Toolbox Tuesday
Southern California Climate Adaptation Framework & Housing EElement PaRcel (HELPR) Tool

December 8, 2020
10:00 am – 12:00 pm

www.scag.ca.gov
• Reminder to please mute your mics/phones

• Q&A at the end of each session
  • Questions may be entered using the chat

• Presentation materials will be shared with all participants following today's meeting

• Session is being recorded
Agenda – Session 1: SoCal Adaptation Framework

• SB 379 & SB 1035 for Safety Elements
  Governor's Office of Planning and Research (OPR)

• SoCal Climate Adaptation Framework
  SCAG Sustainability, Cambridge Systematics, ESA

• Resources for Environmental Justice Elements
  SCAG Sustainability
Local Adaptation Planning
State Policies, Guidance & Resources

SCAG TOOLBOX TUESDAY
NIKKI CARAVELLI
ASSISTANT PLANNER, GOVERNOR’S OFFICE OF PLANNING AND RESEARCH
ICARP advances a climate-resilient California for all.

ICARP has a statutory directive to drive a cohesive, coordinated response to climate change impacts across local, regional and state efforts, prioritizing equity and integrating mitigation with adaptation, via:

1. The Adaptation Clearinghouse
2. The Technical Advisory Council

See 2020 Impact Report at opr.ca.gov/planning/icarp/
Safety Element: Climate Adaptation

SB 379 (Jackson, 2015) - requires safety element updates to address **climate vulnerability and adaptation**

- Timing: next update to the local hazard mitigation plan on or after January 1, 2017; or, by January 1, 2022 if no local hazard mitigation plan.
- OK to incorporate other plans by reference

SB 1035 (Jackson, 2018) - requires **review and update to flood, fire hazards, and climate adaptation** portions of the safety element

- Timing: following the next housing element update at least every 8 years.
Safety Element: Wildfire & Evacuation

**SB 1241 (2012):** Added new *wildfire mitigation and risk reduction* requirements for safety element, for jurisdictions in State Responsibility Area (SRA) and Very High Fire Hazard Severity Zone (VHFHSZ)
- Timing: next housing element update on or after 1/1/2014
- Per AB 2911 (2018), OPR must updated by July 2020 to include land use strategies to address wildfire risks

**AB 747 (2019):** Requires analysis of evacuation routes and adequacy under a range of emergency scenarios

**SB 99 (2019):** Requires review, disclosure of developments with only one point of egress
SB 379 Requirements

1. Review and update of the safety element as necessary in order to address climate adaptation and resiliency strategies OR
   • Jurisdictions can reference other planning documents to fulfill the climate adaptation planning requirement
2. Complete a vulnerability assessment
3. Develop adaptation and resilience goals, policies, and objectives; and
4. Develop feasible implementation measures
Developing Plans And Strategies

A Climate Adaptation Strategy for the Lake Tahoe Basin

Adaptation + Mitigation + Innovation = Resilience
Resources: search ResilientCA.org

- OPR General Plan Guidelines (Chapter 4)
- State Adaptation Planning Guide
- Cal-Adapt.Org
- California’s Fourth Climate Change Assessment
- OPR SB 379 Survey Report
- OPR Guide to Defining Vulnerable Communities in the Context of Climate Adaptation
Defining Vulnerable Communities

http://www.opr.ca.gov/planning/icarp/vulnerable-communities.html

Table 1: Comparison table: indicators currently available through statewide vulnerability assessment tools, organized by system factors

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>INDICATOR</th>
<th>CES (weighted index x map)</th>
<th>CCHVI (not on index)</th>
<th>HPI (weighted index x map)</th>
<th>ROI (weighted index)</th>
<th>SB $1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing inequalities, institutionalized racism, or exclusion: People facing disadvantage or discrimination often have lower socioeconomic status, which result in fewer resources for preparing, coping and recovering from climate impacts.</td>
<td>Educational attainment</td>
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<td>Employment</td>
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<td>Housing burdened low income households</td>
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<td>Income</td>
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<td>Linguistic Isolation</td>
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<td>Poverty</td>
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<td>Race and Ethnicity</td>
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<td></td>
<td>Transparent household</td>
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<td>U.S. Citizenship</td>
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<td>Violent Crime Rate</td>
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<td></td>
<td>Voting</td>
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<tr>
<td>Physical states or conditions that increase vulnerability: Older adults, young children, pregnant women, and people with chronic health conditions or mental illness are more susceptible to harm from effects of climate change.</td>
<td>Asthma emergency department visits</td>
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<td></td>
<td>Children</td>
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<td>Cardiovascular disease</td>
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<td>Elderly</td>
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</tbody>
</table>
Exploring California's Climate Change Research

Cal-Adapt provides a view of how climate change might affect California. Find tools, data, and resources to conduct research, develop adaptation plans and build applications.
Thank you!

GOVERNOR’S OFFICE OF PLANNING AND RESEARCH

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Sign up for ICARP email updates
SoCal Climate Adaptation Planning Guide

Toolbox Tuesday Demonstration and Training

SCAG Sustainability Department, Cambridge Systematics, HereLA, and ESA

December 8, 2020

www.scag.ca.gov
Project Background

SoCal Climate Adaptation Framework

- February 2019 Kickoff
- SB 1 Adaptation Planning Grant
- SCAG, Cambridge Systematics, with ESA, Here LA, and Urban Economics

- Tools and Resources
- Outreach and Communications Strategies
- Planning Guidance and Model Policy Language
- Vulnerability mapping and assessment tools
- Transportation and land use scenarios and modeling
- Finance and Funding Guidance
Today’s Agenda – How to Use the Tools

1. Project Background
2. Policy Background of State Bills
3. Climate Change Impacts in the SCAG Region
4. SoCal Adaptation Planning Guide
5. Model Policy Language
6. Vulnerability Mapping and Assessment Tools
7. Adaptation Actions and Strategies
8. Transportation and Land Use Scenarios and Modeling
9. Finance and Funding Guidance
10. Outreach Tools
11. Questions and Discussion
Key State Bills – Safety & Climate

**Senate Bill 379** – Safety Element of a General Plan and Local Hazard Mitigation Plan to address climate adaptation

**Senate Bill 1035** – Safety Element regular updates to address climate change as part of Housing Element and Local Hazard Mitigation Plan updates

**Senate Bill 1000** – Environmental Justice Element to be prepared when two or more elements are updated and the city or county has a disadvantaged community
Climate Change Impacts In the SCAG Region

- Extreme Heat
- Sea Level Rise/Coastal Flooding and Erosion
- Severe Storms/Wind
- Inland Flooding
- Drought
- Wildfire
- Air Quality and Vector Borne Diseases
- Landslides
- Pests and Ecological Hazards
Widespread Impacts

**Wildfire Risk**

2030 Population Affected by Wildfire (Medium, High or Very High Risk)
1. - 100 people

**Sea Level Rise**

2030 Population Affected by Sea Level Rise (1m)
1. - 100 people

**Extreme Heat**

2030 population affected by Extreme Heat
1. - 500 people

**Flood Risk**

2030 Population Affected by Floods (100 year event)
1. - 50 people
Annual Days of Heat Health Events in 2050

- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 126

Source: Cal-Adapt, California Heat Assessment Tool
https://www.cal-heat.org/
Heat Health Events are defined as heat waves producing spikes in heat related hospital visits and fatalities. Historical correlations with temperature, humidity, heat island effects, tree canopy and ratios of vulnerable populations are used in these projections.
Annual Days of Heat Health Events in 2070

