



# Our Climate Crisis

## *A Guide for SoCal Communities in the Wildland Urban Interface*

Presentation to the City of Calabasas City Council

February 9, 2022



# Malibu Foundation Consultants

**Shea Cunningham** is a Sustainability Planning Specialist and the Principal of Balanced Approach. In addition to her work with the Malibu Foundation, she is the Co-Director of Culver City's Sustainable Business Certification Program, and the ESG Strategist for ASGN Incorporated and represents the company in the United Nations Global Compact's Sustainable Development Goal Accelerator Program. She co-founded and managed FOCUS on the Global South in Bangkok, Thailand and led a social innovations project for the Organization of Economic Cooperation and Development in Paris, France. She also established the US Green Ribbon Award-winning sustainability program for Culver City Unified School District and was Culver City Chamber's Visionary Awardee in 2021.

**Dean Kubani** is an internationally recognized expert in urban sustainability. In a 25-year career with the City of Santa Monica, where he served as the city's first Chief Sustainability Officer, Dean oversaw the city's groundbreaking work in sustainable community development, renewable energy, water self-sufficiency, pollution prevention, green building and sustainable business. He currently Chairs the Santa Monica Commission on Sustainability, Environmental Justice and the Environment and teaches at the John T. Lyle Center for Regenerative Development at Cal Poly Pomona.

# Santa Monica Mts WUI Region



# Project Objectives

1

Identify climate change hazards in WUI region, with a focus on most vulnerable populations

2

Propose strategies to increase climate resilience, sustainability and capacity to adapt to extreme heat, fire and other hazards

3

Serve as an actionable guide for regional collaboration by local governments, regional agencies, individuals, neighborhood groups and other stakeholders

# Methodology

**Community Surveys:** 400 residents (Feb – March 2021)

**Listening Sessions:** Older Adults + Day Laborers (April-May)

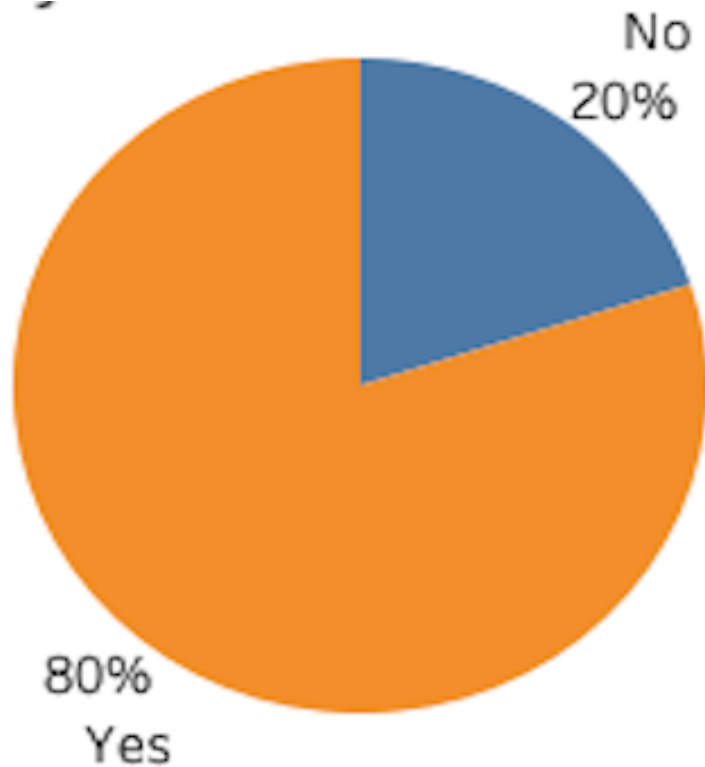
**Community Asset Inventory:** Catalog of community infrastructure

**Research and Data Analysis:**

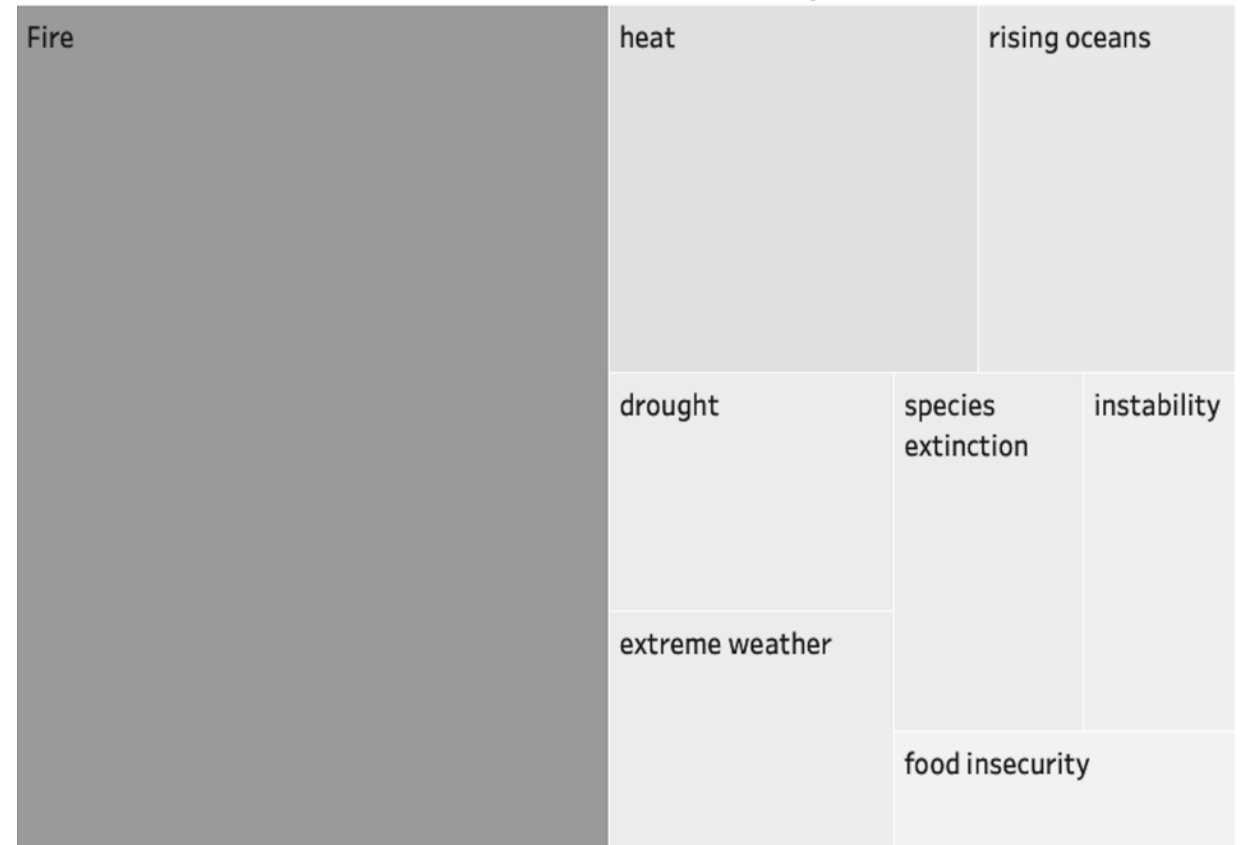
- CalAdapt
- Coastal Storm Modeling System (CoSMoS)
- National Oceanic and Atmospheric Administration (NOAA)
- LA County's 2021 Climate Vulnerability Assessment

