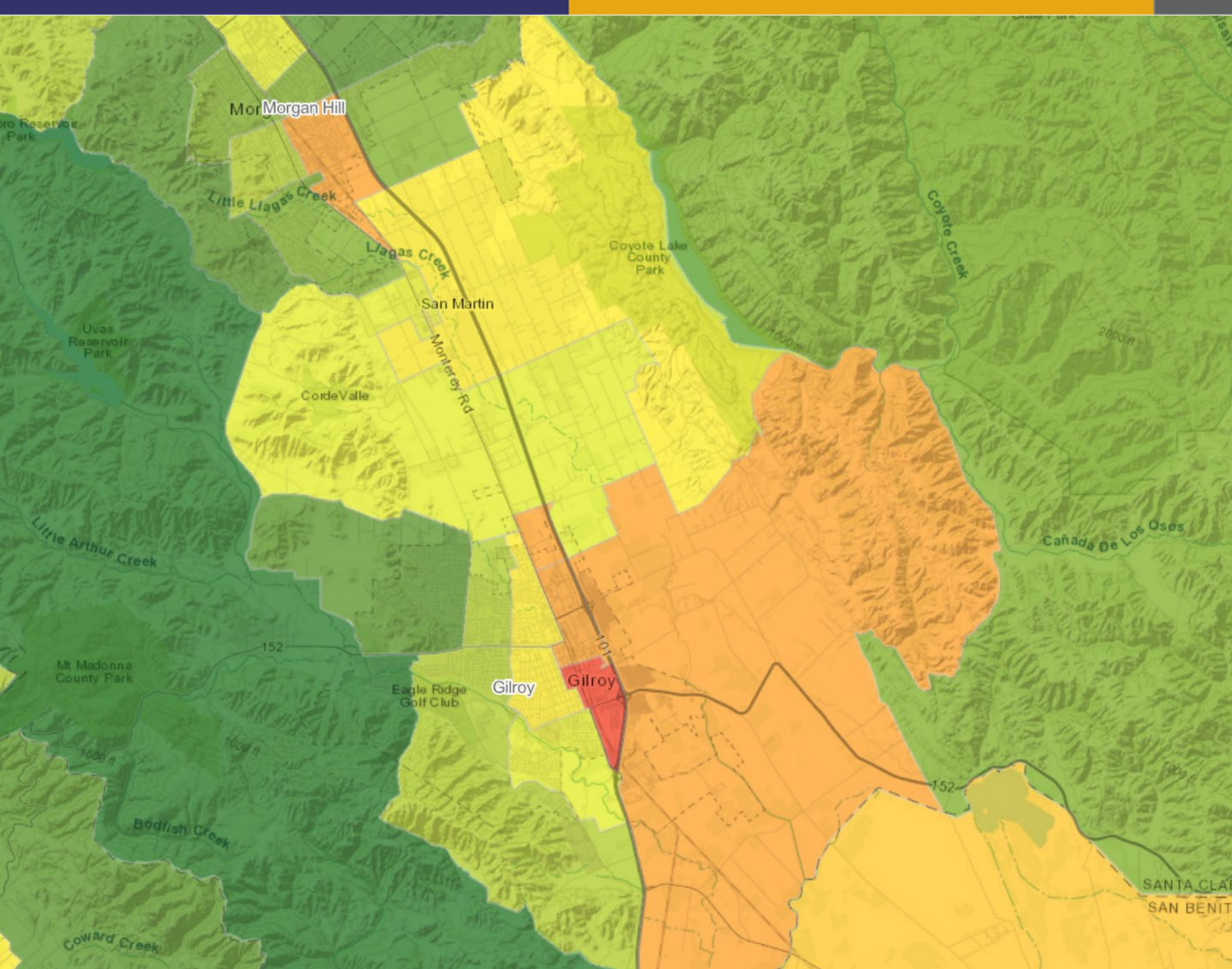
- >90 - 100 (Highest Scores)
- >80 - 90
- >70 - 80
- >60 - 70
- >50 - 60
- >40 - 50
- >30 - 40
- >20 - 30
- >10 - 20
- 0 - 10 (Lowest Scores)