- 2 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 157

Source: Cal Adapts, California Heat Assessment Tool
https://www.cal-heat.org/

Heat Health Events are defined as heat waves producing spikes in heat related hospital visits and fatalities. Historical correlations with temperature, humidity, heat island effects, tree canopy and ratios of vulnerable populations are used in these projections.
Four Phases of Climate Adaptation Planning

PHASE 1: Explore, Define, and Initiate

PHASE 2: Assess Vulnerability

PHASE 3: Define Adaptation Framework & Strategies

PHASE 4: Implement, Monitor, Evaluate, and Adjust

Outreach & Engagement
Regional Climate Adaptation Framework

The Southern California Association of Governments is pleased to be developing a Regional Climate Adaptation Framework, which assists local and regional jurisdictions in managing the negative impacts of climate change. The study looks at how the Southern California region can work together to plan and prepare for the impacts of sea level rise, extreme heat, increasingly frequent and damaging wildfires, and other climate-related issues. We are already dealing with these severe climate issues and adaptation planning is necessary to help individuals, communities, and natural systems cope with the unavoidable consequences of a changing climate.

For this effort, SCAG has been working with local municipalities, advocacy groups, universities, and other stakeholders to assess the unique issues affecting the SCAG region, available planning tools and resources, scientific data, and messaging strategies. Many local jurisdictions do not have the resources to adequately assess their local hazards, develop effective adaptation plans, and participate in regional planning efforts – our framework provides jurisdictions with a roadmap to adaptation in an effort to help build a more resilient Southern California.

As part of the overall Framework, SCAG is sharing new tools for local jurisdictions – first, the Communication & Outreach Strategies and Templates that can help jurisdictions and community-based organizations engage the public during the planning process.
Policy gap analysis:

- 44% of SCAG jurisdictions have adopted climate adaptation policies or are in the process of updating their policy documents.

- Only 14 cities and counties (7%) have adopted or drafted an updated safety element that addresses climate change.
PHASE 1

Explore, Define, and Initiate

- Step 1.1 Motivation and Scope
- Step 1.2 Teams and Resources
- Step 1.3 Climate Effects and Community Elements

Conduct Outreach and Engagement

Figure 8
Steps in Phase 1
Step 1.3: Identify Community Climate Hazards and Critical Assets at Risk

Goal: Identify climate change hazards that could impact the community and populations and assets that are at risk.

The California APG provides detailed guidance on identifying climate change hazards and community assets at risk. A brief summary of the guidance is provided here.

As described in the California APG, the goal of Phase 1 is to gain a preliminary understanding of climate change effects on the community to help support project scoping.

To inform the detailed vulnerability assessment in Phase 2, identify the climate-related hazards expected to impact the community, as well as the types of community assets potentially at risk from those hazards. These climate-related hazards and community assets will be refined during Phase 2 as a result of stakeholder and community outreach efforts.  

See Jurupa Valley example.
Additional Tools and Resources for Identifying Vulnerable Communities:

- **Vulnerable Populations:** CalEnviroscreen 3.0 is an online screening tool that identifies communities that are disproportionately burdened by and vulnerable to various sources of pollution based on existing pollution burden and environmental effects as well as population-based disparities.

- **Disadvantaged Communities:** Locate disadvantaged communities as defined by CalEPA for the purposes of funding projects pursuant to SB 535 using the SB 535 Online Mapping Application of Disadvantaged Communities based on CalEnviroscreen criteria.

- The **SB 1000 Toolkit** includes guidance and resources for identifying disadvantaged communities.

- **Planning and Investing for a Resilient California:** The Vulnerable Populations Appendix identifies vulnerable populations and explains why these populations may be disproportionately impacted by climate change. The Equity Checklist includes a list of questions that can be used to guide a planning phase or decision-making process with the intent of ensuring equitable community engagement and more equitable outcomes for vulnerable populations.

- **Regional Resilience Toolkit** offers guidance regarding identifying disadvantaged communities. Additionally, the Stakeholder Identification and Stakeholder Mapping Worksheets in Appendix B are intended to facilitate the identification of vulnerable communities and key stakeholders within the communities that should be included in the planning process.

- **California Heat Assessment Tool** is an online mapping tool that identifies population groups by census tracts that are particularly vulnerable to heat events.

- The **California Healthy Places Index (HPI)** is an online mapping tool that reports on community conditions related to health outcomes. Data can be displayed at the census tract level, city, county and other boundaries. The Healthy Places Index allows users to see how existing conditions for health intersect with areas of climate hazards. The HPI Policy Guide includes strategies designed to improve health while also building climate resilience.
PHASE 2
Assess Vulnerability

Step 2.1 Exposure
Step 2.2 Sensitive & Potential Impacts
Step 2.3 Adaptive Capacity
Step 2.4 Vulnerability Scoring

Engagement and Outreach

Figure 2.1 - Steps in Phase 2
Figure 10: Exposure of Bulidings and Facilities to Riverine Flooding

CITY OF LONG BEACH
Climate Change Vulnerability Assessment Results (2018)

PHASE 2: ASSESS VULNERABILITY
PHASE 3

Develop and Prioritize Strategies

Step 3.1 Summarize Vulnerability
Step 3.2 Confirm Vision and Goals
Step 3.3 Prepare Adaptation Strategies
Step 3.4 Prioritize Strategies

Conduct Outreach and Engagement

Figure 13
Steps in Phase 3
### Step 3.3: Prepare Adaptation Strategies

**Goal:** Develop adaptation strategies to address community’s vulnerability to climate change hazards.

The problem statements or issue statements in Step 3.1 can be useful in identifying the strategies needed to increase resilience in most critical assets. The California Adaptation Planning Guide (APG) offers guidance on how to craft a strategy to support objectives developed in Step 3.2, and vulnerabilities and problem statements in Step 3.1. As explained in the California APG, these strategies should be developed within the context of the planning process being developed or updated plan safety element, climate action plan, local hazard mitigation plan, or other specific planning documents used by the strategies. See Section 3.1 on creating an impact.

