Climate Adaptation Planning Tools for California Local Governments

May 15, 2012 11:00 am – 12:00 pm

Please note:

- Questions and comments may be submitted using the on-screen webinar tools.
- For live assistance during the webinar, please call 916-658-8202.
- PowerPoint presentation is available for download at: www.ca-ilg.org/SCLN/ClimateAdaptationWebinar

INSTITUTE FOR LOCAL GOVERNMENT

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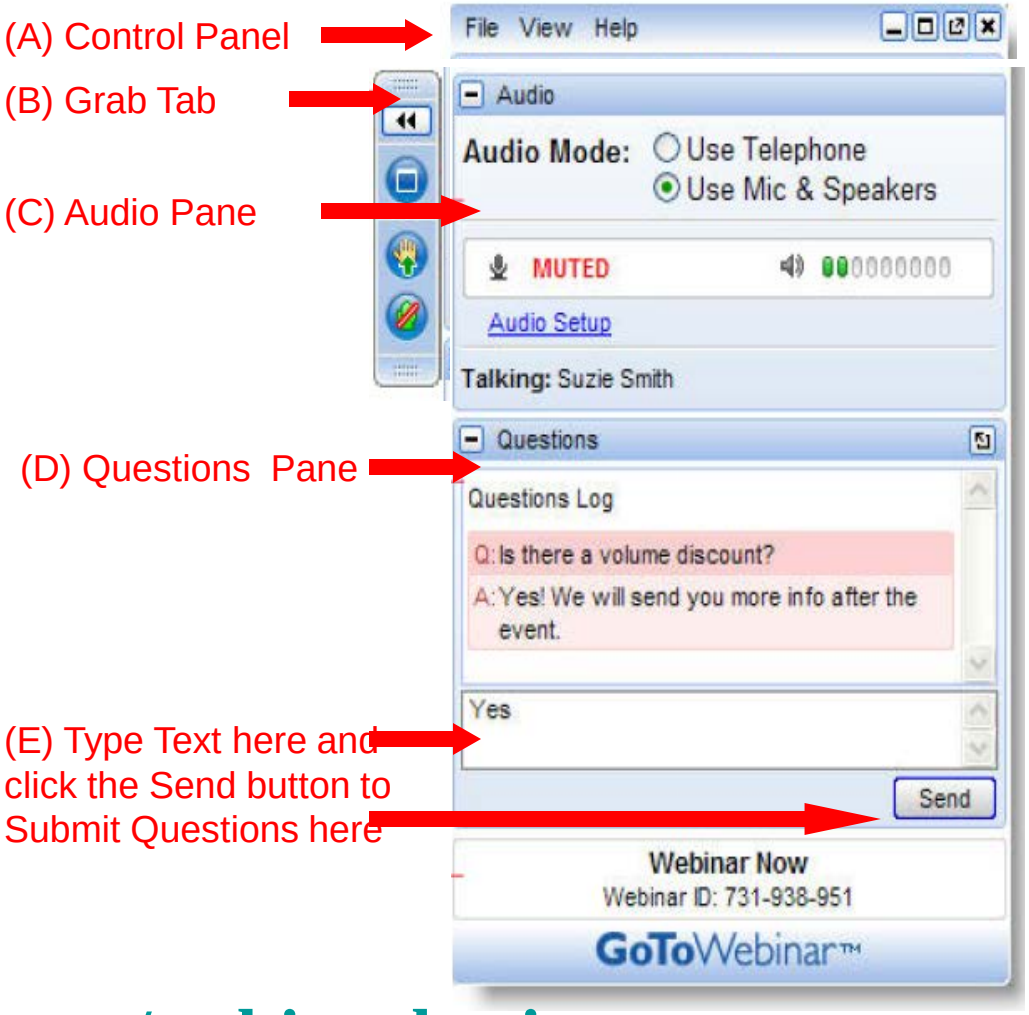


www.ca-ilg.org/webinarbasics

Today's Agenda

I. Welcome and Introductions

Steve Sanders, Institute for Local Government

II. State Climate Change Resources for Local Governments

Michael McCormick, Governor's Office of Planning and Research

III. Climate Adaptation Decision Support Tools

Kurt Malchow, California Natural Resources Agency

IV. California Climate Adaptation Policy Guide

Adrienne Greve, California Polytechnic State University, San Luis Obispo

V. Questions and Discussion

About the Institute

Who:

- **Founded 1955**
- **501(c)(3) Research and Education Arm of:**
  - League of California Cities
  - California State Association of Counties

Mission:

Promoting good government at the local level

Sustainable Communities Learning Network

The Sustainable Communities Learning Network helps local officials and staff to access and share resources and tools that encourage their communities to consider and apply economically, socially and environmentally sustainable practices.

Institute for Local Government
Promoting Good Government at the Local Level

UCDAVIS
University of California
Information Center for the Environment (ICE)

The California Endowment

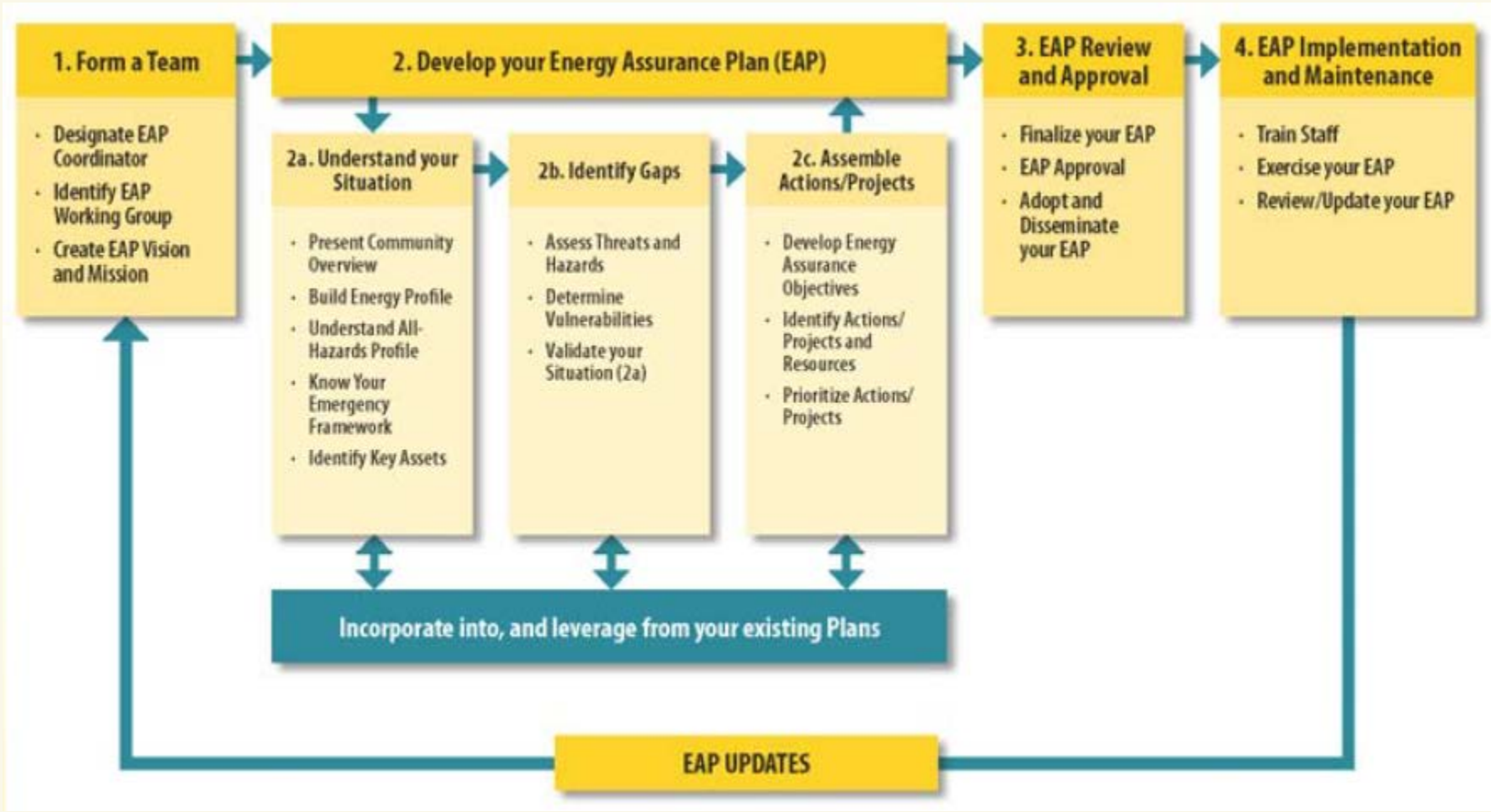
California Strategic Growth Council

Sustainable Communities Learning Network

Learn. Share. Connect. Lead.

