Toolbox Training: SCAG Transit Climate Adaptation and Resiliency Toolbox
Matt Gleason & Grieg Asher, SCAG
Robert Kay & Beth Rodehorst, ICF

23 May 2019

Agenda

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<td>10:05 – 10:15</td>
<td>Why did we create this Toolbox?</td>
<td>Matt Gleason</td>
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<td>10:15 – 10:20</td>
<td>How did we create this Toolbox?</td>
<td>Robert Kay</td>
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<td>10:20 – 10:25</td>
<td>Toolbox Overview</td>
<td>Robert Kay</td>
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<td>10:25 – 10:45</td>
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<td>Beth Rodehorst</td>
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<td>10:45 – 11:05</td>
<td>When and how should I apply each of the Toolbox tools?</td>
<td>Beth Rodehorst</td>
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<td>Group 2: Assessing Vulnerability and Consequences</td>
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<td>11:05 – 11:15</td>
<td>When and how should I apply each of the Toolbox tools?</td>
<td>Beth Rodehorst</td>
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<td>11:15 – 11:30</td>
<td>When and how should I apply each of the Toolbox tools?</td>
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<td>Group 4: Moving Toward Implementation</td>
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<td>11:30 – 11:45</td>
<td>SCAG Adaptation Plan Project</td>
<td>Grieg Asher</td>
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<td>11:45 – 12:00</td>
<td>Final questions and wrap up</td>
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Why did we create this Toolbox?

Primary goal: reduce barriers to increasing climate resilience for transit agencies

- Many agencies are small and many not have significant resources to dedicate to climate resiliency
- By doing some of the legwork upfront, the toolbox can significantly reduce the time, money, and resources needed to assess vulnerability and get started on adaptation planning
- Providing exposure datasets not only reduces the burden on individual transit agencies, but also ensures consistent data is used across the SCAG region
- Transit agencies can benefit from recent lessons learned through similar assessments conducted elsewhere
How did we create this Toolbox?

Project Team

Collaborative process that blended best practices and technical analysis with stakeholder input

- Best practices
  - Emerging best practices in the adaptation field
- Technical analysis
  - Climate change projections
  - GIS mapping
- Stakeholder input
  - RTTAC meetings
  - Two project workshops
    - Workshop #1: Criticality and Vulnerability
    - Workshop #2: Adaptation
Toolbox Overview

You can find the Toolbox at:
http://www.scag.ca.gov/programs/Pages/Adaptation-and-Resilience-Planning.aspx
Toolbox Overview

Toolbox Goals
Lower common barriers to climate resiliency planning to empower agencies with limited resources to prepare for climate change, including:
1. Identifying critical assets and routes
2. Integrating climate considerations into local and regional planning processes, and
3. Implementing adaptation practices to improve transit system resilience while complying with state and federal regulations

The Toolbox is…
- A collection of resources aimed at helping transit agencies assess vulnerabilities and conduct resilience planning

The Toolbox is NOT…
- A framework or a step by step guide for conducting vulnerability assessments or adaptation plans

GETTING STARTED
Learn about how your local climate is changing, define your resiliency goals, and learn about frameworks and transit processes that could guide your initiatives.

ASSESSING VULNERABILITIES AND CONSEQUENCES
Learn about resources to support vulnerability and impact assessments, including obtaining detailed climate projection data, identifying critical assets, and determining how assets are potentially affected by climate change.

IDENTIFYING AND EVALUATING ADAPTATION STRATEGIES
Discover how other transit agencies are preparing for climate change, and read about best practices when evaluating and selecting your adaptation actions.