Overall Percentile

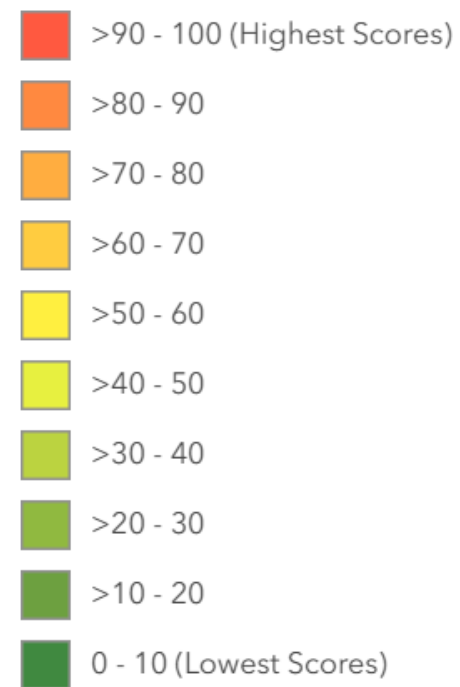
CalEnviroScreen 4.0 Results

- >90 - 100 (Highest Scores)
- >80 - 90
- >70 - 80
- >60 - 70
- >50 - 60
- >40 - 50
- >30 - 40
- >20 - 30
- >10 - 20
- 0 - 10 (Lowest Scores)



Overall Percentile

CalEnviroScreen 4.0 Results



**San Francisco
Bay Conservation and
Development Commission
(BCDC)**



Four Major Components

1. Socioeconomic Vulnerability

- Populations with fewer resources to respond to impacts, including:
 - Low-income households
 - Renters (vs. homeowners)
