SCAG Joint Working Group
Climate Adaptation, Public Health, Sustainable Communities

December 17, 2020
1:00 pm – 3:00 pm

www.scag.ca.gov
• Meeting length: approximately 2 hours

• Reminder to please mute your mics/phones

• Q&A at the end of each session

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

Climate Adaptation
1:00 pm – 1:50 pm

Public Health
1:50 pm – 2:40 pm

Sustainable Communities
2:40 pm – 3:00 pm
Climate Adaptation Working Group

Update on SCAG's Climate Adaptation Framework

SCAG Sustainability Department, Cambridge Systematics, HereLA, and ESA
December 17, 2020

www.scag.ca.gov
SoCal Climate Adaptation Framework

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

Includes:
- 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. NEW RESOURCE: Housing Element Parcel Tool (HELPR)
12. 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

Sea Level Rise

Extreme Heat

Flood Risk

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

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

2030 Population Affected by Extreme Heat
1 - 500 people

2030 Population Affected by Floods (100 year event)
1 - 50 people
### Raw Affected Demographics and Relocation Scenario Totals

#### Wildfire Risk

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>2030 Pop</th>
<th>2030 Emp</th>
<th>2030 HHs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate</td>
<td>563,340</td>
<td>182,184</td>
<td>186,648</td>
</tr>
<tr>
<td>High</td>
<td>547,288</td>
<td>146,994</td>
<td>181,494</td>
</tr>
<tr>
<td>Very High</td>
<td>61,873</td>
<td>14,083</td>
<td>23,309</td>
</tr>
<tr>
<td>Very High (Stranded)</td>
<td>228,299</td>
<td>54,099</td>
<td>84,721</td>
</tr>
<tr>
<td>Total</td>
<td>1,400,800</td>
<td>397,360</td>
<td>476,172</td>
</tr>
</tbody>
</table>

#### Flood Risk

<table>
<thead>
<tr>
<th>Scenario</th>
<th>2030 Pop</th>
<th>2030 Emp</th>
<th>2030 HHs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 100 year events</td>
<td>311,145</td>
<td>158,088</td>
<td>105,174</td>
</tr>
<tr>
<td>Sea Level Rise (1m)</td>
<td>SLR Affected</td>
<td>371,624</td>
<td>214,219</td>
</tr>
<tr>
<td></td>
<td>Stranded</td>
<td>12,433</td>
<td>6,436</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>384,057</td>
<td>220,655</td>
</tr>
</tbody>
</table>

#### Extreme Heat Health Events

<table>
<thead>
<tr>
<th>Scenario</th>
<th>2030 Pop</th>
<th>2030 Emp</th>
<th>2030 HHs</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,250,328</td>
<td>2,361,705</td>
<td>2,153,175</td>
<td></td>
</tr>
</tbody>
</table>

#### Total Affected Demographics

<table>
<thead>
<tr>
<th>Total Affected Demographics</th>
<th>2030 Pop</th>
<th>2030 Emp</th>
<th>2030 HHs</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,346,330</td>
<td>3,137,808</td>
<td>2,904,494</td>
<td></td>
</tr>
</tbody>
</table>

#### Regional Totals 2030

<table>
<thead>
<tr>
<th>Regional Totals 2030</th>
<th>Pop</th>
<th>Emp</th>
<th>HH</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,803,607</td>
<td>6,924,493</td>
<td>9,203,450</td>
<td></td>
</tr>
</tbody>
</table>

#### Total Percentage Affected

|                      | 40% | 45% | 32% |

#### Wildfire Risk Relocation

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Realloc_pop30</th>
<th>Realloc_emp30</th>
<th>Realloc_hh30</th>
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</thead>
<tbody>
<tr>
<td>Moderate</td>
<td>136,339</td>
<td>44,363</td>
<td>45,072</td>
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<tr>
<td>High</td>
<td>272,104</td>
<td>72,857</td>
<td>90,186</td>
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<tr>
<td>Very High</td>
<td>46,116</td>
<td>10,369</td>
<td>17,395</td>
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<tr>
<td>Stranded</td>
<td>228,299</td>
<td>54,099</td>
<td>84,721</td>
</tr>
<tr>
<td>Total</td>
<td>682,858</td>
<td>181,688</td>
<td>237,374</td>
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#### Flood Risk (Calculated only for 100 year events)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Realloc_pop30</th>
<th>Realloc_emp30</th>
<th>Realloc_hh30</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 100 year events</td>
<td>19,544</td>
<td>11,197</td>
<td>6,234</td>
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</table>

#### Sea Level Rise (1m)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Realloc_pop</th>
<th>Realloc_emp</th>
<th>Realloc_hh</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLR Relocation</td>
<td>45,058</td>
<td>28,137</td>
<td>21,157</td>
</tr>
<tr>
<td>Stranded</td>
<td>12,433</td>
<td>6,436</td>
<td>6,388</td>
</tr>
<tr>
<td>Total</td>
<td>57,491</td>
<td>34,573</td>
<td>27,545</td>
</tr>
</tbody>
</table>