MOVING TOWARD IMPLEMENTATION
Articulate time line, responsibilities, and next steps for action; conduct contingency planning, and identify funding sources.
Toolbox Overview

1. Projected Changes in Climate in the SCAG Region
2. Assessing Vulnerability and Consequences: Getting Started
3. Integrating Climate Change into Transit Planning Processes

1. How to Obtain Detailed Climate Projection Data
2. Assessing Criticality
3. Sensitivity Matrix

4. Example Adaptation Measures
5. Tips for Selecting and Implementing Adaptation Measures

6. Climate Resilience Planning Template
7. Contingency Plan Template
8. Transit Resiliency Funding Opportunities

When and how should I apply each of the Toolbox tools?
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>GETTING STARTED</strong></td>
</tr>
<tr>
<td>Learn about your local climate, define resiliency goals,</td>
</tr>
<tr>
<td>and learn about frameworks and processes that could</td>
</tr>
<tr>
<td>guide your initiatives.</td>
</tr>
<tr>
<td><strong>TOOLBOX RESOURCES</strong></td>
</tr>
<tr>
<td>1. Projected Changes in Climate in the SCAG Region</td>
</tr>
<tr>
<td>2. Assessing Vulnerability and Consequences: Getting</td>
</tr>
<tr>
<td>Started</td>
</tr>
<tr>
<td>3. Integrating Climate Change into Transit Planning</td>
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<tr>
<td>Processes</td>
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<tr>
<td><strong>ASSESSING VULNERABILITIES AND CONSEQUENCES</strong></td>
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<tr>
<td>Learn about resources to support vulnerability and</td>
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<tr>
<td>impact assessments, including obtaining detailed climate</td>
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<tr>
<td>projection data, identifying critical assets, and</td>
</tr>
<tr>
<td>determining how assets are potentially affected by</td>
</tr>
<tr>
<td>climate change.</td>
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<tr>
<td><strong>TOOLBOX RESOURCES</strong></td>
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<tr>
<td>4. How to Obtain Detailed Climate Projection Data</td>
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<td>Discover how other transit agencies are preparing for</td>
</tr>
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<td>climate change, and read about best practices when</td>
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<td>evaluating and selecting your adaptation actions.</td>
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<tr>
<td>7. Example Adaptation Measures</td>
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<td>8. Tips for Selecting and Implementing Adaptation</td>
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<tr>
<td>Measures</td>
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<tr>
<td><strong>MOVING TOWARD IMPLEMENTATION</strong></td>
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<tr>
<td>Articulate timeline, responsibilities, and next steps</td>
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<td>for action; conduct contingency planning, and</td>
</tr>
<tr>
<td>identify funding sources.</td>
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<tr>
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<td>9. Climate Resilience Planning Template</td>
</tr>
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<td>10. Contingency Plan Template</td>
</tr>
<tr>
<td>11. Transit Resiliency Funding Opportunities</td>
</tr>
</tbody>
</table>
Why was this resource developed?
- Retrieving climate data and mapping against assets can be a can require a lot of resources
- We did the work for you!
  - The projections are consistent across the SCAG region and with the latest State-recommended guidance

What is the resource?
- A starting point for understanding exposure. It provides mid-century climate projections for three hazards for the SCAG region, and maps overlaying projections with transit assets
  - Extreme heat
  - Sea level rise
  - Extreme precipitation and inland flooding

When and how should I use it?
- Use it early on to understand how the climate is projected to change
- Eventually, you may decide to do a more detailed exposure assessment. But for most people’s purposes, this information should be sufficient.

Heat waves are expected to become hotter, last longer, occur more frequently, and be more widespread. Inland areas are projected to experience the greatest increases.
Sea levels are projected to rise, leading to inundation in some coastal areas, namely Ventura, Playa Vista, Long Beach, and northern Orange County.

The threshold for extreme precipitation is expected to increase, and dry to wet year swings (i.e., precipitation whiplash) are projected to become more intense. However, the average annual number of very heavy precipitation days is expected to stay roughly the same.
Several areas have transit in floodplains within the SCAG region, including Long Beach, Coachella Valley, and western Imperial County. Flooding may be exacerbated by more intense extreme precipitation.