#### Strategies and Actions

<table>
<thead>
<tr>
<th>Climate Change Hazard</th>
<th>Asset</th>
<th>Strategy</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inland flood</td>
<td>Buildings and Facilities</td>
<td>Account for climate change impacts when designing and approving future projects and netting existing projects</td>
<td>Require accounting of flood risk in all applications for new development flood plain areas. Ensure that all applications for new development account for projected precipitation changes and provide adequate protection or design accommodations.</td>
</tr>
<tr>
<td>Inland flood</td>
<td>Multiple Assets</td>
<td>Adapt and repair management to accommodate changing precipitation patterns</td>
<td>Design new channels to increase flood capacity.</td>
</tr>
<tr>
<td>Inland flood</td>
<td>Multiple Assets</td>
<td>Adapt river and reservoir management to accommodate changing precipitation patterns</td>
<td>Coordinate with water districts to explore reservoir management and operations options for improving river flood management in anticipation of changing precipitation patterns.</td>
</tr>
<tr>
<td>Inland flood</td>
<td>Biodiversity and Habitat</td>
<td>Build or expand flood defenses</td>
<td>Construct “living levees” by increasing open space, upland, and wetland habitats between the levee and river.</td>
</tr>
<tr>
<td>Inland flood</td>
<td>Multiple Assets</td>
<td>Build or expand flood defenses</td>
<td>Upgrade or rebuild existing levees, flood walls, or other flood defenses along creeks and rivers to increase flood capacity of the channel.</td>
</tr>
<tr>
<td>Inland flood</td>
<td>Wastewater Treatment</td>
<td>Design and utilize green infrastructure to provide adaptation benefits</td>
<td>Promote low-impact development (LID) stormwater practices in areas where storm sewers may be impounded by high water due to flood waters.</td>
</tr>
<tr>
<td>Inland flood</td>
<td>Stormwater</td>
<td>Design and utilize green infrastructure to provide adaptation benefits</td>
<td>Where possible, use pervious pavement (e.g., for bicycle and pedestrian pathways) to increase water infiltration.</td>
</tr>
<tr>
<td>Inland flood</td>
<td>Stormwater</td>
<td>Design buildings and facilities to minimize vulnerability to flood hazards</td>
<td>Elevate the first floor up to elevations above target flood levels accounting for projected precipitation changes. Design and build buildings and roads by elevating or relocating them to higher elevations. Rebuild all connecting roads, trails, and utilities to comply up to the new grade. Elevation should account for projected precipitation changes.</td>
</tr>
<tr>
<td>Inland flood</td>
<td>Buildings and Facilities</td>
<td>Design buildings and facilities to minimize vulnerability to flood hazards</td>
<td>Modify building design standards so that the second floor is above the target flood level and contains flood-sensitive features, while the first floor is used for parking and/or storage and is designed to be durable and resilient to flood damage. Target flood level for existing buildings and roads by placing all to the grades at higher elevations. Rebuild all connecting roads, trails, and utilities to comply up to the new grade. Elevation should account for projected precipitation changes.</td>
</tr>
<tr>
<td>Inland flood</td>
<td>Multiple Assets</td>
<td>Design restoration of riparian corridors and wetlands in floodplains to be resilient to climate change</td>
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</tr>
<tr>
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</tr>
</tbody>
</table>

**Sources**

- [California Adaptation Planning Guide](https://www.scag.ca.gov/planning-guides/)
PHASE 4
Implement, Monitor, Evaluate, and Adjust

Step 4.1 Implement
Step 4.2 Monitor
Step 4.3 Evaluate
Step 4.4 Adjust

Conduct Outreach and Engagement

Figure 14
Steps in Phase 4
Model policies organized by general plan element and climate hazard type

- **Elements:**
  - Environmental Justice
  - Circulation
  - Land Use
  - Safety

- **Hazards:**
  - Multiple hazards
  - Extreme heat
  - Air quality and human health
  - Other climate-related hazards

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**Safety Element**

**Multiple Hazards**

- **Identify Local Transit Agency’s Role in Providing Evacuation Assistance.** Incorporate in the Local Hazard Mitigation Plan and any local emergency response plans, the role of the local transit agency(s) in providing evacuation assistance based upon the duration and severity of events related to climate change impacts.

- **Consider Vulnerability of Agricultural Operations as part of Climate Change Planning Process.** If the community includes agricultural uses, include vulnerability of agricultural operations as part of the climate change and/or adaptation planning process including assessments of climate, physical environment, farm-level factors and socio-economic forces.

- **Engage Stakeholders from the Agriculture Sector in Climate Change Planning Process.** If the community includes agricultural uses, ensure that all stakeholders, including industry specialists, farm operators, and other community groups are identified and engaged in all planning and policy development related to climate change and/or adaptation.

- **Encourage the Use of Williamson Act in the Zoning Ordinance.** Adopt provisions within the Community’s zoning ordinance to encourage the use of the Williamson Act for preservation of agricultural lands and/or open space. The Williamson Act encourages the preservation of land for open space, forestry and agricultural operations through an easement and reassessment of the property. This can aid in carbon sequestration, protection of food supply, inland floodplain protection, or sensitive habitats to offset costs and provide additional land to mitigate climate change impacts.

- **Implement a Policy of Retreat.** Implement a policy of retreat for areas at-risk for repeated damage due to climate change hazards, such as areas of high subsidence, extreme wildfire risk, and floodplains to allow for natural modification of the landscape and reduction in risk to property and life.

- **Develop an Inclusive Public Outreach and Engagement Strategy.** As climate change and its associated hazards continue to impact more people, it is important to ensure that the public is engaged in planning and decision-making processes.
Safety Elements In Model Policies

• Download Model Policy language from:

• General Plan Model Policies:
  • Safety Element – page 8
  • Housing Element – page 13

• Local Coastal Plan Model Policies:
  • Examples of safety element and sea level rise – page 4
# Project Checklists

## Template for incorporating climate change adaptation elements into local project approval process:

- Residential and commercial development
- Infrastructure projects

## Two-step process:

1. **Suggested screening thresholds for 6 hazards**
2. **Detailed checklist for each hazard**

### Table 1: Project Screening Thresholds for Climate Hazards (For Project Proponent to Complete)

<table>
<thead>
<tr>
<th>Climate Hazard</th>
<th>Screening Threshold Questions (If the answer to any of the following questions is “Yes”, then the checklist for that hazard must be completed)</th>
<th>Links or Sources of Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drought</td>
<td>- Would project consume water resources in its construction or operation and if so, are the water sources supplying the project at risk from drought?</td>
<td>Urban Water Management Plan applicable to the project’s location</td>
</tr>
<tr>
<td>Extreme Heat</td>
<td>- Is the area where your project is located expected to experience more than 30 heat health days per year over the project lifetime?</td>
<td>Maps based on California Heat Assessment Tool (CHAT): <a href="https://www.cal-heat.org/">https://www.cal-heat.org/</a></td>
</tr>
<tr>
<td>Inland Flooding</td>
<td>- Is the project located in the 100-year or larger FEMA floodplain, otherwise known as the 1% annual chance flood?</td>
<td>FEMA Flood Maps: <a href="https://msc.fEMA.gov/portal/home">https://msc.fEMA.gov/portal/home</a></td>
</tr>
<tr>
<td>Landslides</td>
<td>- Is the project located in an area of moderate or high susceptibility to landslide hazards?</td>
<td>USGS landslide susceptibility map: <a href="https://maps.conservation.ca.gov/cgi/srtv/">https://maps.conservation.ca.gov/cgi/srtv/</a></td>
</tr>
<tr>
<td>Sea Level Rise/Coastal Flooding</td>
<td>- Is the project in a SLR vulnerability zone, or will any infrastructure or resources that the project relies upon be affected by SLR (e.g., beaches, groundwater)?</td>
<td>Use detailed local SLR maps, if available. Alternatively, use Our Coast Our Future tool: <a href="http://data.pointblue.org/apps/occdrms/index.php?page=flood-map">http://data.pointblue.org/apps/occdrms/index.php?page=flood-map</a></td>
</tr>
<tr>
<td>Wildfire</td>
<td>- Is the project located in a high or very high fire hazard zone?</td>
<td>CalFIRE Maps - <a href="https://osdm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/">https://osdm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/</a></td>
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</tbody>
</table>
Project Checklists

Extreme Heat Checklist

Over the coming decades the SCAG region can expect longer and hotter heat waves. Average maximum temperatures are projected to increase around 4-5 degrees F by the mid-century, and 5-8 degrees F by the late-century. Extreme temperatures are also expected to increase in duration and intensity.