 - People with limited financial resilience

2. Demographic and Social Factors

- Groups that may face additional barriers, such as:
 - Communities of color
 - Linguistically isolated populations
 - Seniors and children
 - People with disabilities

3. Environmental and Geographic Exposure

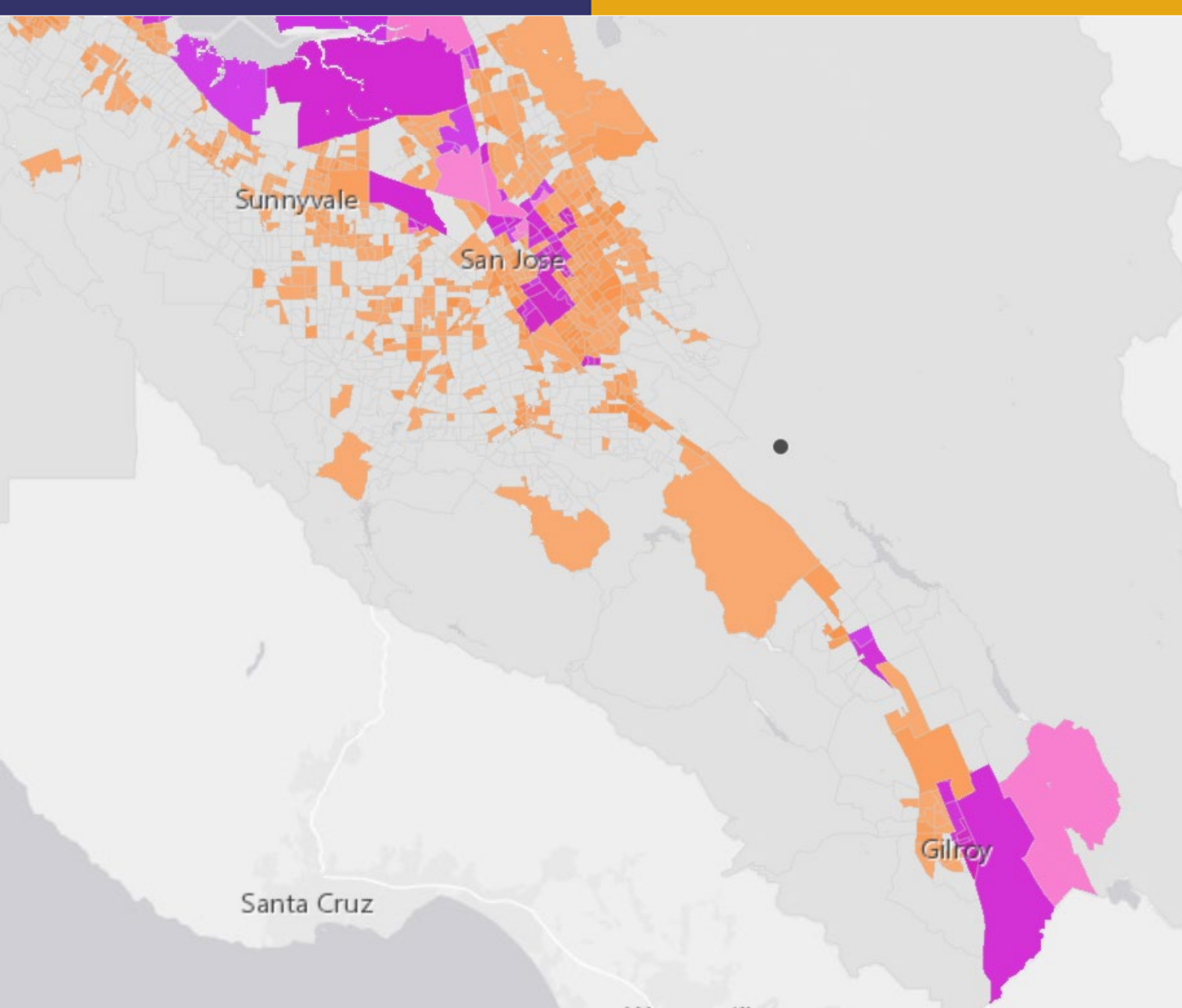
- Communities located in areas:
 - At risk of **flooding or sea level rise**
 - Near environmental hazards (e.g., pollution, industrial uses)
 - With limited access to safe infrastructure