#### Extreme Heat Health Events

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Realloc_pop</th>
<th>Realloc_emp</th>
<th>Realloc_hh</th>
</tr>
</thead>
<tbody>
<tr>
<td>192,198</td>
<td>71,801</td>
<td>63,280</td>
<td></td>
</tr>
</tbody>
</table>

#### Total

| Total          | 952,091      | 299,259     | 334,433     |

#### Regional Totals 2030

<table>
<thead>
<tr>
<th>Regional Totals 2030</th>
<th>Pop</th>
<th>Emp</th>
<th>HH</th>
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<tr>
<td>20,803,607</td>
<td>6,924,493</td>
<td>9,203,450</td>
<td></td>
</tr>
</tbody>
</table>

#### Total Percentage Relocated

|                      | 5% | 4% | 4% |

Annual Days of Heat Health Events in 2020

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 119

Source: CalAdapt; 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 2030

Source: Cal Adapf; 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 between temperature, humidity, heat island effects, tree canopy and ratios of vulnerable populations are used in these projections.
Annual Days of Heat Health Events in 2050

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 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.
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
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.

Materials to Prepare

- Identification of capacity for adaptation planning
- Project budget estimate
- List of core project team members, and members of advisory body
- List of technical resources

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.

- **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 those 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.

- **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
SoCal Adaptation Planning Guide

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 add resilience to the community’s vulnerability to climate change hazards.

#### In addition to the California APG, there are many useful resources for identifying potential adaptation strategies:

<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 retaining existing projects</td>
<td>Require accounting of flood risk in all applications for new development flood-prone areas. Ensure that all applications for new development account for projected precipitation changes and provide adequate protection.</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Multiple Assets</td>
<td>Adopt river and reservoir management to accommodate changing precipitation patterns</td>
<td>Reduce river channels to increase flood capacity</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Multiple Assets</td>
<td>Adopt river and reservoir management to accommodate changing precipitation</td>
<td>Construct &quot;Living Veins&quot; by creating gradually sloping uplands, transition, and wetland habitats between the levee and river</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Biodiversity and Habitat</td>
<td>Build or expand flood defenses</td>
<td>Upgrade or rebuild existing levees, flood walls, or other flood defenses along coasts 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>Increase the resiliency of wastewater plants and systems to flooding and severe weather</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Stormwater</td>
<td>Design and utilize green infrastructure to provide adaptation benefits</td>
<td>Promote low-impact development (LID) stormwater practices in areas where storm sewer networks may be impacted by high water due to flood waters</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>Where possible, use pervious pavement (e.g., for bicycle and pedestrian pathways) to increase water infiltration</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Buildings and Facilities</td>
<td>Design buildings and facilities to minimize vulnerability</td>
<td>Elevate the first floor up to elevations above target flood levels accounting for projected precipitation changes</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Multiple Assets</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 storage and is designed to be durable and resilient to flood damage. Target flood level is the building and roads by placing fill to reduce the grades at higher elevations. Rebuild all connecting roads, trails, and utilities to slope up to the new grade. Elevation should account for projected precipitation changes.</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Biodiversity and Habitat</td>
<td>Design restoration of riparian corridors and wetlands in floodplains to be resilient to climate change</td>
<td>Choose plant species for restoration sites that are less vulnerable to flooding</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Biodiversity and Habitat</td>
<td>Design restoration of riparian corridors and wetlands in floodplains to be resilient to climate change</td>
<td>Establish transitional and upland habitats in restoration sites where feasible</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Biodiversity and Habitat</td>
<td>Design restoration of riparian corridors and wetlands in floodplains to be resilient to climate change</td>
<td>Require adaptive management plans for restoration/mitigation sites within floodplains to consider increased flooding potential</td>
</tr>
</tbody>
</table>

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**Materials to prepare:**
A list of adaptation strategies that address the problem statements in Step 3.1 can be useful in identifying strategies needed to increase resilience of critical assets. The California APG, on how to draft a strategy to support objectives developed in Step 3.2, and vulnerabilities and problem statements of the California APG strategies should be developed within appropriate to the planning context program being developed or updated plan/municipality, climate action plans, local hazard mitigation plan, or other plan. See Section 3.1 on preparing for climate change.
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 for Local Coastal Programs & General Plans

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
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
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 3-8 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 assets or conditions e.g., long heat spells, hot regime, etc.)
   - Yes
   - No
   - Basis for nomination:

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 model(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 asset(s) physical components and/or its functionality, and the project would not recover quickly once the hazard subsides. The project would lose major 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
### Vulnerability Mapping and Assessment Tool

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

<table>
<thead>
<tr>
<th>Layer</th>
<th>Geography</th>
<th>Key Fields</th>
<th>Use</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>Main layers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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></td>
<td></td>
</tr>
<tr>
<td>Relocation scenarios, phase 2</td>
<td>TAZ</td>
<td>Pop, HH, Emp added and removed for each scenario</td>
<td>Scenario Relocation Summary</td>
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</tr>
<tr>
<td>Other layers</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLR, 0.5 m</td>
<td>Extent of inundation</td>
<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>
</tr>
<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>
</tr>
</tbody>
</table>
## Decision Tree Tool