Exposure
1. Historical exposure: Has the site historically experienced extreme heat events? (Provide supporting evidence; if yes, please describe past events or conditions: e.g., long heat spells, hot nights, etc.)
   - Yes
   - No
   - Basis for conclusion

2. Future Conditions over Project Lifetime:
   - Extreme heat events are expected to increase in duration and/or intensity.
   - Extreme heat events are not expected to increase in duration and/or intensity.
   - Extreme heat events are expected to remain about the same.
   - Unknown.

3. Identify data source(s) or map(s)/modeling used for assessing past and future exposure of the asset
   (check all that apply):
   - California Heat Assessment Tool (CHAT) found at https://www.cal-heat.org/
   - Cal-Adapt
   - Site Specific Modeling (please provide date and source of information)

Sensitivity
1. Human Health: Using the CHAT (www.cal-heat.org), determine the Heat Vulnerability Index (HVI) for the census tract where the project is located. Areas with HVI values over 50 are considered highly vulnerable to heat-related health impacts.
2. Physical Asset: Assess sensitivity to the climate hazard based on the following criteria:
   - Low Sensitivity: Climate hazard would have little or no impact on the asset’s physical components or how the project functions.
   - Moderate Sensitivity: Climate hazard would have an impact on the project’s physical components and/or its functionality, but the project would recover quickly once hazard subsides. The project would retain some ability to function while exposed.
   - High Sensitivity: Climate hazard would have a significant impact on the project’s asset(s) physical components and/or its functionality, and the project would not recover quickly once the hazard subsides. The project would lose minor functionality while exposed.

For each hazard of potential concern:

a. Assess project’s vulnerability based on exposure and sensitivity
b. Assess potential consequences based on:
   I. Estimated level of asset damage
   II. Level of disruption of asset service or function
   III. Cost to replace and/or repair and cost of losing the service/function of the asset
c. Assess project’s **adaptive capacity**, based on the adaptation measures incorporated into its design
   i. Suggested measures: customize to local needs
   ii. Utilize the Strategy Matrix

<table>
<thead>
<tr>
<th>Robustness</th>
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<tbody>
<tr>
<td>1. Would project expand and maintain the urban tree canopy? (e.g., by increasing tree cover for large parking lots)</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>2. Would the project expand the use of cool roofs and reflective building materials?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>3. Would the project use alternative vegetative solutions to alleviate urban heat island, for example, green walls and green roofs where trees are not possible?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>4. Would the project expand the use of cool, porous, high-reflectivity pavement or sustainable materials in pavements?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resilience</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Would the project use alternatives to grid-powered air conditioners for cooling, such as propane air conditioners, fans and cold water systems?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adaptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Would the project limit or remove impervious surfaces to help combat urban heat island effects?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>7. Does the project expand access to cooling centers for vulnerable populations to use during heat health events?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Redundancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Would the project have at least 2 routes for emergency vehicle access to allow for emergency services/first responders to access people at project site in the event of an emergency?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>
## Vulnerability Mapping and Assessment Tool

1. ArcGIS Online and ESRI StoryMaps web-based tools
2. Overlay risks with demographics in your community
3. Select areas of interest
4. Explore scenarios and model results

<table>
<thead>
<tr>
<th>Main Layers</th>
<th>Geography</th>
<th>Key Fields</th>
<th>Use</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Level Rise, 1m, avg storm conditions</td>
<td>Extent of inundation</td>
<td>Depth of inundation</td>
<td>Vulnerability mapping</td>
<td>COSMOS</td>
</tr>
<tr>
<td>Wildfire Risk</td>
<td>Extent of risk</td>
<td>Level of risk</td>
<td>Vulnerability mapping</td>
<td>Urban Footprint interpolation of USFS and CalFire</td>
</tr>
<tr>
<td>Extreme Heat Health Impacts</td>
<td>Census tract</td>
<td>Annual days of HHE</td>
<td>Vulnerability mapping</td>
<td>Cal-Heat</td>
</tr>
<tr>
<td>Flood Risk</td>
<td>Extent of inundation</td>
<td>100 yr flood plain, base flood plain</td>
<td>Vulnerability mapping</td>
<td>FEMA</td>
</tr>
<tr>
<td>Stranded Zones SLR</td>
<td>TAZ</td>
<td>Stranded, partially stranded</td>
<td>Stranded Zones Analysis</td>
<td>Cambridge Systematics analysis</td>
</tr>
<tr>
<td>Stranded Zones wildfire</td>
<td>TAZ</td>
<td>Stranded, partially stranded, extreme detour percentage</td>
<td>Stranded Zones Analysis</td>
<td>Cambridge Systematics analysis</td>
</tr>
<tr>
<td>Relocation scenarios, phase 1</td>
<td>TAZ</td>
<td>Pop, HH, Emp added and removed for each scenario</td>
<td>Scenario Relocation Summary</td>
<td>Cambridge Systematics analysis</td>
</tr>
<tr>
<td>Detailed SPZ intersect of vulnerability</td>
<td>SPZ</td>
<td>SLR, Wildfire risk categories, Flood risk</td>
<td>Scenario Relocation Summary</td>
<td>Cambridge Systematics analysis</td>
</tr>
<tr>
<td>Relocation scenarios, phase 2</td>
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<td>Cambridge Systematics analysis</td>
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<tr>
<td>Relocation scenarios, phase 1</td>
<td>dot density</td>
<td>Pop, HH, Emp added and removed for each scenario</td>
<td>Scenario Relocation Summary</td>
<td>Cambridge Systematics analysis</td>
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<td>Scenario Relocation Summary</td>
<td>Cambridge Systematics analysis</td>
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<tr>
<td>Other Layers</td>
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<td>Depth of inundation</td>
<td>Vulnerability mapping</td>
<td>COSMOS</td>
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<tr>
<td>SLR, 0.5 m</td>
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<td>Depth of inundation</td>
<td>Vulnerability mapping</td>
<td>COSMOS</td>
</tr>
<tr>
<td>SLR, 1.5 m</td>
<td>Extent of inundation</td>
<td>Depth of inundation</td>
<td>Vulnerability mapping</td>
<td>COSMOS</td>
</tr>
<tr>
<td>SLR, 2 m</td>
<td>Extent of inundation</td>
<td>Depth of inundation</td>
<td>Vulnerability mapping</td>
<td>COSMOS</td>
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<tr>
<td>SLR, 5m</td>
<td>Extent of inundation</td>
<td>Depth of inundation</td>
<td>Vulnerability mapping</td>
<td>COSMOS</td>
</tr>
<tr>
<td>Wildfire Risk</td>
<td>Extent of risk</td>
<td>Level of risk</td>
<td>Vulnerability mapping</td>
<td>CalFire</td>
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</table>
### Decision Tree Tool

**AGENCY INFO**

| Select the County you represent | Riverside |
| Select City you represent       | Hemet     |

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>Employment</th>
<th>Households</th>
<th>Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>2,425,222</td>
<td>836,021</td>
<td>811,643</td>
<td>2,506,153</td>
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<tr>
<td>City</td>
<td>125,884</td>
<td>37,793</td>
<td>49,159</td>
<td>125,274</td>
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</table>

**DAC Total**

<table>
<thead>
<tr>
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<th>DAC Employment</th>
<th>DAC Households</th>
<th>DAC Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>493,455</td>
<td>306,399</td>
<td>142,886</td>
<td>390,336</td>
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<tr>
<td>City</td>
<td>21,084</td>
<td>10,451</td>
<td>8,024</td>
<td>22,314</td>
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</table>