- Local Government Access Points
- California Adaptation Strategy 2012
- CalEMA/CNRA – APG
- OPR Resources
  - OPR CAP Technical Advisory
  - General Plan Guidelines
- OPC Sea Level Rise Guidance
- California Coastal Commission - LCPs
- State Hazard Mitigation Plan
- DWR – Climate Change and Regional Water Planning
- SGC Grant Funding
- CEC – Energy Assurance
- CDPH Health and Climate Planning

CaLEAP



GOVERNOR'S OFFICE OF PLANNING AND RESEARCH · STATE OF CALIFORNIA

www.caleap.org

EXTREME CLIMATE RISKS AND CALIFORNIA'S FUTURE

Climate Action for Health:

Integrating Public Health into Climate Action Planning

www.cdph.ca.gov/programs/CCDPHP/Pages/ClimateChange.aspx

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH · STATE OF CALIFORNIA

EXTREME CLIMATE RISKS AND CALIFORNIA'S FUTURE

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www.opr.ca.gov

Climate Adaptation Decision Support Tools

Focus: Cal-adapt and Draft Climate Adaptation Policy Guide - Public Stakeholder Input Meetings

May 14-18, 2012

CALIFORNIA natural resources AGENCY

Kurt Malchow
California Natural Resources Agency

Bridging the Gap Between State and Local Planning:

Research synthesis

Local Adaptation Planning

First step: make the research easier to understand

(2009 CAS Executive Summary Strategy #12)

Cal-adapt (cal-adapt.org/):

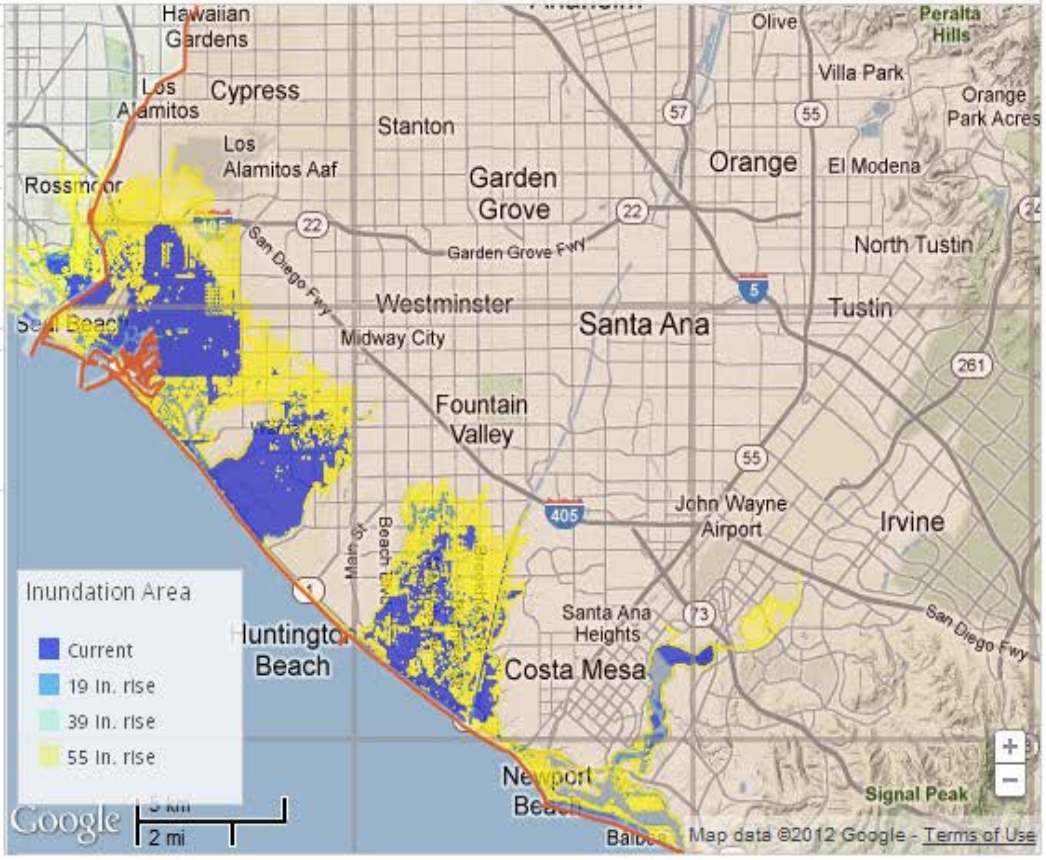
LOCAL CLIMATE SNAPSHOTS

Orange County, CA

Use Metric Units

Sea Level Rise

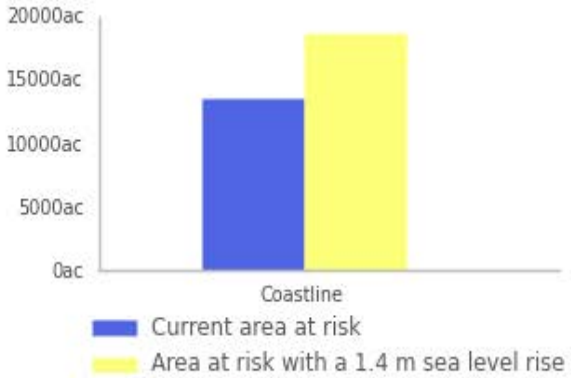
Areas vulnerable to a 100-year flood event as sea level rises



ORANGE COUNTY

Land Vulnerable to a 100-Year Flood Event

	Estimated Acreage in 2000	Estimated Acreage in 2100	Percent Change
Coast:	13,640	18,770	+27%



disclaimer

TEMPERATURE: EXTREME HEAT TOOL

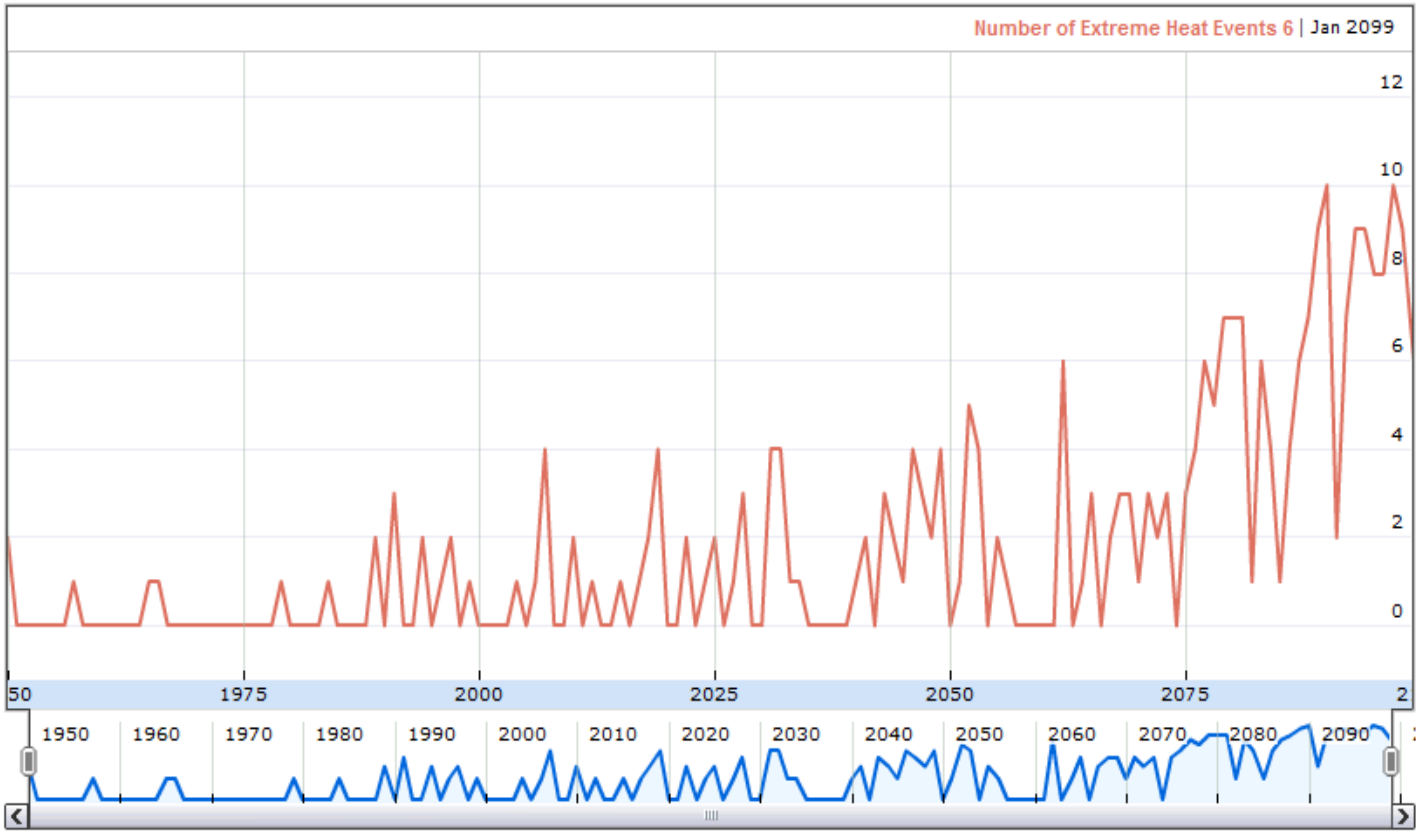
Burbank, CA

Emissions Scenario: LOW HIGH

ABOUT THE TOOL | GRAPH IT! | DISCLAIMER

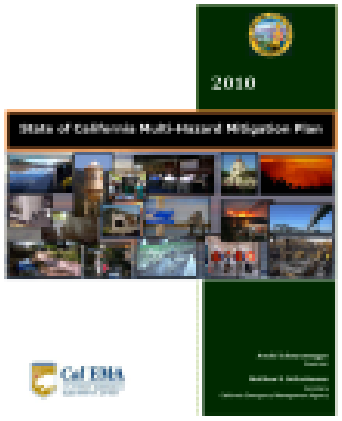
Timing of Extreme Heat Days by Year

OPTIONS



Historical Avg. # Extreme Heat Days: 4 | Extreme Heat Day Threshold: 105°F | *All values based on modeled data*