**Agency Info**

<table>
<thead>
<tr>
<th>Select the County you represent</th>
<th>Riverside</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select City you represent</td>
<td>Hemet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
<th>Population</th>
<th>Employment</th>
<th>Households</th>
<th>Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>2,429,222</td>
<td>886,201</td>
<td>811,643</td>
<td>2,506,153</td>
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<tr>
<td>City</td>
<td>125,684</td>
<td>37,793</td>
<td>39,159</td>
<td>125,724</td>
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</table>

<table>
<thead>
<tr>
<th>DAC Total</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>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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</tbody>
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<table>
<thead>
<tr>
<th>Wildfire</th>
<th>Population</th>
<th>Employment</th>
<th>Households</th>
<th>Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>615,144</td>
<td>215,628</td>
<td>207,610</td>
<td>743,358</td>
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<tr>
<td>City</td>
<td>26,256</td>
<td>7,895</td>
<td>10,269</td>
<td>27,006</td>
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</table>

<table>
<thead>
<tr>
<th>DAC Wildfire Affected</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>13,941</td>
<td>12,840</td>
<td>11,228</td>
<td>16,647</td>
</tr>
<tr>
<td>City</td>
<td>561</td>
<td>649</td>
<td>197</td>
<td>577</td>
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</table>

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

<table>
<thead>
<tr>
<th>DAC Sea Level Rise Affected</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>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flood</th>
<th>Population</th>
<th>Employment</th>
<th>Households</th>
<th>Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>55,430</td>
<td>32,875</td>
<td>36,776</td>
<td>132,354</td>
</tr>
<tr>
<td>City</td>
<td>22,796</td>
<td>6,635</td>
<td>8,916</td>
<td>23,447</td>
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</table>

<table>
<thead>
<tr>
<th>DAC Flood Affected</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>5,917</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>218</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

### AGENCY INFO

<table>
<thead>
<tr>
<th>Select the County you represent</th>
<th>San_Bernardino</th>
<th>Population</th>
<th>Employment</th>
<th>Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you represent a County Agency, a City Agency or Other Agency?</td>
<td>City</td>
<td>County</td>
<td>2,258,662</td>
<td>828,692</td>
</tr>
<tr>
<td>If selected Other Agency, please select Agency Name from the list</td>
<td></td>
<td>City</td>
<td>7,828</td>
<td>3,264</td>
</tr>
<tr>
<td>If selected &quot;Other&quot;, please mention the name of the agency you represent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select City you represent</td>
<td>Needles</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PROJECT INFO

<table>
<thead>
<tr>
<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>Extreme Heat</td>
<td>Inland Flood</td>
<td>Wildfire</td>
<td>Extreme Heat</td>
<td>Severe Storms Or Wind</td>
<td></td>
</tr>
<tr>
<td>Affected Population</td>
<td>7,828</td>
<td>798</td>
<td>1</td>
<td>7,828</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>Affected Employment</td>
<td>3,264</td>
<td>292</td>
<td>0</td>
<td>3,264</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>Affected Households</td>
<td>3,151</td>
<td>283</td>
<td>0</td>
<td>3,151</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>If selected &quot;Other&quot;, please mention hazard name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>
</tr>
<tr>
<td>If selected &quot;Other&quot;, please mention protected asset name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale of project (SFD protected) by this effort (in % ??)</td>
<td>0.05</td>
<td>0.35</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected Population</td>
<td>352</td>
<td>245</td>
<td>1</td>
<td>1,566</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Protected Employment</td>
<td>105</td>
<td>203</td>
<td>0</td>
<td>653</td>
<td>Unknown</td>
<td>Unknown</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>
</tr>
<tr>
<td>Additional Description</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage of the project</td>
<td>Construction</td>
<td>Proposed</td>
<td>Planning</td>
<td>Engineering/De No Action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timeline</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>
</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>
</tr>
<tr>
<td>Contact Info for PM</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