**Wildfire**

<table>
<thead>
<tr>
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<th>Employment</th>
<th>Households</th>
<th>Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>615,144</td>
<td>215,618</td>
<td>207,610</td>
<td>743,358</td>
</tr>
<tr>
<td>City</td>
<td>26,256</td>
<td>7,893</td>
<td>10,269</td>
<td>27,006</td>
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</table>

**DAC Wildfire Affected**

<table>
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<tr>
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<th>DAC Housing Units</th>
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</thead>
<tbody>
<tr>
<td>County</td>
<td>13,941</td>
<td>12,840</td>
<td>11,228</td>
<td>16,847</td>
</tr>
<tr>
<td>City</td>
<td>561</td>
<td>649</td>
<td>197</td>
<td>577</td>
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**Sea Level Rise**

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<th>Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>City</td>
<td>-</td>
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</table>

**DAC Sea Level Rise Affected**

<table>
<thead>
<tr>
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<th>DAC Population</th>
<th>DAC Employment</th>
<th>DAC Households</th>
<th>DAC Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
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<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</table>

**Flood**

<table>
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<tr>
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<th>Employment</th>
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<th>Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>95,430</td>
<td>32,875</td>
<td>36,576</td>
<td>132,354</td>
</tr>
<tr>
<td>City</td>
<td>22,796</td>
<td>6,855</td>
<td>8,916</td>
<td>23,447</td>
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**DAC Flood Affected**

<table>
<thead>
<tr>
<th></th>
<th>DAC Population</th>
<th>DAC Employment</th>
<th>DAC Households</th>
<th>DAC Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>5,017</td>
<td>1,417</td>
<td>1,085</td>
<td>6,680</td>
</tr>
<tr>
<td>City</td>
<td>210</td>
<td>18</td>
<td>89</td>
<td>210</td>
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### PROJECT INFO

<table>
<thead>
<tr>
<th>Questions</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which hazard category do you want to look for projects in?</td>
<td>Extreme Heat</td>
</tr>
<tr>
<td>If selected &quot;Other&quot;, please mention hazard name</td>
<td></td>
</tr>
<tr>
<td>Asset protected in said project</td>
<td>Vulnerable Populations</td>
</tr>
<tr>
<td>If selected &quot;Other&quot;, please mention protected asset name you are interested in</td>
<td></td>
</tr>
<tr>
<td>Desired strategy</td>
<td>Improve access to air conditioning centers by vulnerable populations</td>
</tr>
<tr>
<td>If selected &quot;Other&quot;, please mention your desired strategy</td>
<td></td>
</tr>
<tr>
<td>Action item interested in</td>
<td>Encourage partnerships between local emergency responders and local health departments to identify and reach vulnerable populations in need of access to cooling centers or personal cooling resources</td>
</tr>
<tr>
<td>If selected &quot;Other&quot;, please mention your desired action item</td>
<td></td>
</tr>
</tbody>
</table>
# Project Tracking Tool

<table>
<thead>
<tr>
<th>AGENCY INFO</th>
<th>Population</th>
<th>Employment</th>
<th>Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Bernardino County</td>
<td>2,258,662</td>
<td>828,692</td>
<td>700,095</td>
</tr>
<tr>
<td>City</td>
<td>7,828</td>
<td>3,264</td>
<td>3,151</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PROJECT INFO</th>
<th>Metrics</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
<th>Project 4</th>
<th>Project 5</th>
<th>Project 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate Change Hazard combating through existing, planned or proposed projects (can mention as many as you know)</td>
<td>ExtremeHeat</td>
<td>Inland_Flood</td>
<td>Wildfire</td>
<td>ExtremeHeat</td>
<td>Severe_Storms</td>
<td>Or_Wind</td>
<td></td>
</tr>
<tr>
<td>Affected Population</td>
<td>7,828</td>
<td>706</td>
<td>1</td>
<td>7,828</td>
<td>Unknown</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Affected Employment</td>
<td>3,364</td>
<td>395</td>
<td>0</td>
<td>3,364</td>
<td>Unknown</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Affected Households</td>
<td>3,151</td>
<td>285</td>
<td>0</td>
<td>3,151</td>
<td>Unknown</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Asset protected in said project</td>
<td>Public Transit</td>
<td>Multiple Assets</td>
<td>Public Health</td>
<td>Vulnerable Pop</td>
<td>Buildings and Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale of project (USD protected) by this effort (in % T)</td>
<td>0.05</td>
<td>0.35</td>
<td>0.9</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected Population</td>
<td>393</td>
<td>248</td>
<td>1</td>
<td>1,566</td>
<td>Unknown</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Protected Employment</td>
<td>183</td>
<td>103</td>
<td>0</td>
<td>653</td>
<td>Unknown</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Protected Households</td>
<td>158</td>
<td>100</td>
<td>0</td>
<td>630</td>
<td>Unknown</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Additional Description</td>
<td>Construction</td>
<td>Proposed</td>
<td>Planning</td>
<td>Engineering/Design</td>
<td>No Action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timeline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding</td>
<td>Partially funded</td>
<td>Unfunded</td>
<td>Partially funded</td>
<td>Fully funded</td>
<td>Unfunded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact Info for PM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Adaptation Strategies and Actions

• Excel Spreadsheet

• Over 275 actions

• Filter by climate change hazard type (e.g., extreme heat, air quality)

• Filter by asset type (e.g., vulnerable populations, public health)

• Strategies and actions can be incorporated into Climate Adaptation Plans or as implementation programs for the General Plan
### Strategies and Actions Spreadsheet Tool

#### A1. Climate Change Mitigation

**Action:** Develop a climate change mitigation strategy that includes:
- Reducing greenhouse gas emissions through energy efficiency and renewable energy sources.
- Protecting and enhancing natural ecosystems to store carbon.

**Sources:**
- Energy audits and efficiency improvements.
- Renewable energy projects.
- Afforestation and reforestation programs.

#### A2. Building and Facilities

**Strategy:** Design and construct buildings and facilities that are resilient to climate change impacts.

**Actions:**
- Implement green building standards and practices.
- Design structures to withstand increased temperatures and extreme weather events.

**Sources:**
- Green building certification programs.
- Local and federal grants for sustainability.

#### A3. Transportation

**Strategy:** Enhance transportation systems to accommodate changing climate conditions.

**Actions:**
- Improve public transportation options to reduce emissions.
- Implement adaptive design for roads and bridges.

**Sources:**
- Transportation planning and design agencies.
- Technology advancements in sustainable design.

#### B1. Climate Change Adapation

**Action:** Develop a climate change adaptation strategy that includes:
- Preparing for and managing the impacts of climate change.
- Enhancing resilience and preparedness.

**Sources:**
- Vulnerability assessments and impact studies.
- Community engagement and stakeholder participation.

#### B2. Building and Facilities

**Strategy:** Implement measures to protect buildings and facilities from climate impacts.

**Actions:**
- Install floodproofing systems.
- Use materials that are resistant to increased temperatures.

**Sources:**
- Building and construction codes and standards.
- High-performance building design resources.

#### B3. Transportation

**Strategy:** Enhance transportation systems to accommodate changing climate conditions.

**Actions:**
- Implement adaptive design for roads and bridges.
- Improve infrastructure to withstand extreme weather events.

**Sources:**
- Transportation planning and design agencies.
- Technology advancements in sustainable design.

#### C1. Water Management

**Action:** Develop a water management strategy that includes:
- Ensuring a resilient water supply system.
- Managing water resources under changing climate conditions.