Tool 1: Projected Changes in Climate in the SCAG Region

Why was this resource developed?
- There are a number of vulnerability assessment frameworks available, so we didn’t want to create another one
- We did want to provide some tips and best practices for getting started

What it is the resource?
- Outlines key considerations when embarking on a vulnerability assessment
  - Clearly articulate your vulnerability assessment goals
  - Refine your assessment focus early on
  - Use existing vulnerability assessment frameworks and methods
  - Obtain and interpret climate data appropriately
  - Resources for applying vulnerability assessment results

When should I use it?
- Before undertaking a vulnerability assessment, in order to appropriately prepare for and scope the assessment
Why was this resource developed?
- Given that transit agencies have limited resources, let’s leverage what you’re already doing to be more effective and cost-effective.

What is the resource?
- Outlines how to integrate climate adaptation into three common transit agency processes, including:
  - Procurement and Contracting
  - Transit Asset Management
  - Short Range Transit Plan

When should I use it?
- Once you understand your vulnerabilities and are ready to begin exploring adaptation.
When and how should I apply each of the Toolbox tools?

**GETTING STARTED**
Learn about how your local climate is changing, define your resiliency goals, and learn about frameworks and transit processes that could guide your initiatives.

**ASSESSING VULNERABILITIES AND CONSEQUENCES**
Learn about resources to support vulnerability and impact assessments, including obtaining detailed climate projection data, identifying critical assets, and determining how assets are potentially affected by climate change.

**IDENTIFYING AND EVALUATING ADAPTATION STRATEGIES**
Discover how other transit agencies are preparing for climate change, and read about best practices when evaluating and selecting your adaptation actions.

**MOVING TOWARD IMPLEMENTATION**
Articulate time line, responsibilities, and next steps for action, conduct contingency planning, and identify funding sources.

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Tool 4: How to Obtain Detailed Climate Projection Data

- **Why was this resource developed?**
  - High-level exposure data (provided in the first tool) is sufficient in many cases. However, certain assessments require more detailed data.
  - There are many different options for retrieving data, so we broke it down to help you make decisions.

- **What it is the resource?**
  - This document outlines steps for obtaining climate data, including:
    - Step 1: Identify your climate data needs
    - Step 2: Determine climate data parameters
    - Step 3: Obtain climate data
    - Step 4: Contextualize uncertainty

- **When should I use it?**
  - When you want to develop climate projections beyond those provided in the first tool within this Toolbox

Tool 5: Assessing Criticality

- **Why was this resource developed?**
  - Assessing the vulnerability of all assets within a transit system is not cost-efficient.
  - It’s often helpful to identify assets that are highly critical to the system, and focus vulnerability assessment analyses on those.

- **What it is the resource?**
  - Helps transit agency score the relative criticality of their assets using a guidance document and associated Excel tool.
  - Steps include:
    1. Defining goals and objectives of the analysis
    2. Defining asset categories of interest
    3. Applying evaluation criteria

- **When should I use it?**
  - Before or during your vulnerability assessment, when you want to identify critical assets to focus on
### Tool 5: Assessing Criticality

#### Criticality Criteria Matrix

**Asset Criticality**

<table>
<thead>
<tr>
<th>Bus Asset Category</th>
<th>Severity</th>
<th>Ridership</th>
<th>Connectivity</th>
<th>Service Criticality Score</th>
<th>Total Criticality Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration buildings</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bases</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Communications</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Financial (payroll, procurement, revenue)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fleet (non-revenue)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fleet (revenue)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fuel infrastructure &amp; operations</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Information technology</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Material (stockroom)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Route (redundancy)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Staff (contracted staff)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Staff (direct operators)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Station/bus stop</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Transit centers (incl. park &amp; ride lots, bike centers, etc.)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Yards &amp; shops</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Asset Evaluation Criteria

**Severity:** Given an available backup (if applicable), what kind of service can the system provide?

- 0: Near normal service
- 2: Impaired/compromised delivery of service
- 4: Localized shutdown
- 15: Total system shutdown (automatically considered to be highly critical)

**Ridership:** How many riders does the asset serve each day?

- 0: Does not apply
- 1: <100 riders
- 2: 100 - 999 riders
- 3: 1,000 - 9,999 riders
- 4: ≥10,000 riders

**Connectivity:** How many transit lines does the asset provide connections to?

- 0: Does not apply
- 1: ≤5 lines
- 2: 6 - 9 lines
- 3: ≥10 lines

**Highest Possible Asset Criticality Score (Service Evaluation Criteria + Asset Evaluation Criteria)**

- 30
Why was this resource developed?
- When assessing transit system vulnerability, it’s important to identify specific ways in which assets are sensitive to climate stressors.
- Other transit agencies have already compiled a lot of information on sensitivities as part of their own projects, so we wanted other agencies to build upon, not recreate, their work.