Bridging the Gap Between State and Local Planning:

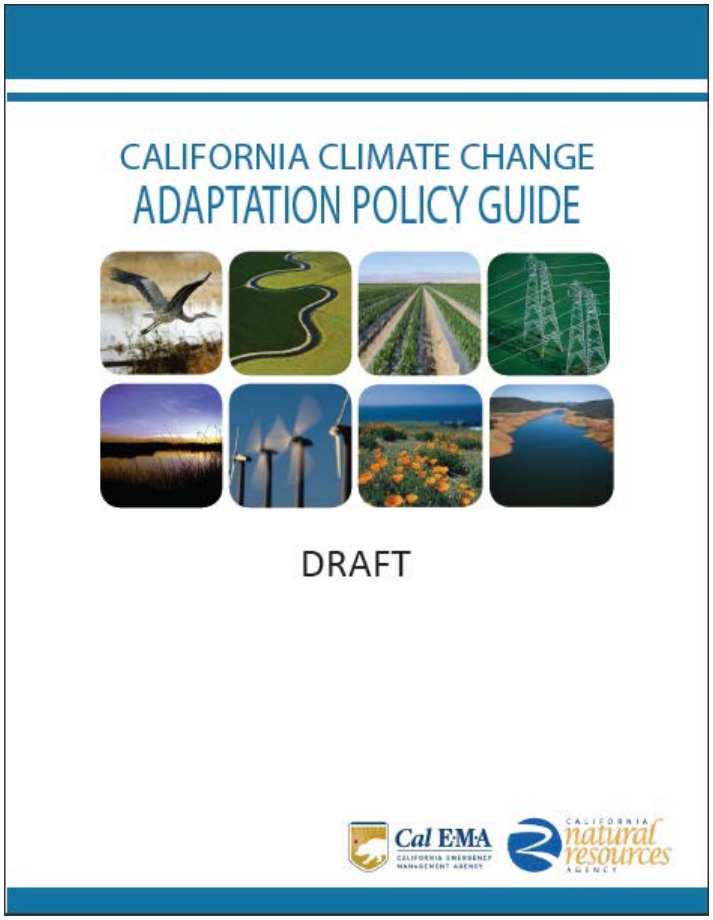


Policy guidance → **Local Adaptation Planning**

Second: once impacts are understood, provide guidance to help evaluate vulnerabilities and develop strategies to address these impacts.

(2009 CAS Executive Summary Strategy #6, Comprehensive State Strategy 3a)

Adaptation Policy Guide



- **A planning/decision framework**

***Timeline*:**

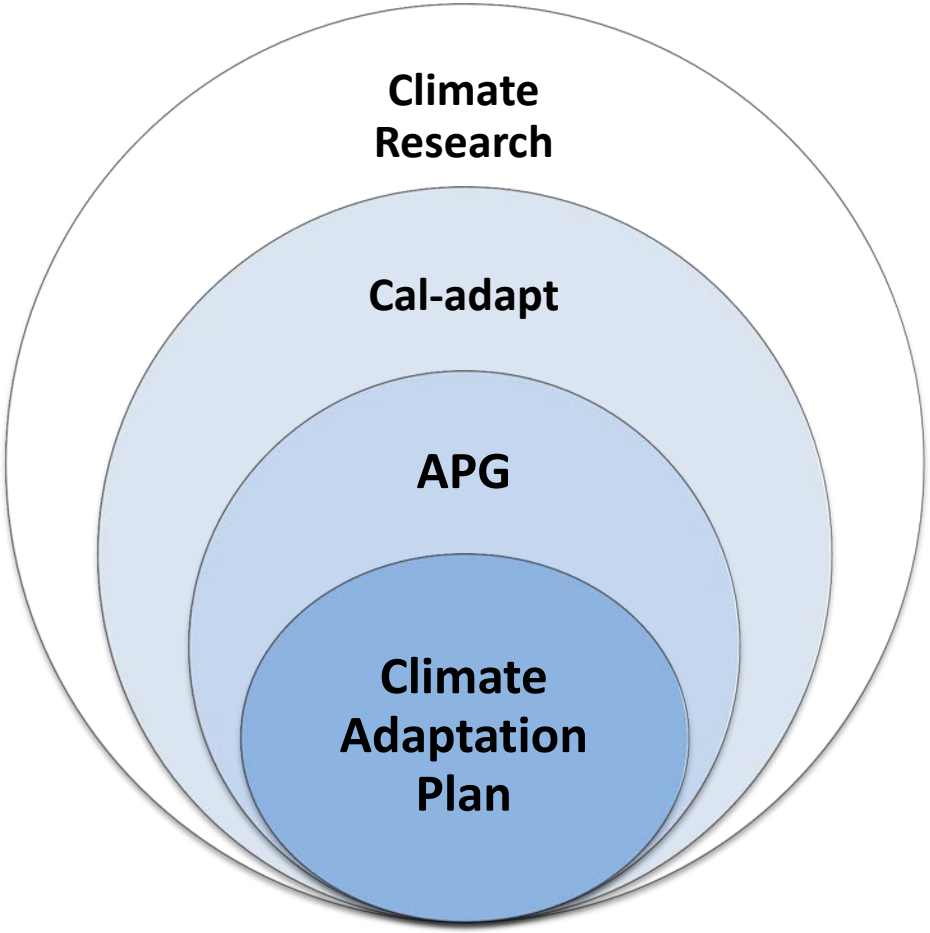
November 2010 – April 2012: Contracting and production

April 9, 2012: Draft released as part of Governor's Extreme Events Conference, Local Government Side Event

April 9 – June 8, 2012: Public Review

Final: End of June 2012

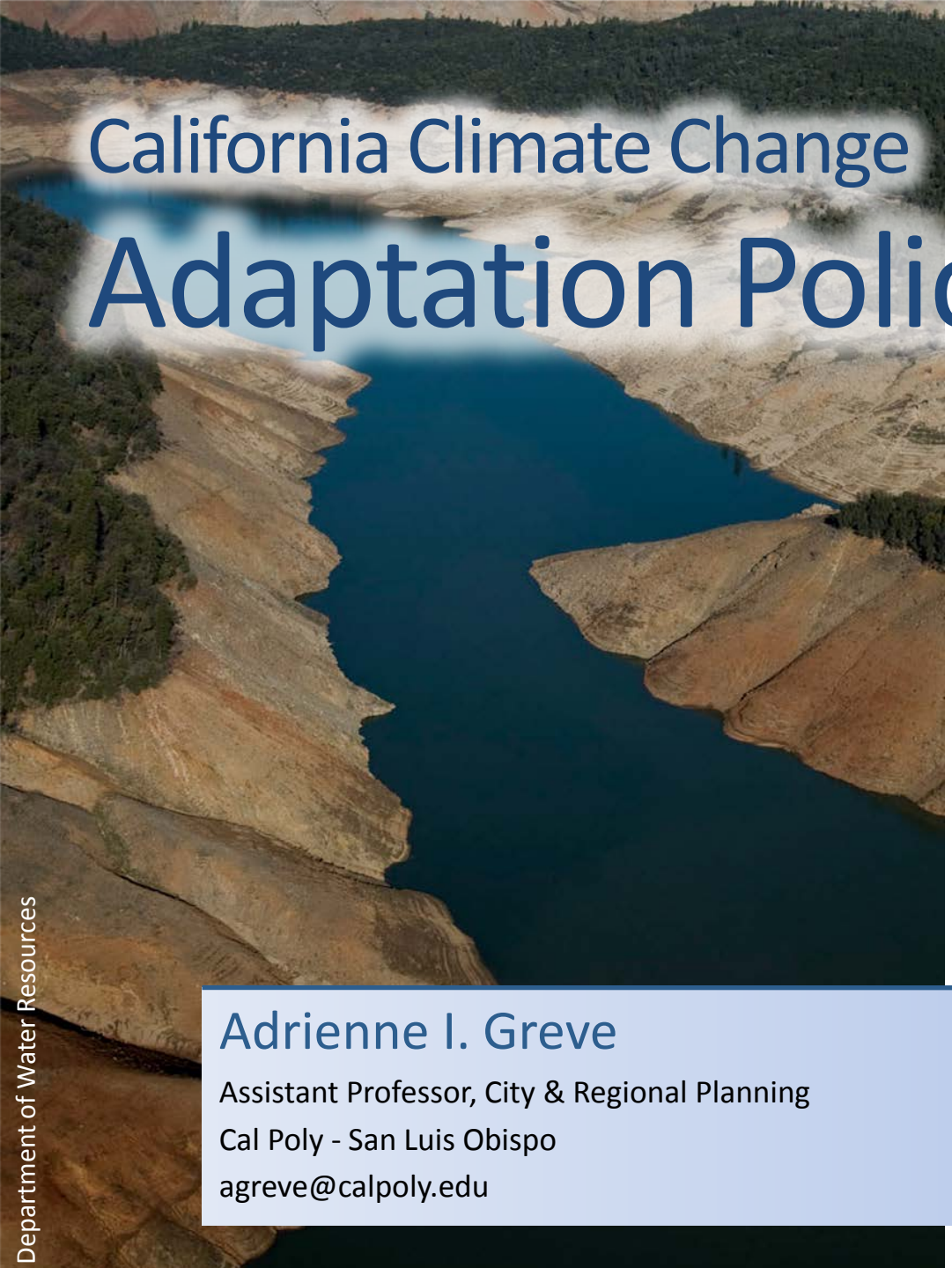
From science to planning:



Additional research, tools and guidance applicable to community needs

Thank you

resources.ca.gov/climate_adaptation/ local_government/adaptation_policy_guide.html



California Climate Change
Adaptation Policy Guide

Adrienne I. Greve

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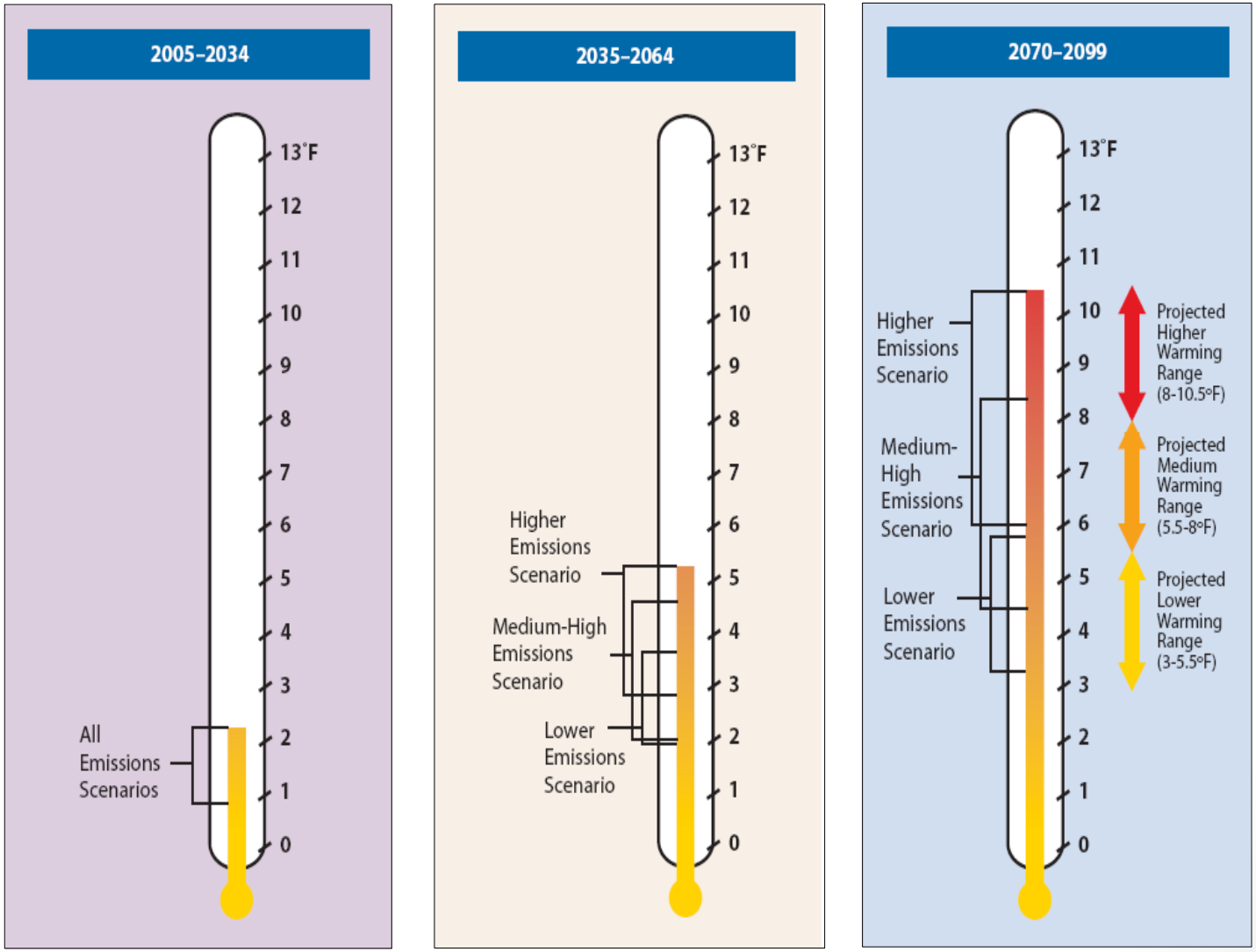
Cal Poly - San Luis Obispo

agreve@calpoly.edu

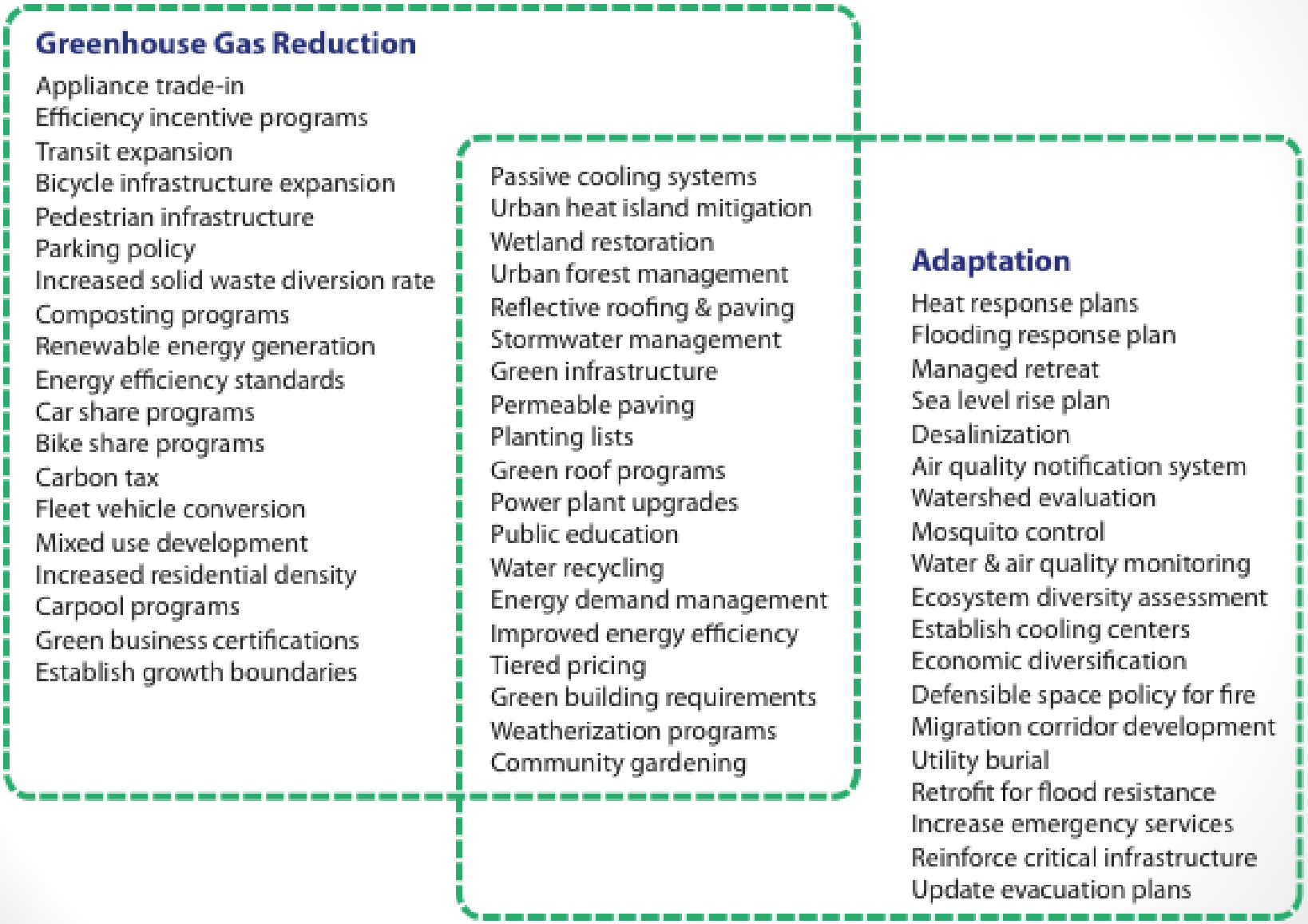
Department of Water Resources

Why Climate Adaptation?