# Survey Highlights

Do you feel climate change is impacting you?



What words come to mind when you hear "climate vulnerability"?



# Climate Hazard Assessment

Prolonged Droughts

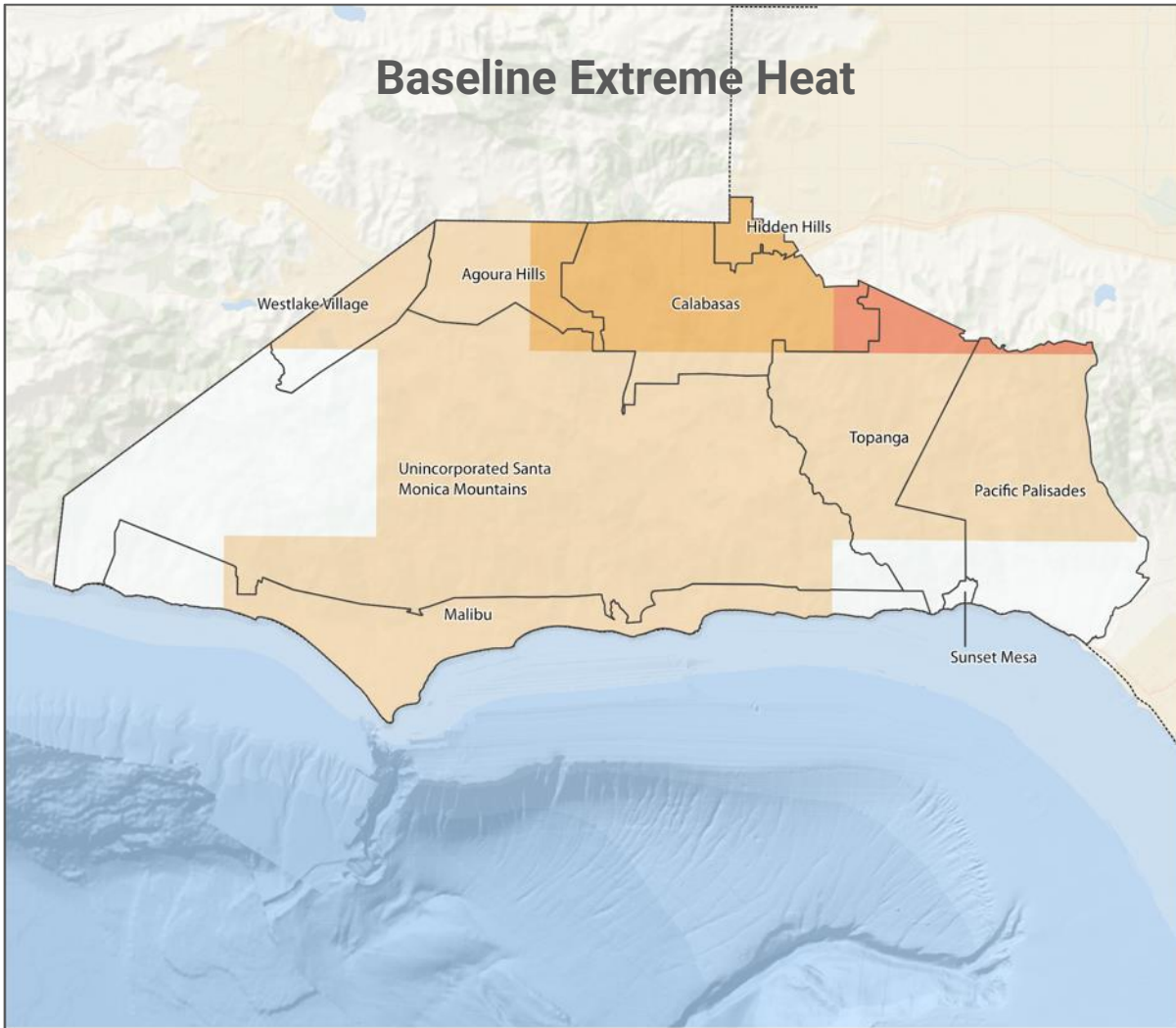
Extended periods of Extreme Heat

More Frequent Wildfires

Extreme Precipitation, Flooding and Landslides

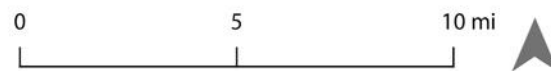
Sea Level Rise

## Baseline Extreme Heat



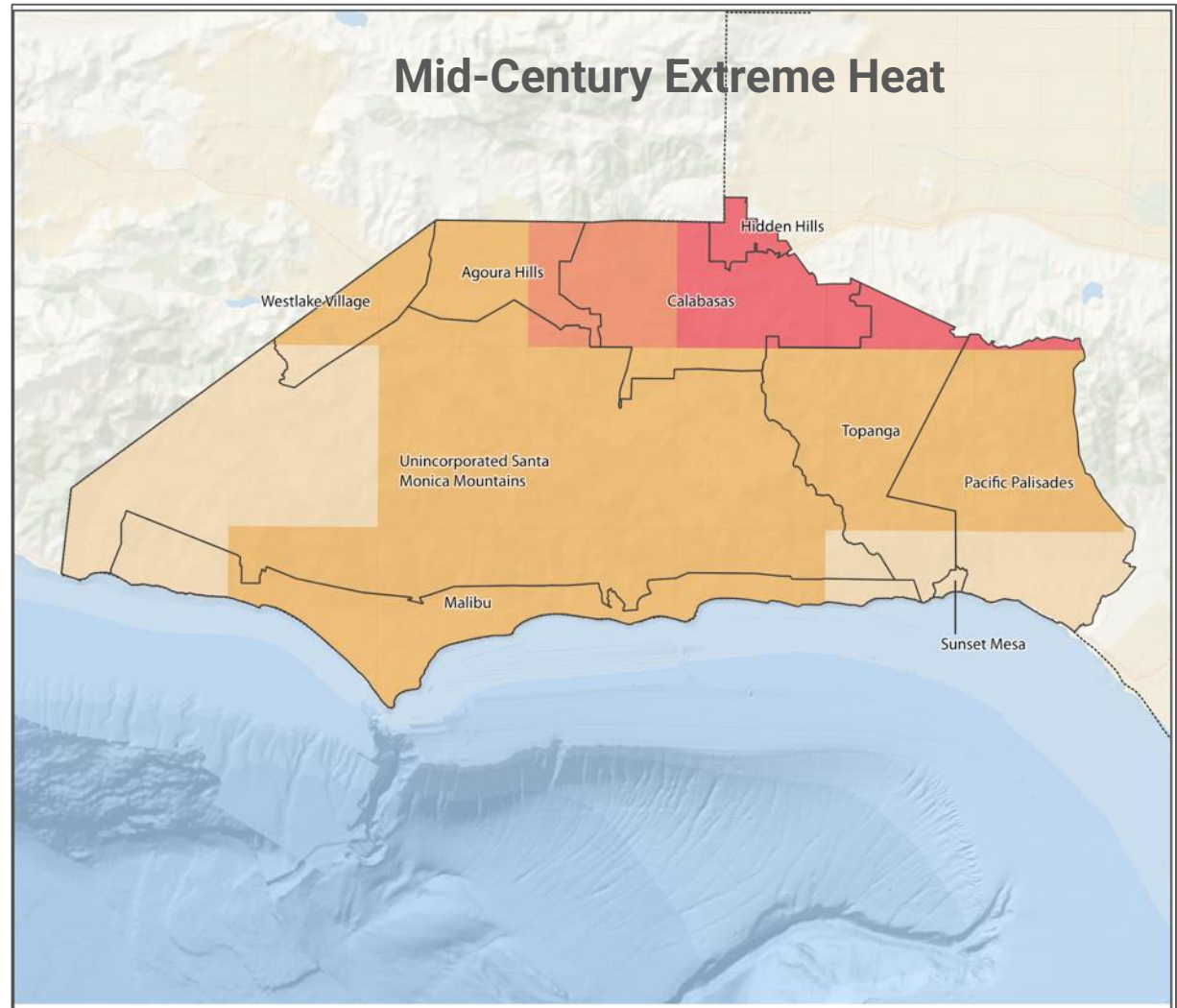
### Climate Hazards 95th Percentile Maximum Temperature

- 80°F - 85°F