What is the resource?
- An Excel workbook that describes specific rail and bus asset sensitivities to temperature, precipitation and inland flooding, and sea level rise.

When should I use it?
- When conducting a vulnerability assessment, once you’re interested in investigating specific sensitivities.

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**Tool 6: Sensitivity Matrix**

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**BUSES**

<table>
<thead>
<tr>
<th>Asset Category</th>
<th>Important Impact-Asset Relationships by Climate Stressor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Temperature</td>
</tr>
<tr>
<td><strong>Fleet</strong></td>
<td>• Reduce asset lifespan (3, 8)</td>
</tr>
<tr>
<td></td>
<td>• All high temperatures. Buses break down more frequently and require additional maintenance (6). Ordered temperatures reach 100 degrees F; many buses begin to shut down and stop running (7).</td>
</tr>
<tr>
<td></td>
<td>• Extreme temperatures, particularly exceeding 100 degrees F, stress the air conditioning systems (5). If they fail, the buses will be taken out of service and require maintenance (6).</td>
</tr>
<tr>
<td></td>
<td>• Extreme heat stresses and causes damage to tires. The expansion and contraction of all in tires due to changing temperatures weaken the material (7).</td>
</tr>
<tr>
<td></td>
<td>• Increased cost of replacing tires damaged by extreme temperatures and road damage (7).</td>
</tr>
<tr>
<td></td>
<td>• Fueling in hot temperatures is less efficient, especially with gasoline (7).</td>
</tr>
<tr>
<td></td>
<td>• Heat damage to asphalt can increase pot holes and road damage, which call for additional maintenance (7).</td>
</tr>
</tbody>
</table>

|                | Precipitation and Inland Flooding                          |
|                | • Flooding at bus stations, parking lots, and bus stops (2). |
|                | • Facilities are lost to routine inspections, and require additional maintenance (2). |
|                | • Loss of bridge and tunnel entrance for roads, rail, and transit will be more susceptible to flooding, and thousands of cists could be undermined for large (3). |
|                | • Flooding at roadway crossings (where water has velocity) can be expected to cause pavement and embankment failure begining when the water is high enough to flow over the roadway surface (4). |
|                | • Storms increase risk of erosion, sedimentation, or cracking, and cause structural damage (4). |
|                | • Increased frequency or duration of heavy rain events will cause more sensitivity. Soil moisture effects electrical power system components, such as poles supporting power lines (4). |
|                | • Drought conditions can increase the likelihood that trees will snap and break in storms, damaging power lines (4). |

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Q&A on Tools for Assessing Vulnerability and Consequences

Coffee Break
### GETTING STARTED
Learn about how your local climate is changing, define your resiliency goals, and learn about frameworks and transit processes that could guide your initiatives.

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### IDENTIFYING AND EVALUATING ADAPTATION STRATEGIES
Discover how other transit agencies are preparing for climate change, and read about best practices when evaluating and selecting your adaptation actions.

7. Example Adaptation Measures
8. Tips for Selecting and Implementing Adaptation Measures

### MOVING TOWARD IMPLEMENTATION
Articulate time line, responsibilities, and next steps for action; conduct contingency planning, and identify funding sources.

9. Climate Resilience Planning Template
10. Contingency Plan Template
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### Tool 7: Example Adaptation Measures

- **Why was this resource developed?**
  - It’s difficult to begin resilience planning from scratch. Having a list of specific examples that transit agencies have implemented can be helpful.