California Climate Change Center 2006

Climate Adaptation & GHG Reduction

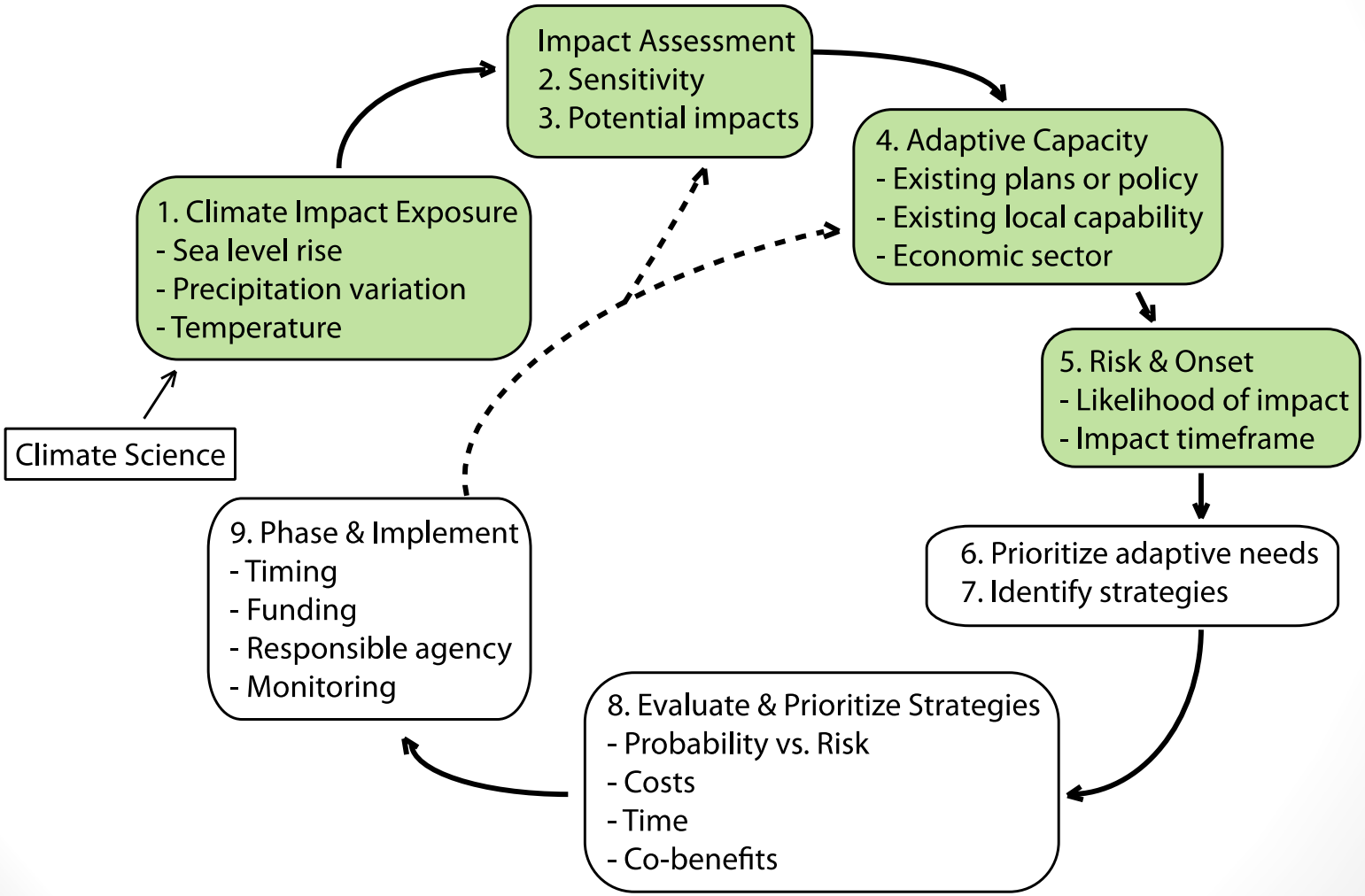


Moser, 2011; Boswell, Greve, & Seale (*2012*)

Adaptation & Local Jurisdictions

- Diversity
  - Biophysical Setting
  - Jurisdiction Characteristics
  - Social/Political Feasibility
- Jurisdiction Control
- Scale (impacts & solutions)
- Uncertainty
  - Climate impact projections
  - Spatial resolution
  - Anticipated outcomes
- Cross sector impacts & solutions
- Links to other guidance

Adaptation Policy Development

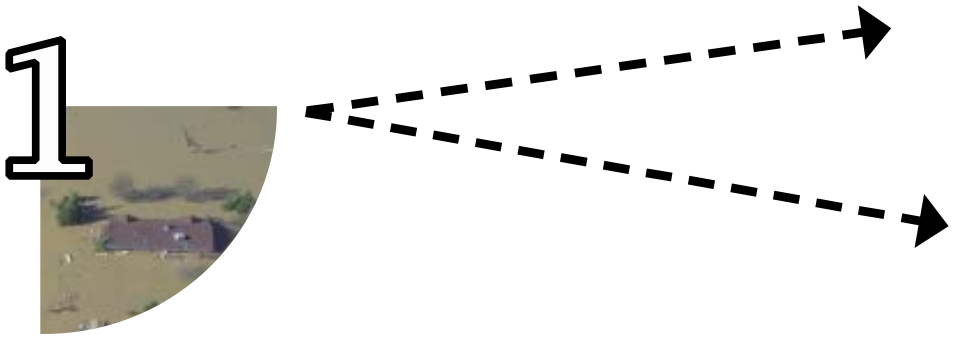


Adapted from Boswell, Greve, & Seale, 2012

Climate Adaptation Team

- Long-range planning or community development
- Emergency response and natural hazards planning
- Economic development
- Parks and open space
- Transportation or engineering
- Utilities (water, wastewater, etc.)
- Administration/finance
- Chamber of commerce
- Public health
- Social services
- Local non-governmental organizations (NGOs - environmental, social, etc)
- Professional organizations (agricultural, fisheries, communications, etc.)

APG Structure



Seven Sectors

- Equity, Health, and Socio-economic Impacts
- Oceans and Coastal Resources
- Water Management
- Forestry and Rangeland
- Biodiversity and Habitat
- Agriculture
- Infrastructure