<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</td>
<td>Require accounting of flood risk in all applications for new development flood prone areas. Ensure that all applications for new development account for projected precipitation changes and provide adequate protection or design accommodations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>projects and retrofitting existing projects</td>
<td></td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Multiple Assets</td>
<td>Adapt river and reservoir management to accommodate changing precipitation patterns</td>
<td>Dredge river channels to increase flood capacity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coordinate with water districts to explore reservoir management and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>operations options for improving river flood management in anticipation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>of changing precipitation patterns</td>
<td></td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Biodiversity and Habitat</td>
<td>Build or expand flood defenses</td>
<td>Construct “living levees” by creating pervious upland, transition, 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>Build or expand flood defenses</td>
<td>Increase the resiliency of wastewater plants and systems to flooding and severe weather.</td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Stormwater</td>
<td>Design and utilize green infrastructure to provide adaptation benefits</td>
<td>Prioritize low-impact development (iID) stormwater practices in areas where storm sewers may be impaled 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>Buildings and Facilities</td>
<td>Design buildings and facilities to minimize vulnerability to flood</td>
<td>Elevate the first floor up to elevations above target flood levels accounting for projected precipitation changes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hazards</td>
<td></td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Buildings and Facilities</td>
<td>Design buildings and facilities to minimize vulnerability to flood</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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hazards</td>
<td>Rebuild all connecting roads, trails, and utilities to slope 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</td>
<td>Choose plant species for restoration sites that are less vulnerable to flooding.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>be resilient to climate change</td>
<td></td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Biodiversity and Habitat</td>
<td>Design restoration of riparian corridors and wetlands in floodplains to</td>
<td>Establish transitional and upland habitat in restoration sites where feasible.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>be resilient to climate change</td>
<td></td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Biodiversity and Habitat</td>
<td>Design restoration of riparian corridors and wetlands in floodplains to</td>
<td>Require adaptive management plans for restoration/mitigation sites within floodplains to consider increased flooding potential.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>be resilient to climate change</td>
<td></td>
</tr>
<tr>
<td>Inland Flood</td>
<td>Biodiversity and Habitat</td>
<td>Design restoration of riparian corridors and wetlands in floodplains to</td>
<td>Restore riparian corridors, soft-bottomed streambeds, and seasonal flood basins that</td>
</tr>
<tr>
<td></td>
<td></td>
<td>be resilient to climate change</td>
<td></td>
</tr>
</tbody>
</table>
Adaptation Strategies
### Key Strategies and Actions

<table>
<thead>
<tr>
<th>Primary strategy</th>
<th>Wildfire</th>
<th>Extreme Heat Health Impacts</th>
<th>Sea Level Rise</th>
<th>Inland Flooding</th>
</tr>
</thead>
<tbody>
<tr>
<td></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>Other strategies</td>
<td>Harden structures</td>
<td>Expand cooling centers</td>
<td>Pumping stations</td>
<td>Natural buffers</td>
</tr>
<tr>
<td>Rezoning</td>
<td></td>
<td>Expand health care facilities</td>
<td>Rezoning</td>
<td>Rezoning</td>
</tr>
<tr>
<td>Firebreak walls</td>
<td>White roofs</td>
<td></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

[Map showing relocation summary with each dot representing 50 people, with different colors indicating movements.]
## 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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Trips</td>
<td>VMT</td>
<td>VHT</td>
<td>VHD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Code</td>
<td></td>
<td></td>
<td></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>
<td>22,544,031</td>
<td>234,673,126</td>
<td>7,195,885</td>
<td>2,251,865</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>
</tr>
<tr>
<td>4</td>
<td>Riverside</td>
<td>6,293,569</td>
<td>77,764,585</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>75,619,862</td>
<td>1,573,416</td>
<td>210,823</td>
</tr>
<tr>
<td>6</td>
<td>Ventura</td>
<td>2,380,683</td>
<td>19,718,820</td>
<td>465,617</td>
<td>88,599</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>45,201,037</td>
<td>494,151,800</td>
<td>15,439,295</td>
<td>5,880,598</td>
</tr>
</tbody>
</table>
Wildfire Scenario 2030 – “Business as Usual” Scenario
Stranded Zones Analysis for Wildfire Scenario
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><strong>Financing Districts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefit Assessments</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 assessment</td>
</tr>
<tr>
<td>Community Facilities District Special Tax (Mello Roof)</td>
<td>MODEST: Wide range of facilities &amp; services, but must benefit taxed parcels</td>
<td></td>
<td>MODEST: 2/3 district property owners, or 2/3 voter approval if more than 12 voters in district</td>
</tr>
<tr>
<td>Property Tax Increment</td>
<td>BROAD: Facilities (no services), environmental 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>
<tr>
<td><strong>Local/Regional Public Enterprises</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<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
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.
NEW RESOURCE: Housing Element Parcel Tool (HELPR)

http://maps.scag.ca.gov/helpr
How to explore parcel data 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
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
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>
Contact the project team

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Public Health Working Group

A Focus on Extreme Heat and Equity

SCAG Sustainability & Planning Strategy Departments
UCLA Luskin Center for Innovation (LCI)
December 17, 2020
Extreme Heat and Public Health

Natalie Arreaga
CivicSpark Fellow
SCAG Sustainability Department
December 17, 2020
What Is Extreme Heat?

- Extreme heat conditions are defined as weather that is substantially hotter than average for a specific time and place (EPA, 2016)
- Extreme heat events, also known as “heat waves,” have no standard definition
- Extreme heat events are characterized by stagnant warm air and consecutive nights with above average temperatures
- The United States is already experiencing an increase in extreme heat events
Heat Index

- The heat index is a measure of what temperature feels like when relative humidity is factored in with the air temperature.

- The National Weather Service (NWS) refers to it as the “feels like” weather and is also known as apparent temperature.

- Relative humidity is the ratio of the percentage of moisture in the air and the maximum amount of moisture the air can hold.

- Heat Index thresholds are used by the NWS to issue heat advisories and excessive heat warnings.
Forecasts of Extreme Heat (United States)

The Union of Concerned Scientists (UCS) analysis on extreme heat projections throughout the United States over the next century:

Mid-Century (2036–2065)
- Days per year with a heat index above 100 degrees average will more than double.
- Over a third of the United States will experience heat conditions once a year, on average exceeding the heat index range.
- About one-third of the 481 urban areas in the United States with a population of 50,000 people or more will experience an average of 30 or more days per year with a heat index above 105°F.