- **What is the resource?**
  - A word document that includes:
    1. A description of six general types of transit adaptation measures
    2. Specific examples of adaptation measures that have been implemented by transit agencies, tagged by measure type

- **When should I use it?**
  - When developing an adaptation plan or just exploring adaptation measures
Tool 7: Example Adaptation Measures

Why was this resource developed?
- There’s no hard-and-fast formula for determining which adaptation measures should be prioritized and implemented. Prioritization is based on various factors, and varies agency to agency.

What is the resource?
- Provides a few tips for evaluating and implementing adaptation measures, including:
  - There are different types of costs of adaptation measures
  - There are different ways to achieve resilience
  - Some investments may be needed now, and some can wait (but shouldn’t be forgotten!)
  - There are ways to manage uncertainty about the future climate
  - It's ok to start small
  - Effective communication can make the difference when seeking support for your resilience efforts

When should I use it?
- When developing an adaptation plan or beginning to decide which adaptation measures to prioritize and implement

Tool 8: Tips for Selecting and Implementing Adaptation Measures

Example Adaptation Measures Planned or Implemented by Transit Agencies

- Plan & Prepare
- Maintain and Manage
- Strengthen & Protect
- Enhance Redundancy
- Recover
- Retreat

<table>
<thead>
<tr>
<th>Transit Agency Adaptation Measures</th>
<th>Adaptation Measure Type</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansas City Transit Authority (KCATA)</td>
<td>Working on incorporating resilience into management plan for emergencies and to mitigate climate risks</td>
<td>✔️ ✔️ ✔️</td>
</tr>
<tr>
<td></td>
<td>Focus on preparedness and service restoration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Work w/ managers and front-line to identify assets, infrastructure, and services that are potentially vulnerable; work with a regional MPO to coordinate system planning across seven counties; use green infrastructure to mitigate flood risks</td>
<td></td>
</tr>
<tr>
<td>Los Angeles County Metropolitan Transportation Authority (LA Metro)</td>
<td>Integrated resilience into Environmental Management System (EMS) to consider resilience in agency decisions related to maintenance, operations, and capital project development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Developed a Resiliency Indicator Framework to track infrastructure and operational resilience over time</td>
<td>✔️ ✔️</td>
</tr>
<tr>
<td></td>
<td>Developing a comprehensive resiliency policy and updating infrastructure and facility design criteria and construction specifications to include resilience in capital project construction, operations, and maintenance</td>
<td>✔️ ✔️</td>
</tr>
<tr>
<td>Maryland Transit Administration (MTA)</td>
<td>Focus on operations during extreme weather events</td>
<td>✔️ ✔️</td>
</tr>
<tr>
<td></td>
<td>Use operations &amp; maintenance &amp; emergency management procedures to protect infrastructure; developing an asset management system that incorporates climate and weather risk assessment; procedures that facilitate cessation and rapid recovery of services in response to winter weather threats</td>
<td>✔️ ✔️</td>
</tr>
</tbody>
</table>
Q&A on Tools for Identifying and Evaluating Adaptation Strategies

**When and how should I apply each of the Toolbox tools?**

**GETTING STARTED**
Learn about how your local climate is changing, define your resiliency goals, and learn about frameworks and transit processes that could guide your initiatives.

**ASSESSING VULNERABILITIES AND CONSEQUENCES**
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**IDENTIFYING AND EVALUATING ADAPTATION STRATEGIES**
Discover how other transit agencies are preparing for climate change, and read about best practices when evaluating and selecting your adaptation actions.

**MOVING TOWARD IMPLEMENTATION**
Articulate timelines, responsibilities, and next steps for action; conduct contingency planning, and identify funding sources.
Tool 9: Climate Resilience Planning Template

Why was this resource developed?
- We want adaptation plans to turn into meaningful action—not just a report that sits on a shelf
- Articulating responsibilities and near-term steps can help ensure momentum is continued

What is the resource?
- Template that helps transit agencies articulate:
  - Near- and long-term goals
  - Immediate next steps
  - Roles and responsibilities
  - Timeline for key adaptation milestones

When should I use it?
- When undertaking resilience planning

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Resilience Goals (clearly articulating goals can help provide focus around your resiliency efforts)