**Sources:**
- Water utilities and conservation programs.
- Regional and national water management initiatives.

#### C2. Agriculture

**Strategy:** Implement strategies to enhance agricultural productivity.

**Actions:**
- Promote drought-resistant crops and crop rotation.
- Implement water harvesting and irrigation systems.

**Sources:**
- Agricultural research institutions.
- Government agricultural policies and incentives.

#### D1. Energy

**Action:** Develop an energy strategy that includes:
- Increasing energy efficiency.
- Transitioning to renewable energy sources.

**Sources:**
- Energy efficiency programs.
- Renewable energy development grants.

#### D2. Transportation

**Strategy:** Enhance transportation systems to accommodate changing climate conditions.

**Actions:**
- Implement adaptive design for roads and bridges.
- Improve infrastructure to withstand extreme weather events.

**Sources:**
- Transportation planning and design agencies.
- Technology advancements in sustainable design.
Adaptation Strategies
## Key Strategies and Actions

<table>
<thead>
<tr>
<th></th>
<th>Wildfire</th>
<th>Extreme Heat Health Impacts</th>
<th>Sea Level Rise</th>
<th>Inland Flooding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary strategy</strong></td>
<td>Preventative controlled burns</td>
<td>Increase tree canopy coverage</td>
<td>Strategically placed sea walls</td>
<td>Expand/reinforce levees</td>
</tr>
<tr>
<td><strong>Other strategies</strong></td>
<td>Harden structures</td>
<td>Expand cooling centers</td>
<td>Pumping stations</td>
<td>Natural buffers</td>
</tr>
<tr>
<td></td>
<td>Rezoning</td>
<td>Expand health care facilities</td>
<td>Rezoning</td>
<td>Rezoning</td>
</tr>
<tr>
<td></td>
<td>Firebreak walls</td>
<td>White roofs</td>
<td>Natural Buffers</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduce impervious surfaces</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Extreme Heat Scenario Development and Modeling

- Data from CHAT tool: Annual Days of Heat Health Events
  - More complex than temperature forecast data
  - Heat Health Events defined as heat waves which cause spikes in mortality and hospital visits
  - Sensitive to ratios of elderly and vulnerable populations, hospital beds, cooling centers, tree cover, etc.

- “Business as usual” relocation scenario starts relocating demographics once 30 days per year of heat health events reached at 1% per day
  - E.g., 35 days per year = 5% relocated; 50 days = 20% relocated, 70 days = 40% relocated

- “Mitigation” scenario reduces relocation through increased tree cover, cooling centers, hospital beds, etc.
Extreme Heat 2030 – “Business as Usual” Scenario
## Extreme Heat Health Events 2030

**“Business as Usual” Scenario**

<table>
<thead>
<tr>
<th>Code</th>
<th>County</th>
<th>Base</th>
<th>Extreme Heat</th>
<th>Numeric Difference</th>
<th>Difference</th>
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<tr>
<td></td>
<td></td>
<td>Trips</td>
<td>VMT</td>
<td>VHT</td>
<td>VHD</td>
</tr>
<tr>
<td>1</td>
<td>Imperial</td>
<td>524,487</td>
<td>6,755,364</td>
<td>120,182</td>
<td>3,519</td>
</tr>
<tr>
<td>2</td>
<td>Los Angeles</td>
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<td>Orange</td>
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<td>79,500,042</td>
<td>2,091,159</td>
<td>549,667</td>
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<td>Riverside</td>
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<td>77,754,585</td>
<td>1,994,026</td>
<td>575,835</td>
</tr>
<tr>
<td>5</td>
<td>San Bernardino</td>
<td>5,560,880</td>
<td>75,639,662</td>
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<td>570,823</td>
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<td>6</td>
<td>Ventura</td>
<td>2,180,683</td>
<td>20,718,820</td>
<td>465,617</td>
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</tr>
<tr>
<td>Total</td>
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<td>45,201,037</td>
<td>494,151,800</td>
<td>13,459,295</td>
<td>3,580,538</td>
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</table>
Sea Level Rise 2030 – “Business as Usual” Scenario
<table>
<thead>
<tr>
<th>Code</th>
<th>County</th>
<th>Trips</th>
<th>VMT</th>
<th>VHT</th>
<th>VHD</th>
<th>Trips</th>
<th>VMT</th>
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<th>Trips</th>
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<th>VHT</th>
<th>VHD</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Imperial</td>
<td>524,487</td>
<td>6,755,364</td>
<td>120,182</td>
<td>3,519</td>
<td>522,838</td>
<td>6,726,450</td>
<td>119,652</td>
<td>3,479</td>
<td>(1,649)</td>
<td>(28,914)</td>
<td>(530)</td>
<td>(40)</td>
<td>0%</td>
<td>0%</td>
<td>-0.44%</td>
<td>-1.14%</td>
<td>0%</td>
<td>0%</td>
<td>-0.37%</td>
<td>-1.14%</td>
<td>0%</td>
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<tr>
<td>2</td>
<td>Los Angeles</td>
<td>22,544,031</td>
<td>234,673,126</td>
<td>7,195,893</td>
<td>2,251,895</td>
<td>22,534,716</td>
<td>233,902,147</td>
<td>7,279,139</td>
<td>2,350,402</td>
<td>(9,315)</td>
<td>(770,979)</td>
<td>83,246</td>
<td>98,507</td>
<td>0%</td>
<td>0%</td>
<td>1.16%</td>
<td>4.37%</td>
<td>0%</td>
<td>1%</td>
<td>0.29%</td>
<td>1.94%</td>
<td>0%</td>
</tr>
<tr>
<td>3</td>
<td>Orange</td>
<td>8,097,287</td>
<td>79,600,042</td>
<td>2,091,159</td>
<td>549,667</td>
<td>8,191,865</td>
<td>78,894,779</td>
<td>2,083,734</td>
<td>555,020</td>
<td>94,577</td>
<td>(705,263)</td>
<td>(7,425)</td>
<td>5,353</td>
<td>1%</td>
<td>-1%</td>
<td>-0.36%</td>
<td>0.97%</td>
<td>0%</td>
<td>0%</td>
<td>0.38%</td>
<td>2.34%</td>
<td>0%</td>
</tr>
<tr>
<td>4</td>
<td>Riverside</td>
<td>6,293,669</td>
<td>77,764,585</td>
<td>1,994,026</td>
<td>575,835</td>
<td>6,311,715</td>
<td>77,438,304</td>
<td>1,999,881</td>
<td>587,010</td>
<td>18,046</td>
<td>(326,281)</td>
<td>5,856</td>
<td>11,176</td>
<td>0%</td>
<td>0%</td>
<td>0.29%</td>
<td>1.94%</td>
<td>0%</td>
<td>0%</td>
<td>0.38%</td>
<td>2.34%</td>
<td>0%</td>
</tr>
<tr>
<td>5</td>
<td>San Bernardino</td>
<td>5,560,880</td>
<td>75,639,862</td>
<td>1,572,418</td>
<td>210,823</td>
<td>5,576,604</td>
<td>75,692,642</td>
<td>1,578,361</td>
<td>215,759</td>
<td>15,724</td>
<td>52,780</td>
<td>5,943</td>
<td>4,936</td>
<td>0%</td>
<td>0%</td>
<td>2.68%</td>
<td>15.34%</td>
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<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>6</td>
<td>Ventura</td>
<td>2,180,683</td>
<td>19,718,820</td>
<td>465,617</td>
<td>88,599</td>
<td>2,172,050</td>
<td>19,660,788</td>
<td>478,095</td>
<td>102,192</td>
<td>(8,633)</td>
<td>(58,032)</td>
<td>12,478</td>
<td>13,593</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>45,201,037</td>
<td>494,151,800</td>
<td>13,439,295</td>
<td>3,680,338</td>
<td>45,309,788</td>
<td>492,315,111</td>
<td>13,538,862</td>
<td>3,813,862</td>
<td>108,751</td>
<td>(1,836,689)</td>
<td>99,567</td>
<td>133,524</td>
<td>0.24%</td>
<td>-0.37%</td>
<td>0.74%</td>
<td>3.63%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Wildfire Scenario 2030 – “Business as Usual” Scenario
Stranded Zones Analysis for Wildfire Scenario