- 85°F - 90°F
- 90°F - 95°F
- 95°F - 100°F



Data Source: Cal-Adapt, University of California, Berkeley, California's Fourth Climate Change Assessment, Pierce et al., 2018.

## Mid-Century Extreme Heat



### Climate Hazards 95th Percentile Maximum Temperature

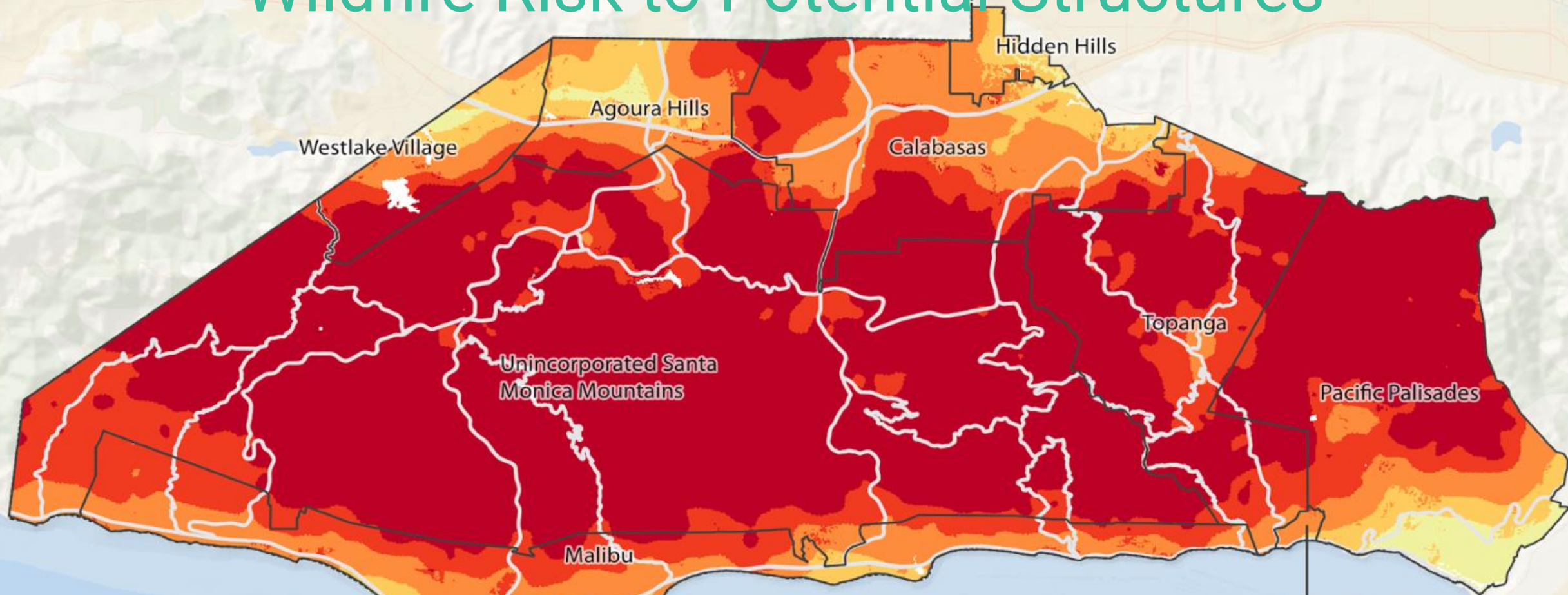
- 85°F - 90°F
- 90°F - 95°F
- 95°F - 100°F
- 100°F - 110°F



Data Source: Cal-Adapt, University of California, Berkeley, California's Fourth Climate Change Assessment, Pierce et al., 2018.