Late Century (2070–2099)
- On average, the United States will experience four times as many days per year with a heat index above 100°F, and almost eight times as many days per year above 105°F, as it has historically.
- On average, more than 60 percent of the United States will experience off-the-charts conditions that exceed the NWS heat index range and present mortal danger to people, at least once per year.
- More than 60 percent of urban areas in the United States will experience an average of 30 or more days with a heat index above 105°F.
- An additional 9,300 heat-related annual deaths will occur across the country.
Forecasts of Extreme Heat (SCAG Region)

Projections from Connect SoCal Public Health Technical Report:

- By 2030, California is expected to have an increase in annual average temperatures of 5 degrees and 10 degrees by the end of the century.
- The SCAG region is projected to have an average increase of 35 extreme heat days from 2040–2060.
- The county in the SCAG region with the highest projections is Imperial County, which is expected to have over 43 extreme heat days per year from 2040–2060.
- Riverside, San Bernardino, and Los Angeles Counties are expected to have 42, 41, and 37 extreme heat days, respectively, per year.
- Ventura County is projected to have 32 extreme heat days. Orange County is expected to have 15 extreme heat days per year which is the lowest projection of extreme heat days in the SCAG region from 2040–2060.
- Extreme heat days per year are expected to more than double across the entire region after 2085.
Urban Heat Island Effect

Causes

- Low albedo materials
- Large Populations
- Increased use of air conditioning
- Destruction of trees
- Urban Canopy
- Wind Blocking
- Air Pollutants

Reduction Strategies

- Trees and other vegetation
- Green roofs
- Cool roofs
- Cool pavements
- Smart growth
Extreme Heat and Public Health Effects

Many serious illnesses are caused by extreme heat exposure and over the last 30 years, extreme heat was the leading weather-related cause of death in the United States (NWS 2018). The following are negative impacts that extreme heat has on human health.

- Heat Cramps
- Heat Exhaustion
- Heat Stroke
- Heat Related Mortality
- Respiratory Illness
- Vector Borne Illness
- Water Quality
Most Vulnerable to Extreme Heat Impacts

- Infants and small children under the age of 4
- Children under the age of 14
- Population over 65 years of age
- Rural residents
- City dwellers
- Outdoor workers
- Low-income communities
- People with chronic diseases
- Adults living alone
California Heat Assessment Tool (CHAT)

Heat Health Events (HHEs)

Projected Changes to HHEs

- Annual Number of Health Events
- Average Event Duration
- Average Maximum Temperature
- Average Minimum Temperature
- Average Maximum Relative Humidity
- Average Minimum Relative Humidity

Use timeline below to see projected changes. Click a census tract to view historical and projected information in more detail.

Bold black outlines indicate high priority census tracts based on the selected vulnerability indicator.
Thank You!

Questions?

Natalie Arreaga
arreaga@scag.ca.gov
A Preview:
California Healthy Places Index
Extreme Heat Edition

UCLA Luskin Center for Innovation (LCI)
J.R. DeShazo, Principal Investigator deshazo@ucla.edu
Lolly Lim, Project Manager llim@luskin.ucla.edu

December 17, 2020
The California Healthy Places Index (HPI): Extreme Heat Edition is a tool developed by the Alliance in partnership with the UCLA Luskin Center for Innovation. The Extreme Heat Edition of the HPI provides datasets on projected heat exposure for the State of California, place-based indicators measuring community conditions, and sensitive populations. It also provides a list of State resources and funding opportunities that can be used to address extreme heat.

The Extreme Heat Edition of the HPI is a flexible tool that can be used to understand underlying heat vulnerability and resilience characteristics of a community, to identify resources to mitigate adverse effects of extreme heat, and to prioritize public and private investments, resources and programs.
California Healthy Places Index: Extreme Heat Edition

Can be used to understand:

- Anticipated extreme heat days / days over 90F / days over 100F by mid-century and end-of-century (by census tract, city / town, county, and other geographic units)
- Areas in which heat-sensitive populations are concentrated within a community
- Areas were selected heat-related vulnerability factors overlap (e.g., housing quality, sensitive populations, anticipated extreme heat)
- Can be used to inform planning decisions (e.g., siting cooling centers; prioritizing weatherization investments; prioritizing greening)
Projected Extreme Heat Indicators on Tool

<table>
<thead>
<tr>
<th>Mid-Century (2035 - 2064)</th>
<th>End of Century (2070 - 2099)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days Above 90F</td>
<td>Days Above 90F</td>
</tr>
<tr>
<td>Days Above 100F</td>
<td>Days Above 100F</td>
</tr>
<tr>
<td>Extreme Heat Days</td>
<td>Extreme Heat Days</td>
</tr>
<tr>
<td>(above 98th percentile of</td>
<td>(above 98th percentile of</td>
</tr>
<tr>
<td>historical baseline)</td>
<td>historical baseline)</td>
</tr>
</tbody>
</table>