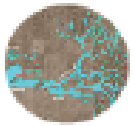
Eleven Climate Adaptation Regions


North Coast Region


North Region


Bay Area Region


Northern Central Valley Region


Bay-Delta Region


Southern Central Valley Region


Central Coast Region

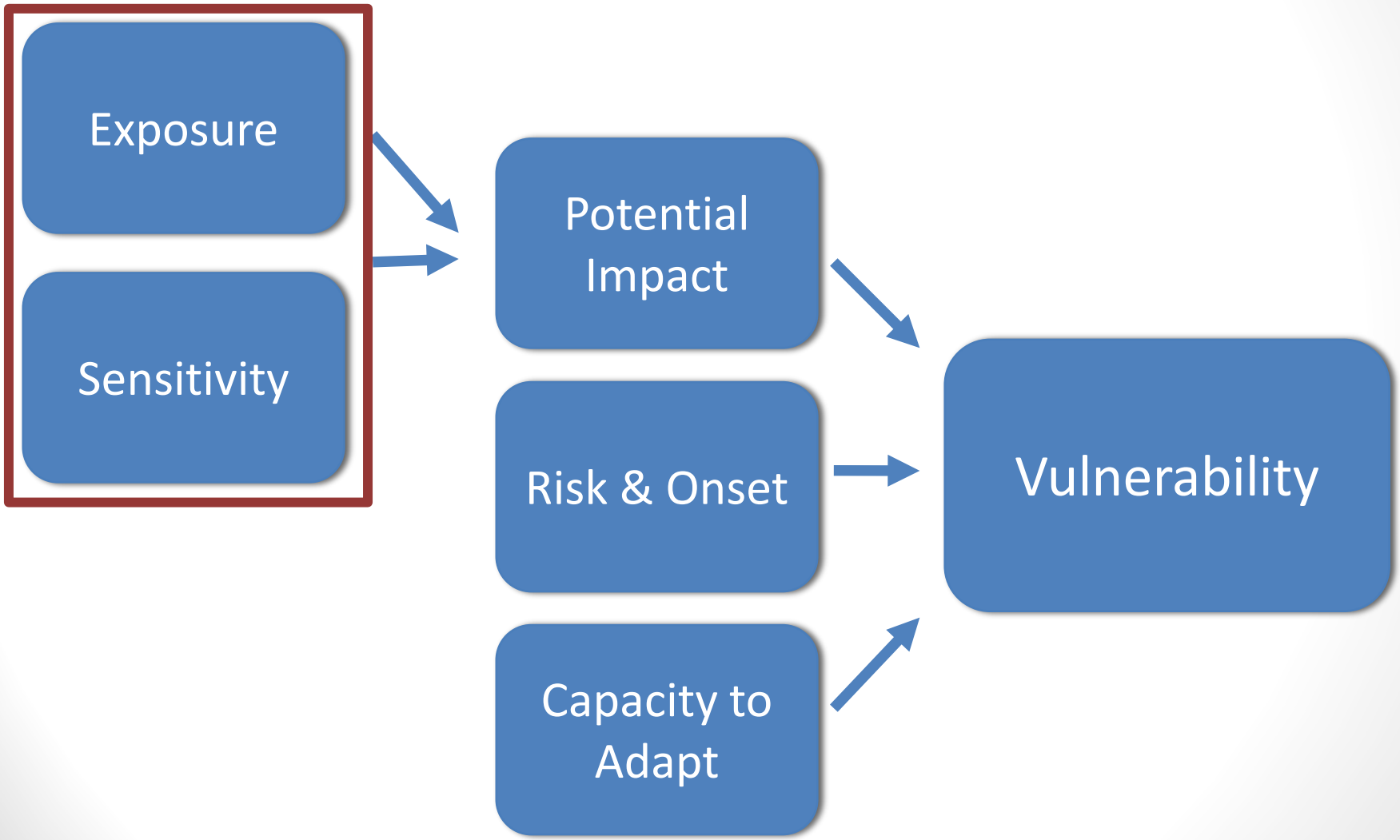

North Sierra Region


Southeast Sierra Region


South Coast Region


Desert

Vulnerability Assessment



Exposure
Projected climate impacts

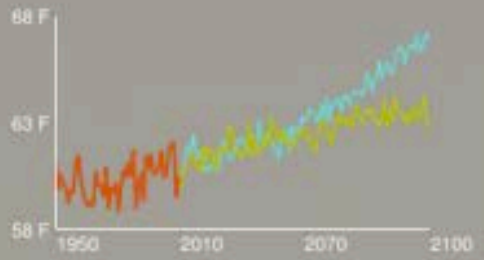
- Difference from current conditions
- Speed of onset
- Spatial variation
- Extent of impact
- Certainty

cal-adapt

EXPLORING CALIFORNIA'S CLIMATE CHANGE RESEARCH

View Local Profiles

QUICKLY EXPLORE CLIMATE PROJECTIONS FOR YOUR LOCAL AREA



Explore Climate Tools

INTERACTIVE MAPS & CHARTS

SEA LEVEL RISE

About Cal-Adapt

- WHAT'S NEW?
- WHAT'S TO COME?
- FAQS

Access Data

ACCESS THE RAW DATA USED IN CAL-ADAPT

Select and download data in a variety of tabular and GIS formats

Resources

INFORMATION, ARTICLES & LINKS

Find out more about how climate change in California is relevant to your community

Community

PARTICIPATE IN COMMUNITY BASED TOOLS AND ACTIVITIES

Find out how you can share your thoughts and findings, communicate with experts, and help to collect new data

Tweet 201 Like 349

Site developed by:
Geospatial Innovation Facility

Cal-Adapt is a product of the Public Interest Energy Research (PIER) program

Estimating Exposure

- *Sea-level rise*: Identify areas of the community that are currently subject to coastal flooding (100-year flood) and areas potentially subject to the 55-inch rise forecasted for 2100.
- *Precipitation*: Identify the current annual precipitation and the forecasted change over time to 2090.
- *Temperature*: Identify the current average seasonal temperatures and the forecasted change over time to 2100.

Impact Certainty (IPCC

Driver	% Prob. Of Driver (IPCC)	Certainty
Temperature change	> 90% probability	High
Precipitation change	> 66% probability	Medium
Sea-level rise	>90% probability	High
Snow season and depth change	> 90% probability	High

Source: IPCC. 2007. WG1 Physical Science Basis, Section 10 & 11.

Sensitivity

2. ASSETS

Residential
Commercial
Industrial
Government
Institutional (schools, churches, hospitals, prisons, etc.)
Parks & open space
Recreational facilities
Infrastructure
Water treatment plant and delivery infrastructure
Wastewater treatment plant and collection infrastructure

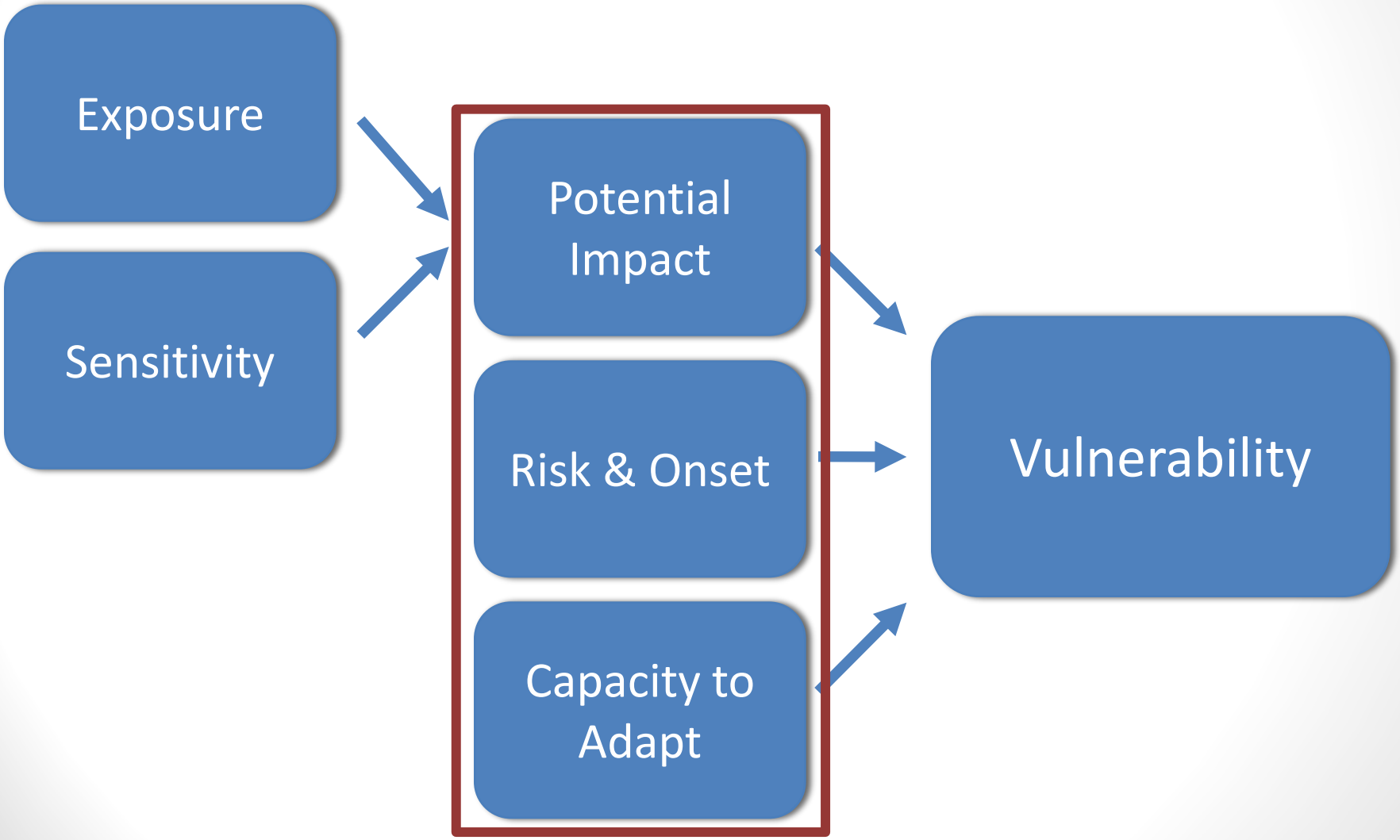
1. FUNCTIONS

Government continuity
Water/sewer/solid waste Energy delivery
Emergency services
Public safety
Public health
Emotional and mental health
Business continuity
Housing access
Employment and job access
Food security
Mobility/transportation/access
Quality of life
Social services
Ecological function
Tourism
Recreation
Agriculture, forest, and fishery productivity
Industrial operations

3. POPULATIONS

Seniors
Children
Individuals with disabilities
Individuals with compromised immune systems
Individuals without access to cars
Non-white communities
Low-income communities
Renters

Vulnerability Assessment



Potential Impact

For each point of sensitivity identify:

- Temporal extent
- Spatial extent
- Permanence
- Danger to local populations
- Level of disruption to normal community function

Risk and Onset

Secondary Exposure	Driver Occurs?	Certainty*
Inundation/long-term waterline change	↑ sea-level	High
Extreme high tide	↑ sea level	High
Coastal erosion	↑ sea level	High
Salt water intrusion	↑ sea level	High
Changed seasonal patterns	↑ or ↓precipitation-and/or-↑ or ↓ temperature	Medium
Heat wave	↑ temperature	High
Intense rainstorms	↑ temperature-and/or- ↑ or ↓precipitation	Medium
Landslide	↑ wildfire-and/or- ↑ precipitation	Medium
Drought	↑ temperature-and/or- ↓precipitation	Medium
Wildfire	Use Cal-Adapt	Medium
Snowpack	Use Cal-Adapt	High

Estimated based on most conservative driver from Table 2.
Source: IPCC. 2007. WG1 Physical Science Basis, Section 10 & 11.