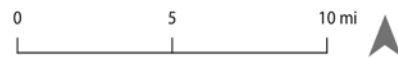


# Wildfire Risk to Potential Structures



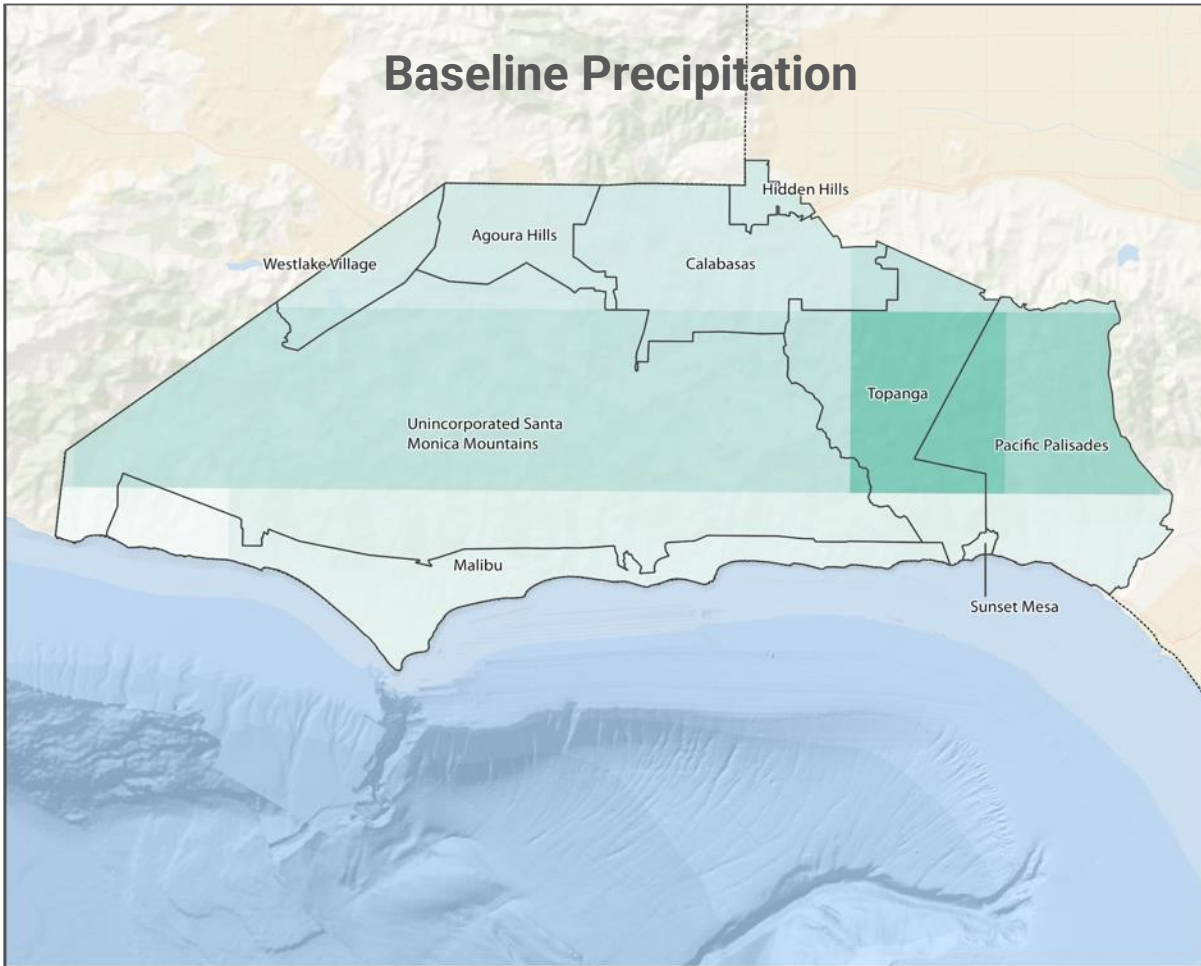
**Climate Hazards Percentiles (Relative to US)**

- 0
- 0 to 40th
- 40th to 70th
- 70th to 90th
- 90th to 95th
- 95th to 100th
- Evacuation Routes copy



Data Source: Scott, Joe H.; Gilbertson-Day, Julie W.; Moran, Christopher; Dillon, Gregory K.; Short, Karen C.; Vogler, Kevin C. 2020. Wildfire Risk to Communities: Spatial datasets of landscape-wide wildfire risk components for the United States. Fort Collins, CO: Forest Service Research Data Archive.