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# Community Conditions ("Place") Indicators in Tool

<table>
<thead>
<tr>
<th>Index Score Indicators</th>
<th>Environment</th>
<th>Housing</th>
<th>Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Places Index</td>
<td>Clean Air - Diesel PM</td>
<td>Homeowner Housing Cost Burden</td>
<td>Active Commuting</td>
</tr>
<tr>
<td>CalEnviroScreen 3.0</td>
<td>Clean Air - PM 2.5</td>
<td>Renter Housing Cost Burden</td>
<td>Automobile Access</td>
</tr>
<tr>
<td>Economic</td>
<td>Clean Air - Ozone</td>
<td>Homes with Kitchens</td>
<td></td>
</tr>
<tr>
<td>&gt; 80% of Median Household Income</td>
<td>Impervious Surface Cover</td>
<td>Homes With Plumbing</td>
<td></td>
</tr>
<tr>
<td>Above Poverty</td>
<td>Park Access</td>
<td>Uncrowded Housing</td>
<td></td>
</tr>
<tr>
<td>Median Household Income</td>
<td>Tree Canopy</td>
<td>Homes Built Before 1940</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Urban Heat Island Index</td>
<td>Households in Mobile Homes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Households in RV, Van, or Boat</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>HUD-subsidized Housing Units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LIHTC Housing Units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Housing Voucher Subsidized Units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public Housing Units</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other HUD-subsidized units (e.g., Section 8, Section 236)</td>
<td></td>
</tr>
</tbody>
</table>
## Sensitive Population ("People") Indicators in Tool

<table>
<thead>
<tr>
<th>Mothers / Infants</th>
<th>Older Adults</th>
<th>Health</th>
<th>Race / Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Under 5</td>
<td>65 and older</td>
<td>Asthma ER Admissions</td>
<td>American Indian / Alaskan</td>
</tr>
<tr>
<td>Preterm Births</td>
<td>65+ Below Poverty</td>
<td>Heart Attack ER Admissions</td>
<td>Native</td>
</tr>
<tr>
<td>Youth</td>
<td>65+ Limited English</td>
<td>Chronic Kidney Disease</td>
<td>Asian</td>
</tr>
<tr>
<td>Population 5-14 Years Old</td>
<td>65+ Living Alone</td>
<td>Diagnosed Diabetes</td>
<td>Black</td>
</tr>
<tr>
<td>Students Eligible for Free &amp; Reduced Meal Program</td>
<td>65+ Non-White</td>
<td>Stroke</td>
<td>Latino</td>
</tr>
<tr>
<td>Other</td>
<td>65+ with Disability</td>
<td></td>
<td>Native Hawaiians or Other Pacific Islanders</td>
</tr>
<tr>
<td>Disability</td>
<td>75+ and older</td>
<td></td>
<td>Some Other Races</td>
</tr>
<tr>
<td>Limited English</td>
<td>Workers experiencing high environmental exposure</td>
<td></td>
<td>Two or more races</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td></td>
<td>White</td>
</tr>
</tbody>
</table>
State Resources and Funding Opportunities to Address Heat

Organized by user groups

Provides descriptions of programs and heat-relevant program offerings
Tool Demonstration

Currently undergoing final edits; to be launched January 2021
SCAG’s Progress on Equity Efforts

SCAG Joint Working Group: Public Health, Sustainable Communities, Climate Adaptation
Courtney Aguirre
December 17, 2020
1:00 p.m. – 3:00 p.m.
SCAG’s Commitment to Racial & Social Justice

• On July 14, SCAG Board adopted resolution on its support for racial & social justice.
• SCAG’s policy for a regional discussion and Action on Equity and Social Justice
• Directs staff to regularly report back on the work of the Special Committee on Equity and Social Justice
• Identified core deliverables, including:
  • Establishing a working definition of equity
  • Completing an equity inventory
  • Developing an equity framework
  • Developing a Diversity, Equity, and Inclusion work plan
  • Reviewing the Public Participation Plan

Staff report on board action available [here](#)
Special Committee on Equity & Social Justice [website](#)
Equity Definition Background Research

• Equity Work Group scanned for equity definitions from peer agencies within the state.
  • LA Metro
  • MTC–ABAG (Bay Area MPO)
  • SACOG (Sacramento Council of Governments)
  • SBCTA, SBCOG, & SB County (San Bernardino County)

• Scan included other national agencies, such as Oregon Metro and Metropolitan Council (Twin Cities).