Wildfire Stranded Zones and Severe Detours

- Destinations w/out Severe Detour
- 0.15-0.20
- 0.20-0.25
- 0.25-0.30
- 0.30-0.35
- 0.35-0.40
- 0.40-0.45
- 0.45-0.50
- 0.50-0.55
- 0.55-0.60
- 0.60-0.65
- 0.65-0.70
- 0.70-0.75
- 0.75-0.80
- 0.80-0.85
- 0.85-0.90
- 0.90-0.95
- 0.95-1.00

- Partially Stranded - 50% Evacuation
- Stranded - 100% Evacuation

© 2020 Mapbox © OpenStreetMap
Severe Detour Analysis for Wildfire Scenario
Funding

Finding adequate funding to implement adaptation strategies is an ongoing challenge. As mentioned at the end of Chapter 1, the most significant source of funding is from integrating climate adaptation into existing local agency expenditures. In terms of new funding, there are state and federal grant programs currently available to support both adaptation planning and strategy implementation.

Additional funding programs are likely to emerge in coming years as more and more communities experience the impacts of climate change. Over time, communities should develop a layered funding strategy that uses local investments to leverage regional, state, and federal grants, and loans, as well as private sector investments. The variety of tools that local agencies can utilize to generate adequate funds are summarized in the table below.

Table 4.1: Local Revenue Sources for Climate Adaptation

<table>
<thead>
<tr>
<th>Revenue Source</th>
<th>Applicability to Climate Adaptation</th>
<th>Revenue Potential</th>
<th>Ease of Authorization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefit Assessments²</td>
<td>NARROW: Must provide direct benefit to assessed parcels</td>
<td>LIMITED: But critical to leverage funding from directly benefitting property owners</td>
<td>MODEST: Majority district property owner approval weighted by assessment³</td>
</tr>
<tr>
<td>Community Facilities District Special Tax (Mello Roos)</td>
<td>MODEST: Wide range of facilities &amp; services, but must benefit taxed parcels</td>
<td>MODEST: 2/3 district property owners, or 2/3 voter approval if more than 12 voters in district</td>
<td></td>
</tr>
<tr>
<td>Property Tax Increment²</td>
<td>BROAD: Facilities (no services), environment-related mitigation</td>
<td>LIMITED in the short run, INCREASING over time with new development</td>
<td>SIMPLE: Governing board approval subject to majority protest by property owners</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Local/Regional Public Enterprises</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Water, Sewer &amp; Refuse Charges</td>
<td>NARROW: Must support enterprise operations</td>
<td>MODERATE to SIGNIFICANT: Depends on climate adaptation priorities relative to other enterprise needs</td>
<td>SIMPLE: Governing board approval subject to majority protest by ratepayers</td>
</tr>
<tr>
<td>Sea &amp; Airport Revenues</td>
<td></td>
<td></td>
<td>SIMPLE: Governing board approval</td>
</tr>
</tbody>
</table>
Outreach Overview

What is the Climate Talks Box?
An immersive pop-up experience, crafted with sustainable materials, educating the public about climate change and climate adaptation strategies.

Goal
Test four different messaging strategies about climate change to understand what resonates with people who live in the SCAG region.

Messaging Strategies
1. How climate change causes personal, monetary & health-related harm
2. How trusted leaders are speaking about climate change
3. How climate change is affecting California's natural resources
4. How climate change will affect the region surrounding the pop-up
Events

Redondo Beach Pier Summer Concert Series, 08/24

Taste of Baldwin Park, 08/29

Climate Resolve Keep LA Cool Day @ Hansen Dam, 09/07

Open Arts & Music Festival, 09/15

Urban Hive Market Long Beach, 09/28
Outreach Workshop Templates

WHAT IS INCLUDED IN THE WORKSHOP TEMPLATE

This workshop template includes three customizable components:

1. A presentation slide deck tailored to SCAG jurisdictions who would like to engage constituents in a conversation about climate adaptation and/or mitigation.
2. Materials for an interactive activity, in both group and individual formats.
3. Corresponding meeting announcements and invites that you can change for your event.

All template components provide you with a flexible base. Add to and change them as you see fit.

HOW TO USE THIS TEMPLATE

1. Read through this Guide to help orient yourself to the materials included, messaging strategies, and best practices as you craft your communications approach.
2. Open up the presentation slide deck in either InDesign or PowerPoint and start to move things around, add your content, and customize the presentation as you see fit.
3. Modify the template invitations/ notices and send them to your constituents to announce your upcoming workshop.
4. Print out the final materials or project them digitally at your workshop to start the conversation!
## Communication Strategies

### 1) Make it personal

Use a personal “risk-based” messaging strategy that identifies the monetary costs and health impacts of climate change for your constituency.

- This strategy ranked as the most effective during SCAG’s community outreach.
- Use facts that can apply to an individual’s or family’s life and phrase the risk so that the effects are tangible. A utility bill increasing by hundreds of dollars is an experience that is easy to grasp; it is much more difficult to grasp a change in millions of dollars to a government’s budget.
- As an example, we have included four such facts in the “How the Climate Affects You” section of the slide deck.

### 2) Localize and concretize

Use a before and after visualization of a familiar and beloved resource.

- In this strategy, you can direct your audience’s feelings of attachment towards a place, into collective support. Use a visual (photographs, videos, renderings) to show the before and after effects of our changing climate. This allows attendees to see the effects for themselves.
- A good subject is nearby nature that has been affected by extreme weather events.
- As an additional note, the literature shows that conservative audiences respond more favorably to changes that are framed as the “past & present,” whereas liberal audiences preferred a “present & future” framing.
- See the examples in the “How the Climate Affects California” section of the slide deck.

### 3) Map the risk

Use a chronological map to show the proximity of risk and change over time.

- This strategy uses mapping visualization to help participants understand the future effects of climate change.
- It is important to keep in mind that map-reading is a special skill. Aid participant understanding by ensuring your visualizations are focused on your immediate locality, and that familiar landmarks are called out.
- Connecting the familiar (local places) to the hard-to-grasp (future climate effects) builds a kind of support grounded in personal affection.
- See the examples in the “How Climate Changes at Home” section of the slide deck.

### 4) Bring in a trusted advisor:

Use the words and stature of someone your community already trusts.