<table>
<thead>
<tr>
<th>Immediate Next Steps</th>
<th>Assigned to</th>
<th>Description</th>
<th>Relevant Resilience Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: Engage senior leadership on adaptation</td>
<td>Mike</td>
<td>3 months prior to SRTP kick off</td>
<td>Near-term objectives 1, 2</td>
</tr>
<tr>
<td>Example: Develop workplan for completing a vulnerability assessment</td>
<td>John</td>
<td>Prior to next meeting of adaptation planning team</td>
<td>Long-term goal 1</td>
</tr>
<tr>
<td>Example: Conduct internal education/outreach on adaptation initiative</td>
<td>Anna</td>
<td>Throughout Q1</td>
<td>Near-term goal 1</td>
</tr>
</tbody>
</table>

Timeline and Key Milestones

Next adaptation planning check-in:
- Example: January 15, 2019

Adaptation Planning Timeline:
- Example:
  - Q1: Complete internal outreach and seek buy-in from executive leadership
  - Q2: Identify greatest vulnerabilities to transit system from climate change
  - Q3: Develop plan for incorporating climate change resiliency into upcoming SRTP
  - Q4: Work with colleagues throughout SRTP process to ensure climate resiliency is addressed
Tool 10: Contingency Plan Template

- Why was this resource developed?
  - Contingency plans can help agencies more effectively prepare for, cope with, and respond to disruptive events.

- What is the resource?
  - Template that helps transit agencies develop contingency plans for disruptive events.

- When should I use it?
  - When planning for disruptive events

Flow of Information During a Disruptive Event

Tool 11: Transit Resiliency Funding Opportunities

- Why was this resource developed?
  - Funding is critical in advancing resilience efforts

- What is the resource?
  - A document that discusses grant funding opportunities as of June 2018

- When should I use it?
  - When undertaking resilience planning

FUNDING OPPORTUNITIES SUMMARY

<table>
<thead>
<tr>
<th>Grant Program</th>
<th>Grant Description</th>
<th>Grant Distribution &amp; Match Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Transportation Planning</td>
<td>Funding directed for climate change adaptation planning on California’s transportation systems.</td>
<td>Grant minimum of $100,000; Grant ceiling of $700,000; 25% local match minimum</td>
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Q&A on Tools for Moving Toward Implementation

Thank you!

Questions?
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SCAG Regional Adaptation Plan Project

Project Purpose

- Empower transit agencies in the SCAG Region to:
  - identify critical assets and routes;
  - integrate climate considerations into local and regional planning processes; and
  - implement adaptation practices to improve transit system resilience while complying with state and federal regulations.

- Develop a toolbox of resources that will assist transit agencies in completing these activities with limited resources

- Project to be completed in June 2018
Why a Toolbox?

- Purpose is to build capacity of transit agencies of all sizes to
  - Evaluate their own vulnerabilities to climate change
  - Identify and implement appropriate adaptation measures

- By lowering common barriers to climate resiliency planning, agencies with limited resources can prepare for climate change

Toolbox Overview

GETTING STARTED
Learn about how your local climate is changing, define your resiliency goals, and learn about frameworks and transit processes that could guide your initiatives.

1. Projected Changes in Climate in the SCAG Region
2. Assessing Vulnerability and Consequences: Getting Started
3. Integrating Climate Change into Transit Planning Processes
4. How to Obtain Detailed Climate Projection Data
5. Assessing Criticality
6. Sensitivity Matrix

7. Example Adaptation Measures
8. Tips for Selecting and Implementing Adaptation Measures
<table>
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<th>Toolbox Overview</th>
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<tr>
<td><strong>MOVING TOWARD IMPLEMENTATION</strong></td>
</tr>
<tr>
<td>Articulate time line, responsibilities, and next steps for action; conduct contingency planning, and identify funding sources.</td>
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<tr>
<td>9. Climate Resilience Planning Template</td>
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<tr>
<td>10. Contingency Plan Template</td>
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<tr>
<td>11. Transit Resiliency Funding Opportunities</td>
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