4. Limited Adaptive Capacity

- Communities with:
 - Less access to transportation or mobility options
 - Limited access to healthcare or emergency services
 - Fewer institutional supports

How the Final Score Works

Unlike CalEnviroScreen, BCDC does not have a fixed formula. They use a **flexible, project-specific indicator layering. Weighting varies** by project and can be adjusted based on context.



Santa Clara County Maps

Community Vulnerability (2023) ⋮

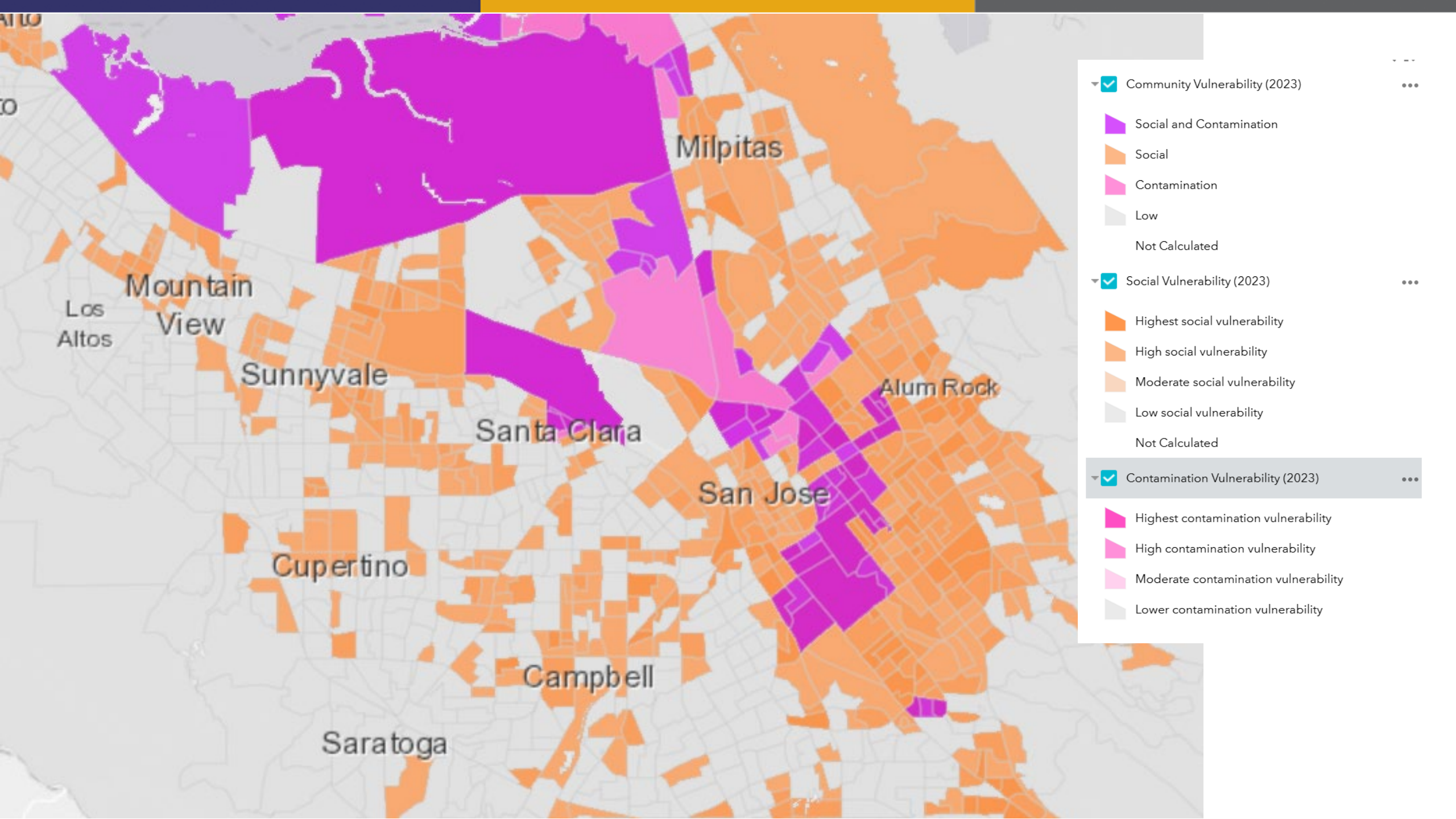
- Social and Contamination
- Social
- Contamination
- Low
- Not Calculated