- This strategy requires the identification of a leader or authority figure with whom your community has a rapport and finding a values-based message that will resonate with them.
- This can occur as quotes, a video message, or an in-person appearance. The literature says this strategy can work especially well with older, and more conservative constituencies.
- However, appropriate advisor selection can align this strategy with a wide range of ideologies. Notably, this strategy was reported as slightly less impactful than the other strategies explained here.
- See the examples in the “How the Climate Affects Us” section of the slide deck.
Contact the project team

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www.scag.ca.gov
Recent Changes Affecting General Plan Elements

- **Housing**
  - Update every 5-8 years or penalized
  - **AB 72, effective 2018**

- **Safety**
  - Add Wildfire req.
  - Update after Housing Element
  - **SB 1241, effective 2014**

- **Safety**
  - Add evacuation routes
  - Update after LHMP
  - **AB 747, effective 2022**
  - Update after Housing Element
  - **SB 99 Effective 2020**

- **Safety**
  - Add climate adaptation
  - Update during or after LHMP
  - **SB 379, effective 2017-2022**
  - Update after Housing Element
  - **SB 1035, effective 2019**

- **EJ**
  - Add new element or incorporate throughout
  - Create or incorporate when 2 or more elements are updated concurrently
  - **SB 1000, effective 2018**

Source: OPR

Refer to the State's SB 535 Disadvantaged Communities guidance to identify if DACs in your community:

https://oehha.ca.gov/calenviroscreen/sb535
Environmental Justice Element Resources

• **Requirement:** An environmental justice element, or related goals, policies, and objectives integrated in other elements, that identifies disadvantaged communities within the area covered by the general plan of the city, county, or city and county, if the city, county, or city and county has a disadvantaged community.

• **Guidance and Tools:**
  - OPR General Plan Guidelines & Environmental Justice Model Policies
    - [https://opr.ca.gov/docs/20200706-GPG_Chapter_4_EJ.pdf](https://opr.ca.gov/docs/20200706-GPG_Chapter_4_EJ.pdf)
  - California Environmental Justice Alliance SB 1000 Toolkit
  - SCAG Expanded Library of General Plan Model Policies:
    - Air Quality
    - Built Environment
    - Circulation & Transportation
    - Environmental Justice
    - Health
    - Housing
    - Land Use
    - Natural Systems
    - Noise
    - Open Space & Conservation
    - Public Facilities
    - Safety
Addtional Model Policies for General Plan Updates

Regional Climate Adaptation Framework

The Southern California Association of Governments is pleased to be developing a Regional Climate Adaptation Framework, which assists local and regional jurisdictions in managing the negative impacts of climate change. The study looks at how the Southern California region can work together to plan and prepare for the impacts of sea level rise, extreme heat, increasingly frequent and damaging wildfires, and other climate-related issues. We are already dealing with these severe climate issues and adaptation planning is necessary to help individuals, communities, and natural systems cope with the unavoidable consequences of a changing climate.

For this effort, SCAG has been working with local municipalities, advocacy groups, universities, and other stakeholders to assess the unique issues affecting the SCAG region, available planning tools and resources, scientific data, and messaging strategies. Many local jurisdictions do not have the resources to adequately assess their local hazards, develop effective adaptation plans, and participate in regional planning efforts — our framework provides jurisdictions with a roadmap to adaptation in an effort to help build a more resilient Southern California.

As part of the overall Framework, SCAG is sharing new tools for local jurisdictions – first, the Communication & Outreach Strategies and Templates that can help jurisdictions and community-based organizations engage with residents to understand better how local climate trends could impact their lives. More tools and resources will be added to the SCAG Climate site in the future.

Housing EElement PaRcel (HELPR) Tool
Toolbox Tuesday Demonstration

Kevin Kane, PhD
Program Manager, Demographics & Housing Policy
December 8, 2020

www.scag.ca.gov
SCAG’s Housing Element Update Support

Yikes! My housing element update is due in under a year! There are a lot of new laws coming down from Sacramento, and some of them even resulted in my huge new RHNA number!

- SCAG has a fairly sophisticated data operation from a long history of local outreach and regional planning

- The clock for effective technical assistance is ticking...
  - August workshop survey: 52% indicate staff/consultant work already underway

- SCAG objectives: update, refine, curate, and deploy available data sets
  - Time savings
  - Link with HCD guidelines to help smooth review process
  - Link with Connect SoCal objectives

Ultimately the housing element update is a jurisdiction’s responsibility to complete and HCD’s responsibility to evaluate.
SCAG’s Housing Element Update Support

- Pre-certified local housing data
  - Data and a report for each jurisdiction
  - ADU affordability analysis
  - Pre-approved by HCD

www.scag.ca.gov/housing-elements

- Housing Element PaRcel Tool (HELPDR)
  - 2019 Annual Land Use Update
  - Housing-specific attributes and filters
  - ESRI-powered web mapping application allows for 3 levels of analysis:
    - Basic
    - Refined
    - Advanced
Selected Parcel Attributes In HELPR

- Existing Land Use
- Zoning Designation
- General Plan Designation
- Specific Plan Designation
- Assessor: Improvement-to-land value ratio
- Parcel size (acres)
- Slope
- Building footprint area
- Brownfield/superfund designation
- Priority growth/constraint area
- Environmental justice/opportunity areas
- Proximity to grocery/healthcare/open space
How to explore sites using HELPR

1. **Basic filtering**
   - 8 pre-made site screening filters

2. **Refined filtering**
   - Refine filter options across several additional attributes

3. **Advanced analysis**
   - Using Excel, desktop GIS, or other platform
   - Additional attributes available
   - Rudimentary ADU capacity calculation

Word cloud of HELPR’s data dictionary
HELPR Demonstration

http://maps.scag.ca.gov/helpr
Selected Environmentally Sensitive Areas

- SCAG selected layers based on guidance from partner agencies, as well as recommendations from The Nature Conservancy
- Impacted parcels can be filtered out for environmentally sensitive areas
- Factors are common considerations in CEQA and support conservation strategies in Connect SoCal
- Layers will be available within the tool for visualizing in the next update (*coming soon*)
- Additional layers will be forthcoming in later releases
### Selected Environmentally Sensitive Areas

<table>
<thead>
<tr>
<th>Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>High and Very High Hazard Fire Risk Zones</td>
<td></td>
</tr>
<tr>
<td>Liquefaction Susceptibility Zones</td>
<td></td>
</tr>
<tr>
<td>Alquist–Priolo Earthquake Fault Zones</td>
<td></td>
</tr>
<tr>
<td>100 Year Floodplains</td>
<td></td>
</tr>
<tr>
<td>Active River Areas</td>
<td></td>
</tr>
<tr>
<td>Wetland Areas</td>
<td></td>
</tr>
<tr>
<td>Sea Level Rise Areas</td>
<td></td>
</tr>
<tr>
<td>Landslide Hazard Zones</td>
<td></td>
</tr>
<tr>
<td>Protected Areas</td>
<td></td>
</tr>
<tr>
<td>Wildlife Habitat, Connectivity Areas, and Missing Linkages</td>
<td></td>
</tr>
<tr>
<td>Natural Community &amp; Habitat Conservation Plans Reserve Designs</td>
<td></td>
</tr>
<tr>
<td>Status and Locations of Rare Plans and Animals</td>
<td></td>
</tr>
</tbody>
</table>
Regional Data Platform (RDP)

- The HELPR app is powered by the Regional Data Platform
- Sites/parcels you download through the HELPR app can be brought into other Esri tools and applications for further analysis, visualization, and reporting using the complimentary software licenses provided to every jurisdiction through the RDP
- In partnership with SCAG’s General Plan Technical Assistance Program, support and training resources will be provided through the RDP to complement this and future applications
- Esri and SCAG will continue to make capabilities like this available to you through 2021 to support other aspects of General Plan updates, like Safety and Environmental Justice
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