## Baseline Precipitation



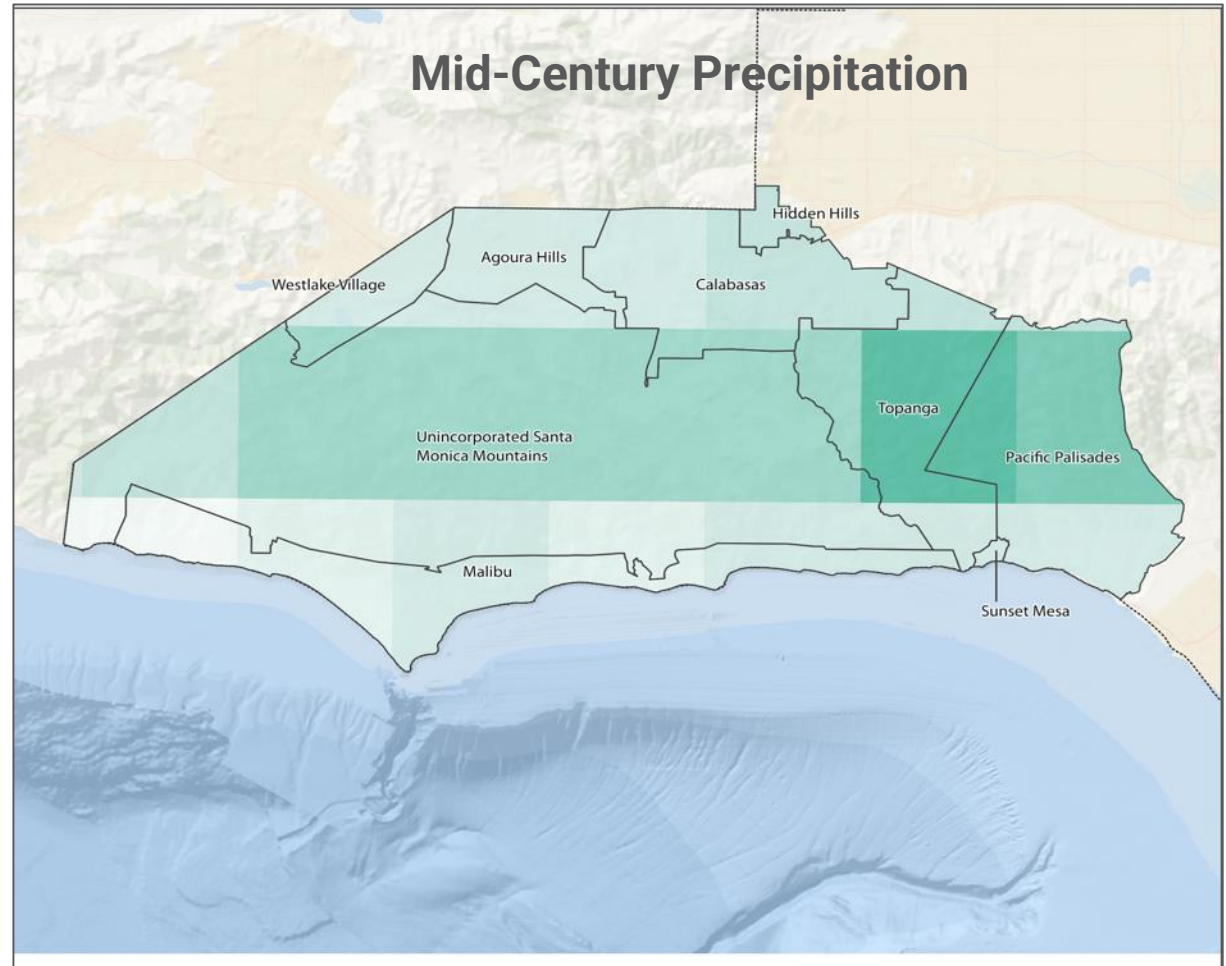
**Climate Hazards**  
**95th Percentile Daily Precipitation (mm)**  
 [1 inch = 25.4 mm]

- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40
- 40 - 45
- 45 - 50



Data Source: Cal-Adapt, University of California, Berkeley, California's Fourth Climate Change Assessment, Pierce et al., 2018.

## Mid-Century Precipitation



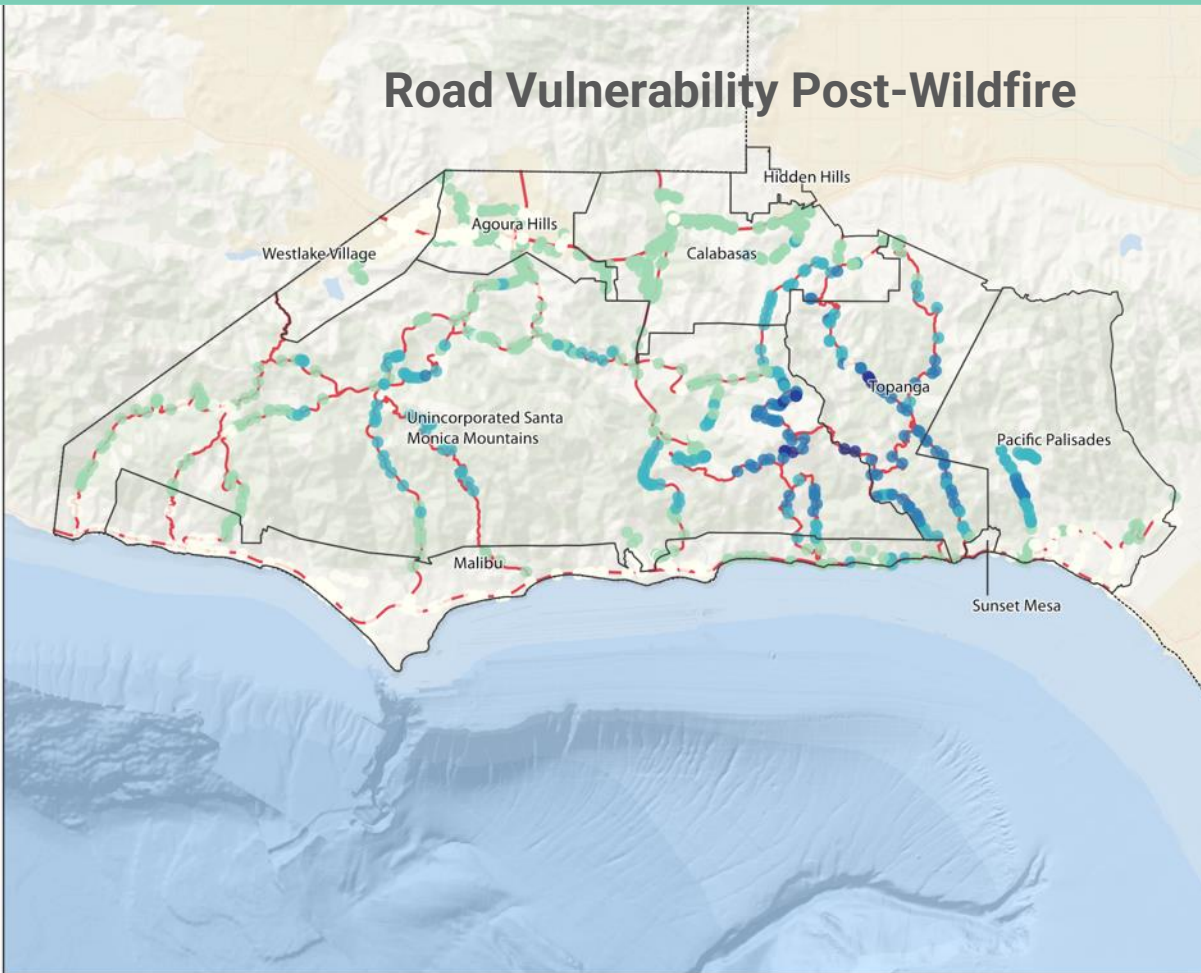
**Climate Hazards**  
**95th Percentile Daily Precipitation (mm)**  
 [1 inch = 25.4 mm]

- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40
- 40 - 45
- 45 - 50
- 50 +



Data Source: Cal-Adapt, University of California, Berkeley, California's Fourth Climate Change Assessment, Pierce et al., 2018.

## Road Vulnerability Post-Wildfire



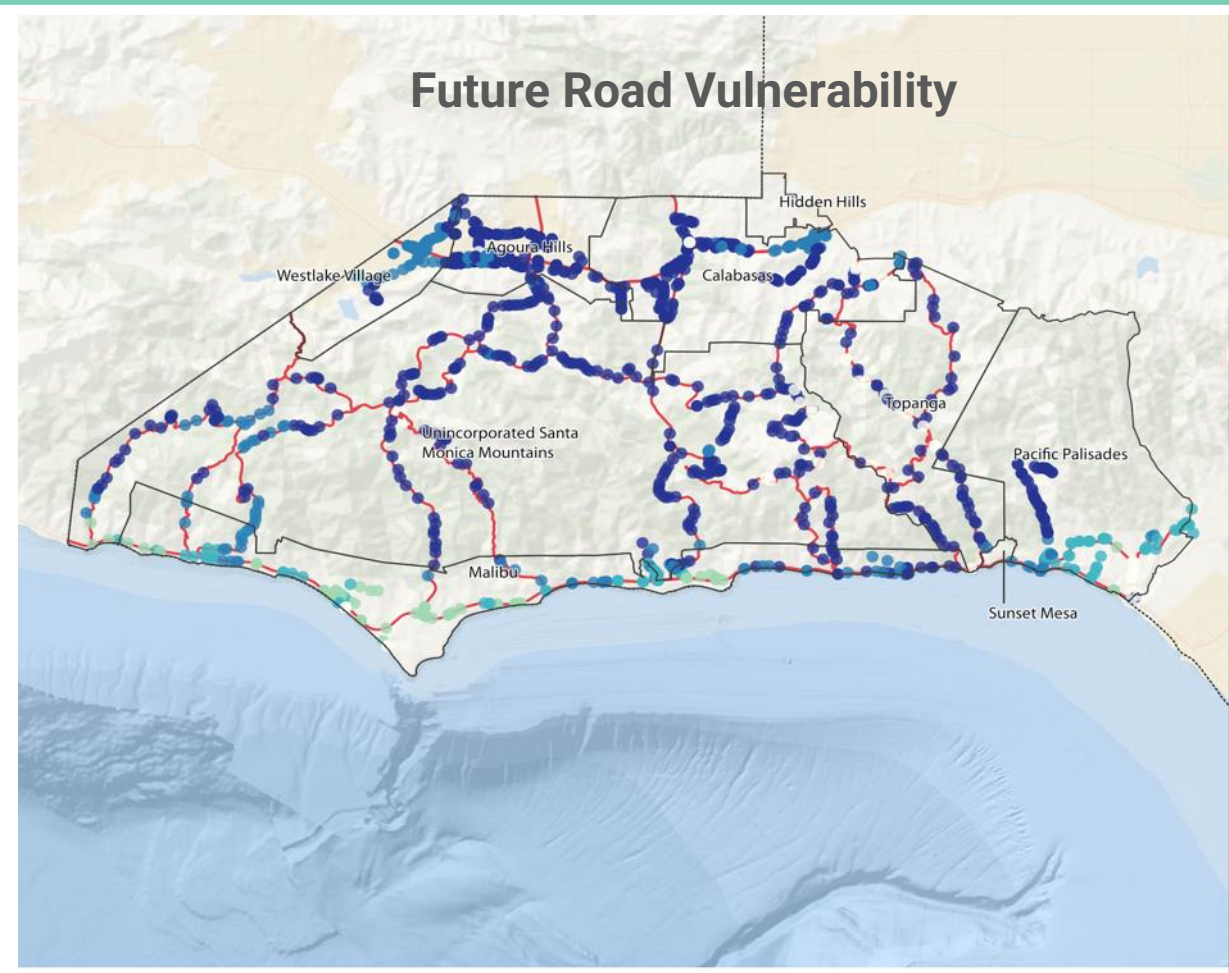
### Physical Vulnerability Debris Flow Risk (10-Year Storm, Current)

- Very Low
- Low
- Medium
- High
- Extremely High
- Evacuation Routes



Data Source: Chester M and Li R, 2020, Vulnerability of California Roadways to Post-Wildfire Debris Flow, UCLA Institute of Transportation Studies, Report No. UC-ITS-2020-38, doi: 10.17610/T60W35.