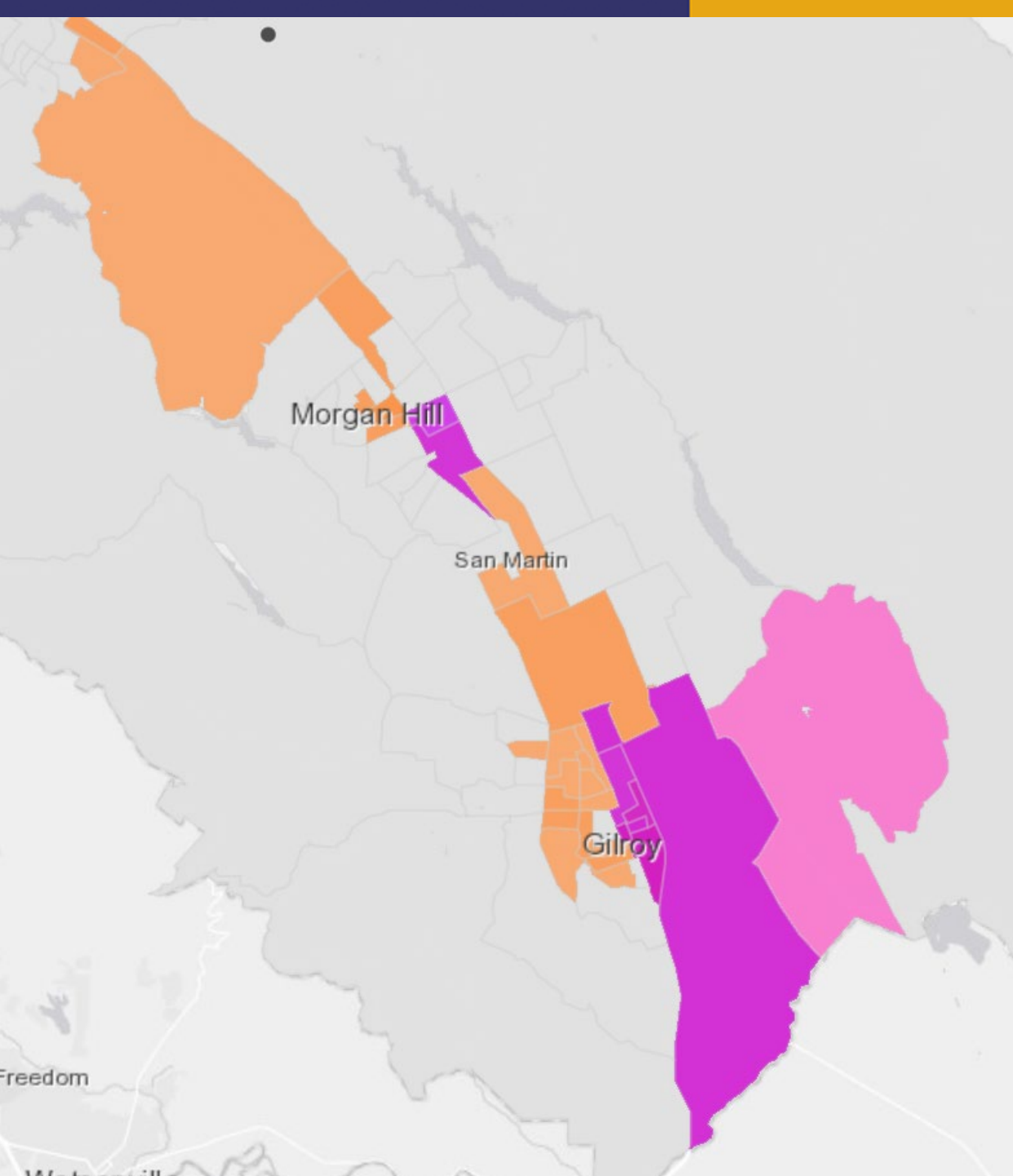
Social Vulnerability (2023) ⋮

- Highest social vulnerability
- High social vulnerability
- Moderate social vulnerability
- Low social vulnerability
- Not Calculated

Contamination Vulnerability (2023) ⋮

- Highest contamination vulnerability
- High contamination vulnerability
- Moderate contamination vulnerability
- Lower contamination vulnerability





Community Vulnerability (2023)

- Social and Contamination
- Social
- Contamination
- Low
- Not Calculated

Social Vulnerability (2023)

- Highest social vulnerability
- High social vulnerability
- Moderate social vulnerability
- Low social vulnerability
- Not Calculated

Contamination Vulnerability (2023)

- Highest contamination vulnerability
- High contamination vulnerability
- Moderate contamination vulnerability
- Lower contamination vulnerability

Key Takeaways CalEnviroScreen

- East San José (strongest and most consistent hotspot)
 - combines intense pollution exposure with populations that have fewer resources to mitigate health impacts
- North San José / Alviso / Baylands
 - concentrated environmental hazards layered with infrastructure-related pollution
- Milpitas / North County industrial corridor
 - localized socioeconomic vulnerability overlaps with urban pollution exposure
- Central San José (selected tracts)
 - localized socioeconomic vulnerability overlaps with urban pollution exposure
- South County pockets (e.g., Gilroy / Morgan Hill edges)
 - environmental exposures tied to agriculture combined with limited access to services

Key Takeaways BCDC

- Alviso / North San José (Bay shoreline) (strongest hotspot)
 - extreme flood exposure overlaps with vulnerable populations and infrastructure risk
- Milpitas / Berryessa / North-East San José
 - combined flood pathways and urban infrastructure stress
- Coyote Creek Corridor (San José)
 - riverine flood risk intersecting with socially vulnerable populations
- South County (Gilroy / Morgan Hill floodplains)
 - rural exposure + limited resources to respond

Major Differences

- East San José top CalEnviroScreen hotspot
- Alviso / shoreline top BCDC hotspot