Adaptive Capacity

Current capacity to adapt to projected changes

Plans

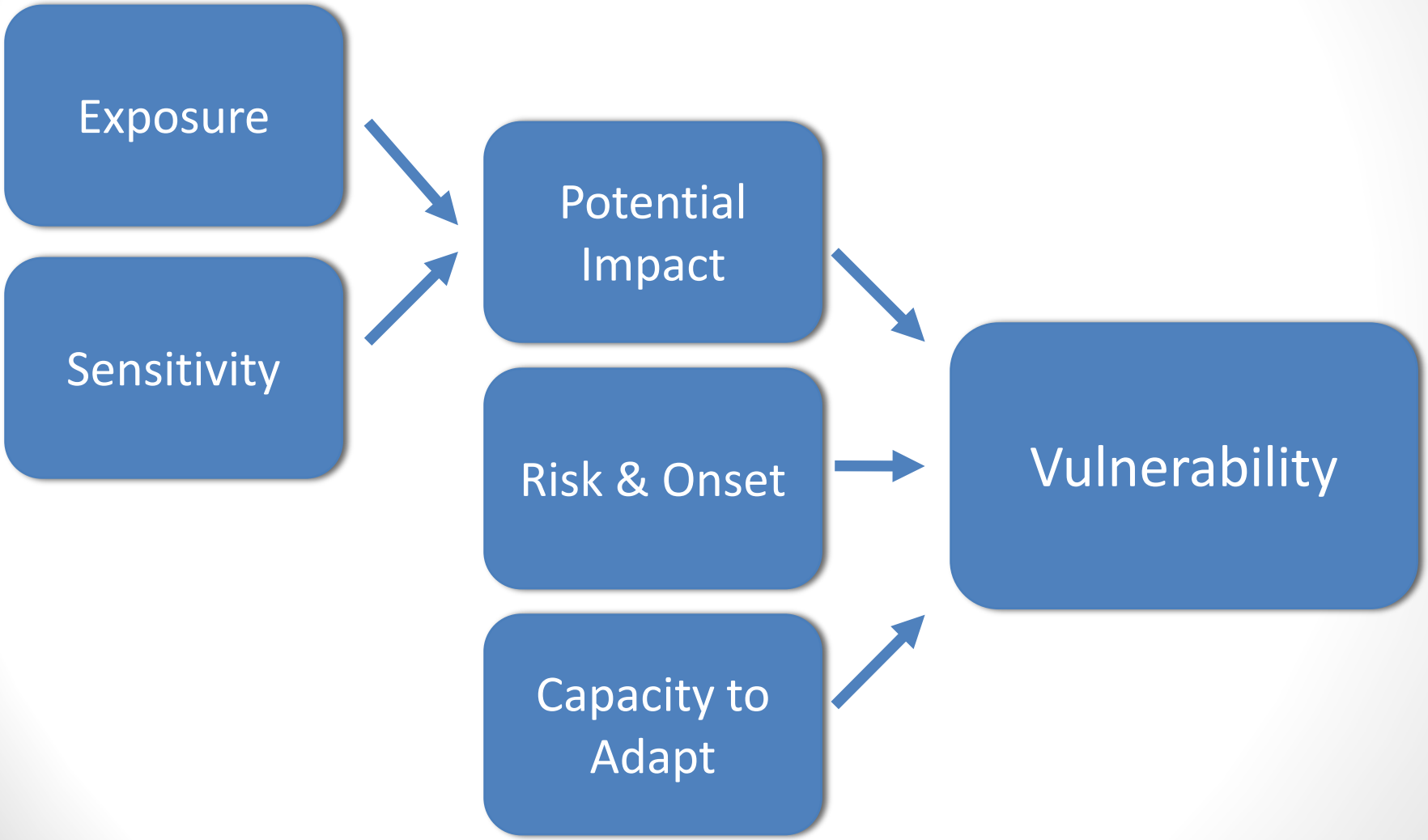
General Plan
Area and Specific Plans
Local Hazard Mitigation Plan
Transit Plan
Urban Water Management Plan
Parks, Trails, and Open Space Master Plan
Downtown Plan

Standards, Ordinances, Programs, And Policies

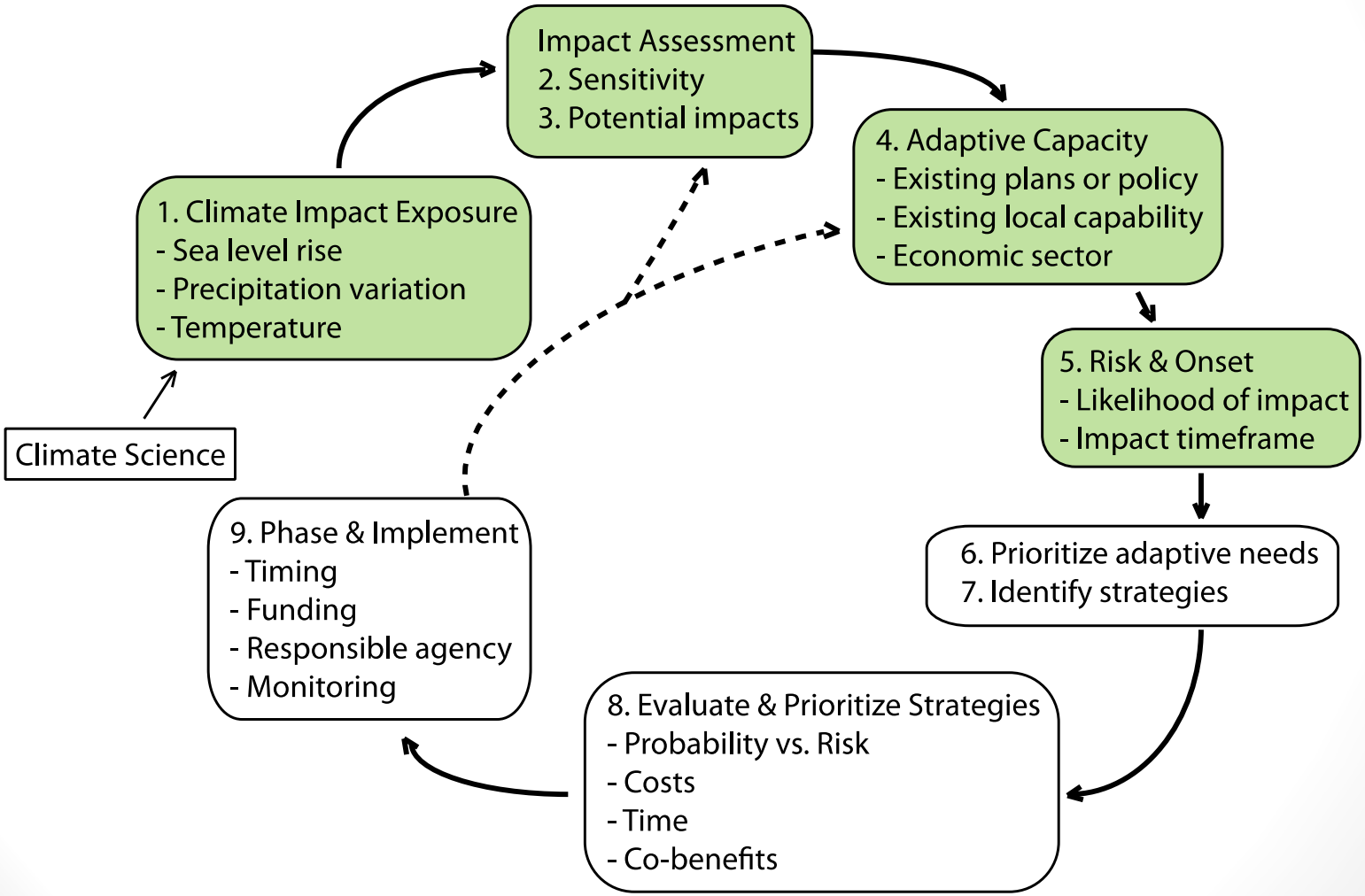
Stormwater Management Program
Zoning Code
Building Code
Fire Code
Tree Ordinance
Floodplain Ordinance

- For each identified potential impact:
  - Identify actions in progress, planned, or readily implemented to address it.
  - If not yet implemented, evaluate the time and resources needed for implementation.
  - Note the degree to which existing actions could be strengthened.