LA Metro
2020 LRTP

MTC–ABAG
Equity Platform

SACOG
Equity, Race, & Inclusion Working Group

SBCTA, SBCOG, & SB County
Equity Ad Hoc Committee & Equity Element in Countywide Vision
## Snapshot of Equity Efforts across California

<table>
<thead>
<tr>
<th>Los Angeles Metro</th>
<th>MTC-ABAG</th>
<th>SACOG</th>
<th>SBCTA, SBCOG, &amp; SB County</th>
</tr>
</thead>
</table>
| **Statement on Racism** | Metro statement on Black Lives Matter and our commitment to fighting racial injustice | MTC Resolution No. 4435.  
"MTC's conviction that Black Lives Matter and reaffirming its commitment to advancing justice, equity, diversity and inclusion in the nine-county Bay Area" | Statement from SACOG Board Chair and Vice-Chair.  
Formation of Board Working Group on Race, Equity and Inclusion | Resolution No. 2020-103.  
“Resolution Affirming that Racism is a Public Health Crisis that Results in Disparities in Family Stability, Health and Mental Wellness, Education, Employment, Economic Development, Public Safety, Criminal Justice, and Housing” |
| **Equity within Policy or Planning Document** | Equity Focus Communities in 2020 LRTP | Equity assessment & strategic implementation plan identified as action in Equity Platform | Our Path Forward: The Prosperity Strategy. A Bridge to Action for Inclusive Economic Recovery & Growth | Addition of “Equity” as eleventh element in Countywide Vision |
| **Action Plan** | LRTP Priority Area 4.1f. Develop and advance a Racial and Socio-Economic Equity Action Plan | Equity Platform Next Steps | **Equity, Race, & Inclusion Working Group; Racial Equity Audit** performed by The McKensie Mack Group | Formation of Equity Element Group |
Revised Equity Definition Working Draft

From 11/16/20

As central to SCAG’s work, equity describes the actions, policies and practices that eliminate bias and barriers to create opportunities for all people, and especially historically and systemically marginalized people, to be healthy and prosperous and to participate fully in civic life.

Revised working draft 12/8/20

As central to SCAG’s work, racial equity describes the actions, policies and practices that eliminate bias and barriers that have historically and systemically marginalized communities of color to ensure all people can be healthy and prosperous and to participate fully in civic life.
Equity Core Concepts

- Core Concepts (equity-related terms—establishing a SCAG lexicon)
  - Racism
  - Racial justice
  - Social justice
  - Race
  - Ethnicity
  - Discrimination
  - Prejudice
  - Privilege
  - White Supremacy
  - Historically marginalized
  - Systemically marginalized
  - Power (institutional)
  - Intersectionality
  - Distributional, procedural, and structural equity
  - Explicit and implicit bias

Additional dimensions include and are not limited to housing, infrastructure, economic, environmental, health and food.
Equity Inventory & Framework

• First step towards developing larger strategic approach to integrating equity in SCAG’s work
• Catalogues existing planning work that takes equity into account and identifies additional areas where equity could be integrated
• Provides holistic snapshot of how equity is currently taken into account
### Support Strategic Plan Goal 5: Recruit, support, and develop a world-class workforce and be the workplace of choice

<table>
<thead>
<tr>
<th>Recruit</th>
<th>Recruit and retain a highly skilled and diverse workforce at all levels through removing barriers in the hiring process, mitigating implicit bias, and ensuring an equitable, accessible, and transparent hiring process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster</td>
<td>Foster an organizational culture around equity, diversity, and inclusion where employees of diverse backgrounds can be their authentic selves, feel a sense of belonging, and have their unique talents, skills, and perspectives valued and supported</td>
</tr>
<tr>
<td>Integrate and align</td>
<td>Integrate and align equity, diversity, and inclusion initiatives with organizational strategies, objectives, and culture and ensure accountability through measurable outcomes</td>
</tr>
</tbody>
</table>
Future Public Participation Plan Recommendations with Emphasis on Equity

• Reflect on our approach and take into consideration ways communication and information-sharing have changed since 2018
• In preparation for the development of the next Connect SoCal, implement intentional, grassroots process to engage diverse constituencies without geographic barriers
• Engage CBO’s and foster partnerships for a more equitable, sustainable, accessible, and affordable region through organizing
• Acknowledge digital divide and promote efforts for broadband across the region
• Continue to bringing traditionally underrepresented and underserved communities to the Table
• Support resiliency that looks to climate adaptation and public health preparedness as key strategies to address community prosperity, safety and economic recovery
Questions? Comments?

Courtney Aguirre – Aguirre@scag.ca.gov

www.scag.ca.gov
Sustainable Communities Working Group

Connect SoCal Update

Sarah Dominguez
December 17, 2020

www.scag.ca.gov
Connect SoCal Update

- California Air Resources Board Executive Order G-20-239
  - Accepts SCAG’s determination that the SCS meets greenhouse gas emission reduction targets

- SCAG eligible for SB 1 funding (Awarded by CTC in December)
  - Trade Corridor Enhancement Program
  - Solutions for Congested Corridors

- Connect SoCal can be used for CEQA Streamlining

SCAG now focused on implementation of Connect SoCal through programs such as the Sustainable Communities Program
2020-2021
Sustainable Communities Program
CALL FOR APPLICATIONS

Julia Lippe-Klein
Planning Strategy
December 17, 2020
SCAG Sustainable Communities Program (SCP) Timeline

- **Growth Visioning**: 2000 - 2004
- **SB375 Target Setting**: 2010
- **Compass Blueprint Call for Proposals**: 2010
- **Sustainability Grants Call for Proposals**: 2013
- **Sustainable Communities Call for Applications**: 2018
- **Active Transportation Call for Proposals**: 2020
- **Sustainable Communities Call for Applications**: 2020