## Future Road Vulnerability



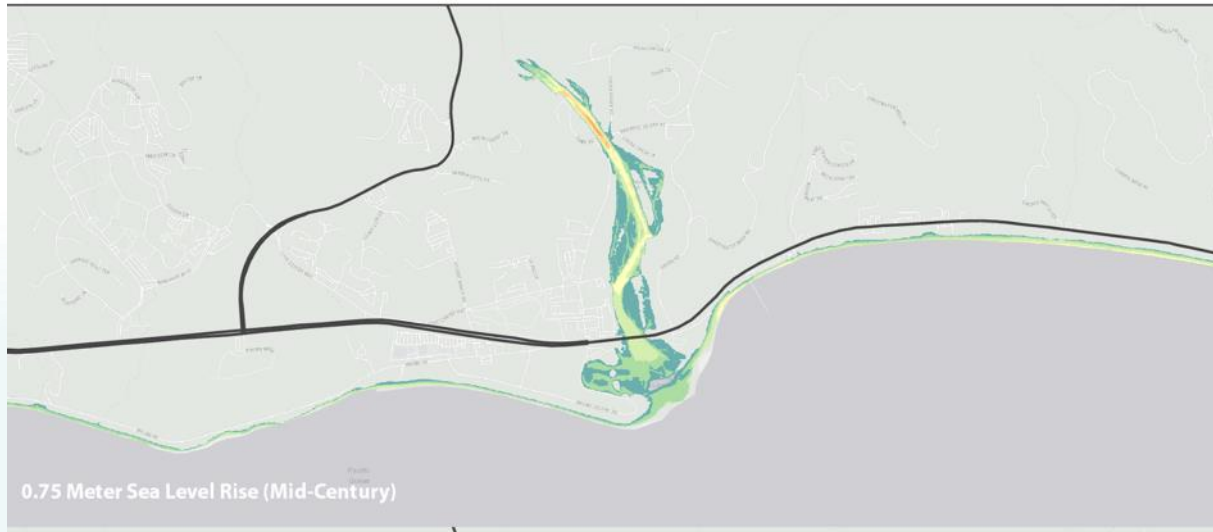
### Physical Vulnerability Debris Flow Risk (50-Year Storm, Late-Century RCP 8.5)

- Very Low
- Low
- Medium
- High
- Extremely High
- Evacuation Routes

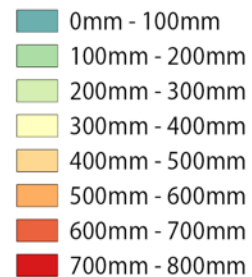


Data Source: Chester M and Li R, 2020, Vulnerability of California Roadways to Post-Wildfire Debris Flow, UCLA Institute of Transportation Studies, Report No. UC-ITS-2020-38, doi: 10.17610/T60W35.

# Coastal Flooding Hazard Sea Level Rise & 100 Year Storm



## Climate Hazards Inundation Depth (mm) [1 inch = 25.4 mm]



Data Source: Barnard, P.L., Erikson, L.H., Foxgrover, A.C., Limber, P.W., O'Neill, A.C., and Vitousek, S., 2018, Coastal Storm Modeling System (CoSMoS) for Southern California, v3.0, Phase 2 (ver. 1g, May 2018): U.S. Geological Survey data release, <https://doi.org/10.5066/F7T151Q4>.

# Social Vulnerabilities

## Older adults (age 65+):

- 12% of LA County's residents 65 or older; 22% of project region's population in this age bracket.
- Significant portion of older adult population have limited financial resources for home hardening, defensible space, on-site renewables w battery backup
- Many lack connectivity/social networks.
- Especially challenged by emergency communications & mobility issues & disproportionately impacted by extreme heat & toxic wildfire smoke.
- Evacuation orders & road closures make it difficult for older residents to leave due to road conditions & inability for caregivers to enter the region & assist them.

# Social Vulnerabilities

## Day laborers / Domestic Workers / Caregivers:

- Most listening session participants not registered or aware of existence of emergency alert systems, which are critical public safety resources to help people reduce their risks and provide accurate evacuation information during emergency events.
- Several participants lost their jobs because of the Woolsey Fire. Even if employers' homes were not destroyed, wildfire circumstances caused the loss of their employment opportunities for an extended period, which put a severe financial strain on them and their families.
- Highly vulnerable to negative health effects of wildfire smoke, day laborers health risks are further exacerbated by occupational hazards, low socio-economic status, limited access to health care, and the fact most reside in South LA, plagued by higher levels of toxic air pollution than other parts of LA County.

# Critical Infrastructure Assessment

A significant amount of critical infrastructure in the region is at risk from climate-related hazards and/or inadequate to meet current needs during a disaster, including:

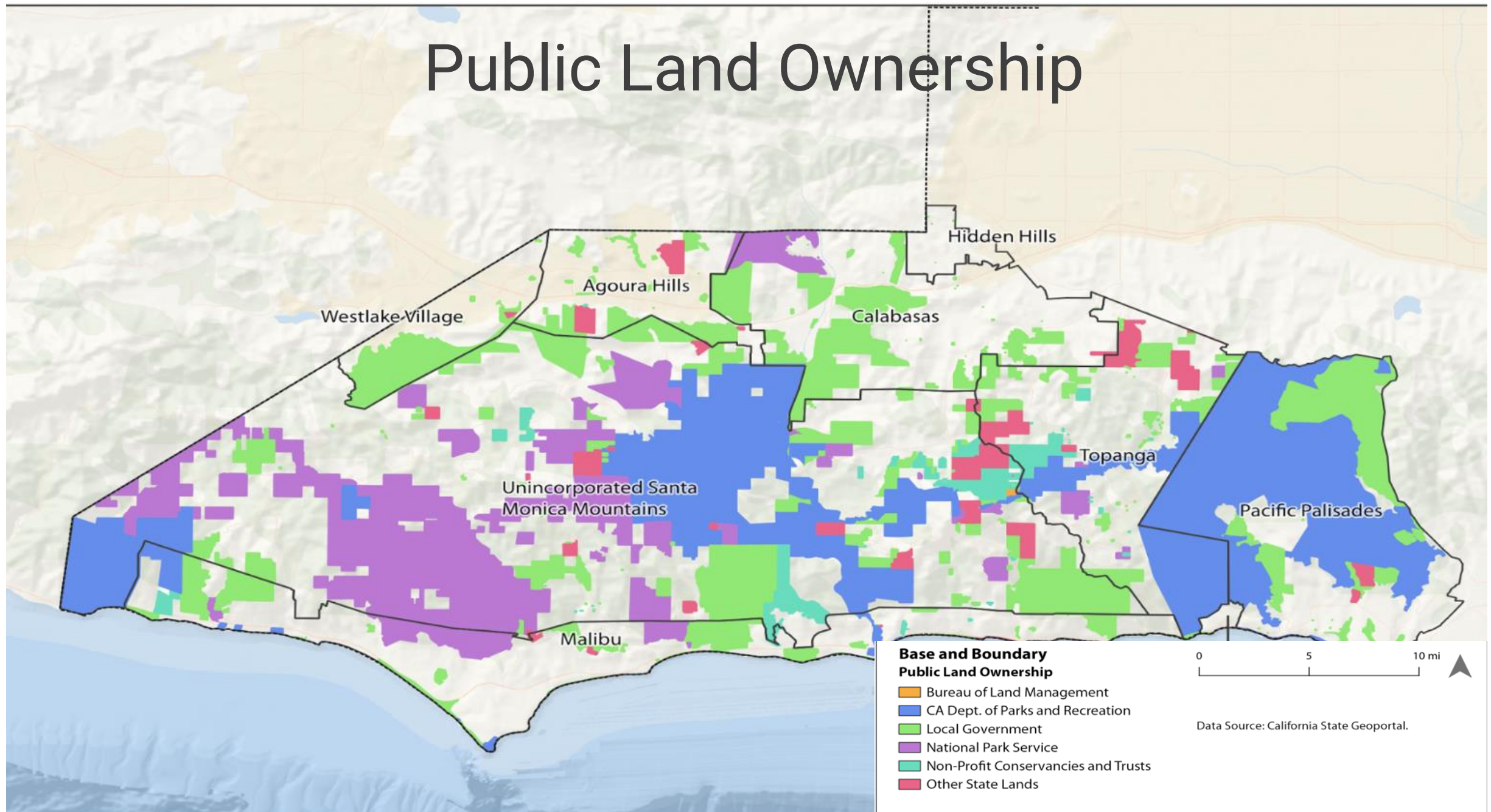
- Power grid is unreliable, power outages are frequent events throughout region.
- Telephone and cellular communications grid also unreliable, particularly during power outages.
- Water demand in region is almost entirely met using imported water, which will be increasingly unreliable in times of prolonged drought unless water agencies begin supplementing imported water with recycled water and stormwater capture.