Vulnerability



Adaptation Policy Guide

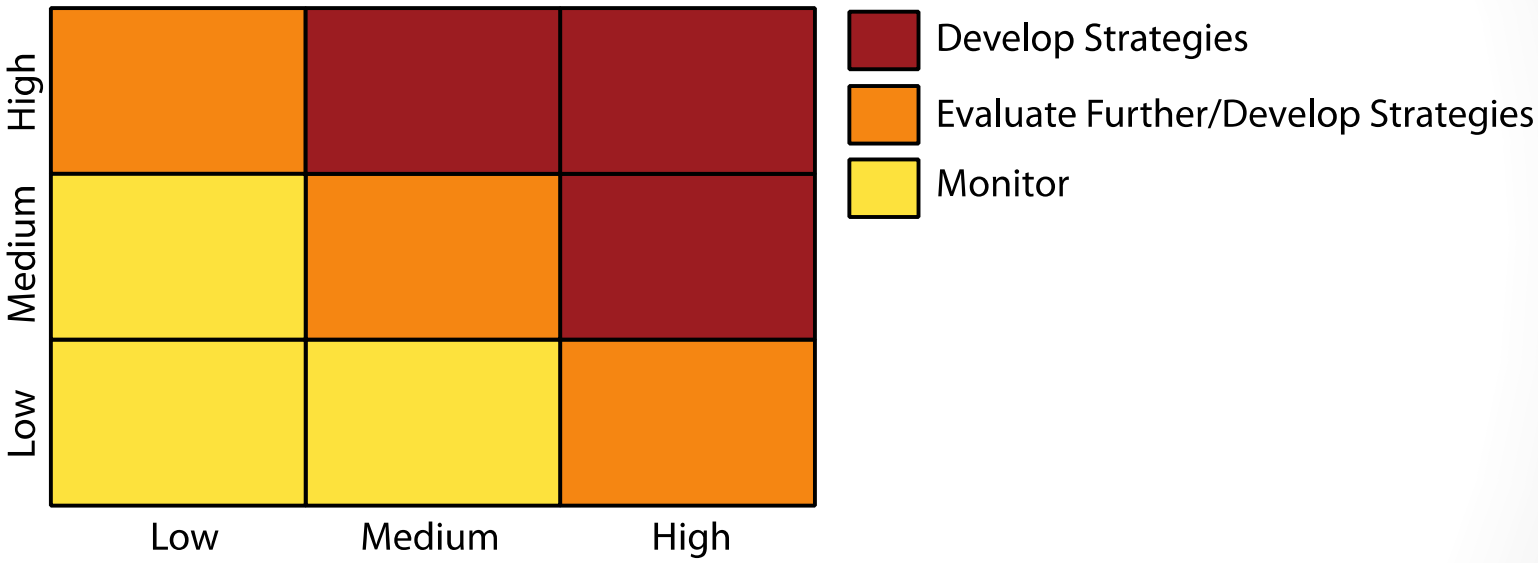


Adapted from Boswell, Greve, & Seale, 2012

Prioritizing Adaptive Needs

Policy in the Face of Uncertainty

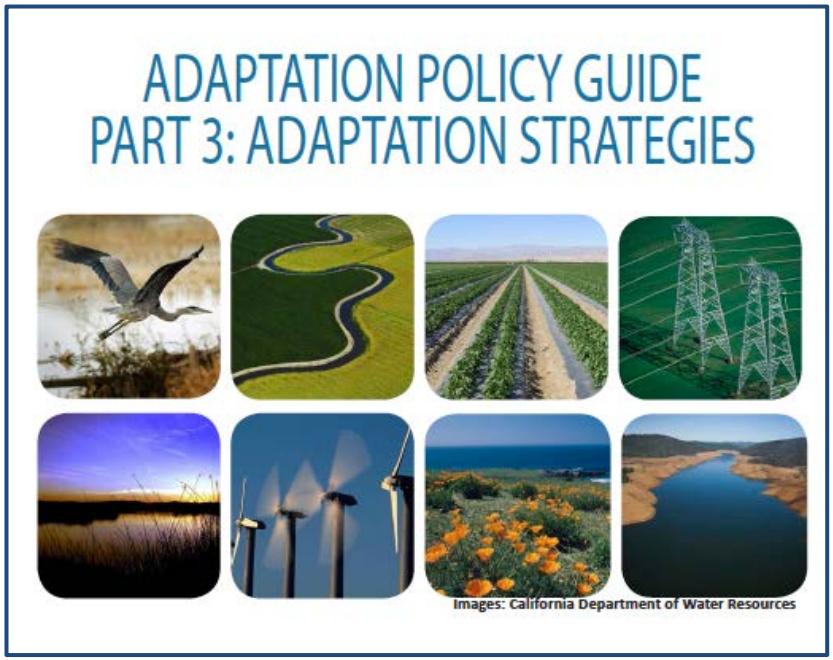
Impact - A combinination of potential impact and community capacity to adapt.



Risk/Uncertainty - For an individual impact based on the scientific certainty and certianty of impact sesnsitivity

Adapted from City of New York, 2009

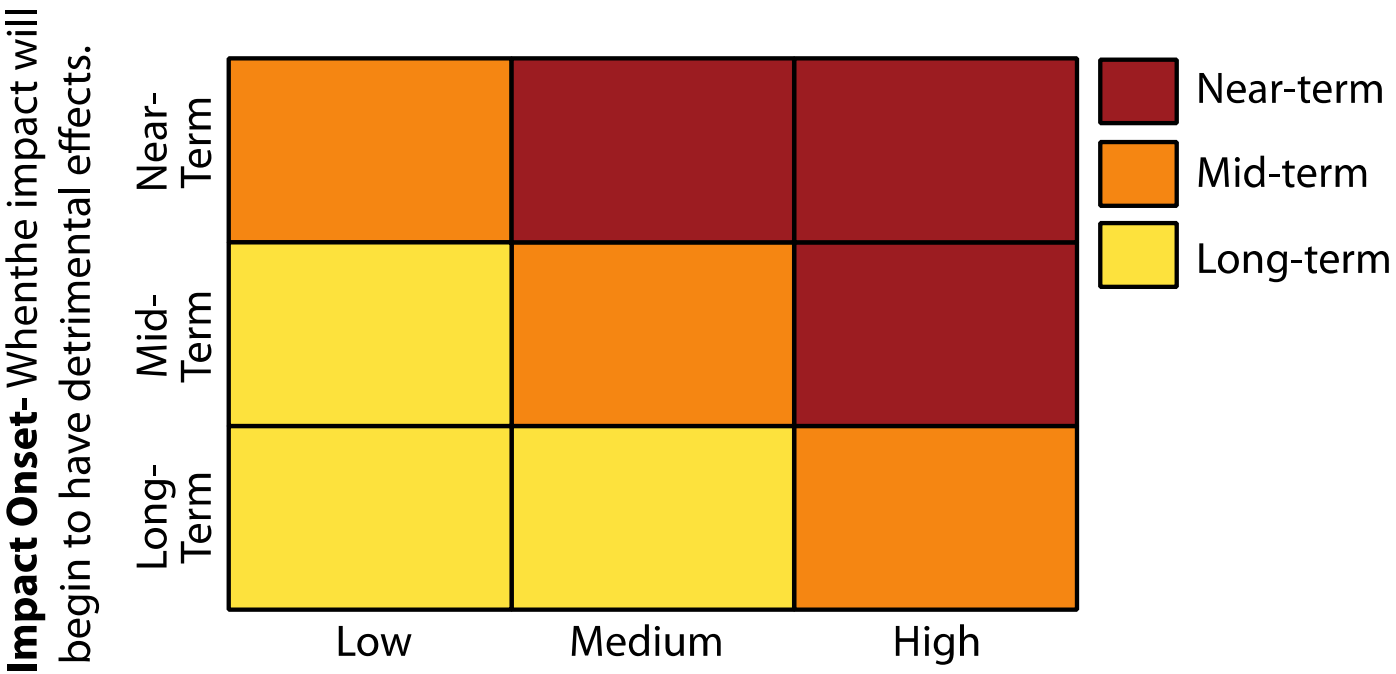
Identify Strategies



Part 3: Adaptation Strategies

- Description
- Factors to Consider
- Examples of Application
- Sources of Information
- Funding
- Sector overlap

Prioritizing Strategies



Cost - Ease of obtaining funding

Co-benefits - Benefit to the community beyond adaptation

Duration - Ease of implementation (from the perspective of time)

Social - Level of community &/or political support

Adapted from City of New York, 2009

Thank You!

Contact:

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CALIFORNIA natural resources AGENCY

STATE OF CALIFORNIA ENERGY COMMISSION

Cal E·M·A CALIFORNIA EMERGENCY MANAGEMENT AGENCY

CAL POLY

FEMA

Questions?

Climate Adaptation Planning Tools for California Local Governments

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Thank you for attending!

Institute for Local Government