**Events**:
- **2000**: SCAG Sustainable Communities Program (SCP) Timeline
- **2002**: Compass Blueprint Growth Vision
- **2004**: Compass Blueprint Growth Vision
- **2006**: SB375 Target Setting
- **2008**: 2008 Advisory Regional Growth Plan
- **2010**: 2012 Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS)
- **2012**: 2016 RTP/SCS
- **2013**: Sustainability Grants Call for Proposals
- **2016**: Sustainability Grants Call for Proposals
- **2018**: Sustainable Communities Call for Applications
- **2020**: Sustainable Communities Call for Applications

**Timeline**:
- 2000
- 2002
- 2004
- 2006
- 2008
- 2010
- 2012
- 2014
- 2016
- 2018
- 2020
2020 Sustainable Communities Program (SCP): Program Goals

- Provide Needed Planning Resources
- Support Connect SoCal's Key Connections
- Promote & Address Health & Equity
- Support a Resilient Region
- Reduce VMT & GHG Emissions
- Support the Region's Competitiveness for Federal & State Funds
- Support the Implementation of Key Strategies and Goals of Connect SoCal's SCS
2020 Sustainable Communities Program (SCP)

- Supports implementation of 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), *Connect SoCal*
- Provides **multiple opportunities** to seek funding and resources to meet the needs of communities, address recovery and resiliency strategies considering COVID-19, and support regional goals
Multiple Funding Calls:
- **Active Transportation & Safety (AT&S) Call Now Closed**
- **Housing & Sustainable Development (HSD) Call Now Open (Deadline Extended to January 29)**
- **Smart Cities & Mobility Innovations (SCMI) Call – Developing Now**

Successful applicants receive technical assistance from SCAG
- **SCAG will complete procurement process for awarded jurisdictions**
Call 2: Housing & Sustainable Development ~ Priorities

HSD Program will provide beneficial resources to cities and counties for housing production planning and:

- Encourage development and preservation of diverse housing types in areas that are supported by multiple transportation options
- Create dynamic, connected, built environments that support multimodal mobility, reduce reliance on single-occupant vehicles, and reduce VMT
- Reduce greenhouse gas emissions and improve air quality
- Support healthy and equitable communities
- Complement and increase competitiveness for state funding programs, including by increasing the number of cities with “pro-housing local policies”
- Employ strategies to mitigate negative community impacts associated with gentrification and displacement.
Call 2: Housing and Sustainable Development Project Types

- Advancing Accessory Dwelling Unit (ADU) Implementation
- Housing Sustainability Districts, Workforce Housing Opportunity Zones, and Housing Supportive Tax Increment Financing Districts
- Objective Development Standards for Streamlined Housing, Pro-housing Designation Program and Parking Innovation
## Call 2: Housing and Sustainable Development Schedule

<table>
<thead>
<tr>
<th>Event</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call for Applications Opens</td>
<td>November 9, 2020</td>
</tr>
<tr>
<td>Application Workshop</td>
<td>December 2, 2020</td>
</tr>
<tr>
<td>Application Deadline</td>
<td>January 29, 2021</td>
</tr>
<tr>
<td>Regional Council Approval of 2020 SCP Projects</td>
<td>April 1, 2021</td>
</tr>
<tr>
<td>Projects Begin</td>
<td>2021-2022</td>
</tr>
<tr>
<td>Final Work and Invoices Submitted</td>
<td>June 30, 2023</td>
</tr>
</tbody>
</table>

Application Deadline Extended
This Call aims to implement three Connect SoCal Key Connections:

- Smart Cities & Job Centers
- Go Zones
- Shared Mobility/Mobility as a Service

Funding to be directed towards local jurisdictions to use technology and innovation to improve the efficiency and performance of the transportation system by implementing curb space management measures that encourage shared modes, manage parking effectively, and support commerce and the growth of housing and employment in job centers.
Project Type and Eligible Projects

- Curb Space Data Collection & Inventory
- Technology Assessment or Adoption Plan
- Parking Management Plan
- Permitting Process Evaluation
## Call 3: Smart Cities & Mobility Innovations Schedule

<table>
<thead>
<tr>
<th>SCP—Smart Cities and Mobility Innovations Milestones</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call for Applications Opens</td>
<td>February 8, 2021</td>
</tr>
<tr>
<td>Application Workshop</td>
<td>March 8, 2021, April 5, 2021</td>
</tr>
<tr>
<td>Call for Applications Submission Deadline</td>
<td>April 23, 2021 (5:00 p.m.)</td>
</tr>
<tr>
<td>Regional Council Recommendation</td>
<td>July 1, 2021</td>
</tr>
<tr>
<td>Final Work and Invoices Submitted</td>
<td>June 30, 2023</td>
</tr>
</tbody>
</table>
Additional Resources

- Program Fact Sheet
- Program Toolkit
- One-to-One Application Coaching
- Application Webinar Recordings & Presentation Slide Decks
- Listening Sessions
- Web-based Application

- [https://scag.ca.gov/sustainability-program-call-applications](https://scag.ca.gov/sustainability-program-call-applications)
Thank you.

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