# Critical Infrastructure Assessment

- Many residents have resource constraints that prevent them from upgrading their properties to be more climate resilient.
- A lack of adequate cooling centers in the region.
- Residents are not sufficiently aware of or prepared for the increasing threats related to climate change. Most cities have not addressed the long-term problems that will affect their communities, including disruption to critical infrastructure and impacts from excessive heat, flooding, wildfires, and drought.
- Emergency communications are poorly coordinated amongst the region's various jurisdictions.
- There is limited overall coordination between communities in the region as well as with the multiple agencies with jurisdictions the region.



# Public Land Ownership



# Recommendations

*to Improve Climate Resilience*

# Local Government Leadership

- ▶ All jurisdictions within the region must develop and implement comprehensive and aggressive Climate Action and Adaptation Plans
- ▶ Without concerted planning and action to drastically cut our climate emissions and deal with the multiple hazards we already face, the region will face even worse disasters and disruption in the near future

# Infrastructure

## Roads

- ▶ All local government agencies in the region should update their existing local emergency response and evacuation plans to address projected impacts to roads from future fires, floods and landslides
- ▶ Complete proactive slope and canyon stabilization on evacuation routes to avoid the need for more costly and disruptive post-disaster repairs

## Water

- ▶ Local government agencies should reevaluate their water supply resources in light of future climate-related drought projections and develop action plans to maximize the use of local water resources

# Infrastructure

## Energy

- ▶ To address the region's unreliable power grid, local government agencies and energy utilities should incentivize nano- and micro-grid energy systems for local residents and business
- ▶ Local governments should require each business property to have an onsite emergency source of power

## Communications

- ▶ To address unreliable emergency communications throughout the region local government agencies should:
  - ▶ Provide all households in the region with hand-crank AM/FM radios and FRS two-way radios to ensure that they can receive critical information and evacuation alerts during emergency events
  - ▶ Ensure businesses are equipped with resilient communication systems (FRS radios, hand-cranked radios, etc.) to provide communications during periods of cell service outage
  - ▶ Maintain updated communications and evacuations plans for their jurisdiction
  - ▶ Regularly provide training and updates to residents in their jurisdiction
  - ▶ Establish neighborhood groups to support vulnerable individuals and groups to assist with communication, transportation, and evacuation during emergency events

# Social Resilience

## Financial Assistance

- ▶ Most of the region's lower-income and fixed-income homeowners and renters require financial assistance to complete essential home hardening and defensible space upgrades to their homes, to purchase emergency kits that include emergency communication devices, and to install insulation, air conditioners, and plant native shade trees to prepare for excessive heat events

## Older Adults

- ▶ Local governments and emergency response organizations should work together to develop an inventory of at-risk older adults in the region, identify neighbors willing to check on these residents during emergency events, and organize sustained communication assistance and emergency trainings that target their specific needs

# Social Resilience

## Day Laborers / Domestic Workers / Caregivers

- ▶ Local government and emergency response agencies should provide multi-language disaster materials and trainings for people with limited English, and establish a public-private regional financial assistance fund to support day laborers, domestic workers, and caregivers during periods of disaster and recovery

## Unhoused Community

- ▶ More public resources are needed to help improve the wellbeing of the region's unhoused community, including the establishment of a dedicated center in the City of Malibu where the majority of people experiencing homelessness in the region reside

# Social Resilience

## Evacuation Centers and Regional Heat Response Planning

- ▶ All local government agencies within the region should review and update their existing emergency response plans to ensure there are adequate heat response facilities available, including cooling centers to service vulnerable residents during extreme heat events, and evacuation centers to provide temporary shelter for residents and workers during emergencies

## Climate Resilience Awareness and Emergency Preparedness Education

- ▶ Local government agencies should work with homeowner groups, neighborhood organizations, and other community groups to provide regular and comprehensive emergency drills and training for residents
- ▶ All local government and emergency response agencies within the region should provide up-to-date information regarding emergency communications, emergency response procedures and evacuation routes to all people in the region
- ▶ All residents in the region, especially older adults, must have up-to-date personal emergency response kits with communication devices, food, water and first aid supplies and any necessary important documents and medications they require





# Malibu Foundation Next Steps...

## 2022 commitments



- Emergency Radio Distributions
- Native Replanting
- Ignition Zone Home Mapping
- Fire Hydrant Placement
- Fire Safety Council Support





# Our Climate Crisis – Executive Summary

<https://www.themalibufoundation.org/executive-summary>



# Our Climate Crisis – Full Report

<https://www.themalibufoundation.org/resilience-report>

