EXTREME CLIMATE RISKS AND CALIFORNIA'S FUTURE
State Resources for Local Governments
State Resources Overview

Michael McCormick
Governor’s Office of Planning and Research
Climate Change Resources:

Resources for Local Government Climate Change Planning, Policy and Mitigation
State Web-based Guidance for Local Governments

- Local Government Access Points
- OPR Resources
- OPR CAP Technical Advisory
- General Plan Guidelines
- OPC Sea Level Rise Guidance
- CDPH Health and Climate
- CalEMA/CNRA – APG
- State Hazard Mitigation Plan
- DWR – Climate Change and Regional Water Planning
- CEC – Energy Assurance Planning
- SGC Grant Funding
Climate Action for Health: Integrating Public Health into Climate Action Planning

www.cdph.ca.gov/programs/CCDHPHP/Pages/ClimateChange.aspx
EXTREME CLIMATE RISKS AND CALIFORNIA'S FUTURE
Cal-Adapt: Climate Adaptation in California

Kurt Malchow
Natural Resources Agency
Bridging the Gap Between State and Local Planning:

First: make the research easier to understand
Example:

Rendering SLR projections from this:

Source: Cayan et al., 2009. CEC-500-2009-014-F
LOCAL CLIMATE SNAPSHOTs

Los Angeles County, CA

Sea Level Rise
Areas vulnerable to a 100-year flood event as sea level rises.

LOS ANGELES COUNTY

Land Vulnerable to a 100-Year Flood Event

<table>
<thead>
<tr>
<th></th>
<th>Estimated Acreage in 2000</th>
<th>Estimated Acreage in 2100</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coast</td>
<td>3,950</td>
<td>7,290</td>
<td>+46%</td>
</tr>
</tbody>
</table>

Coastline
Current area at risk
Area at risk with a 1.4 m sea level rise

Disclaimer
Integrating Adaptation Tools:

- Cal-adapt
- Climate Adaptation Policy Guide
- Strategic Growth Council – Sustainable Communities Planning Grants
- OPR – General Plan Guidelines Update
- State Hazard Mitigation Plan
- Upcoming resources
Social Networking Comments:

@ResetSF

@will_sargent
Interactive maps showing climate change scenarios for the San Francisco Bay Area. Says more than any essay. http://cal-adapt.org/

pspraycar
Paul Spraycar
Used the new @cal_adapt mapping tool to see #climatechange impacts on my favorite #california spots bit.ly/kfhLSG

@davidkroodsma
David Kroodsma
Cal-Adapt: fun with maps, climate change, and California. It’s like they put all of my favorite things together - cal-adapt.org

@squaggliotto
We need more of this. Cal-adapt: online tool to explore climate change impacts and adaptation in California http://bit.ly/mUkwDB #climate

matt_cawood
Matthew Cawood
Cal-Adapt: a window into California’s climate change research. cal-adapt.org Terrific resource, needs translating to Oz. 23 Jun

CuriosityCounts
Cal-adapt - new tool from Berkeley helps researchers, policymakers & the general public better understand climate change http://j.mp/inObwe

digitalText
Un buen recurso para mirar en clase: Cal-Adapt utiliza Google Maps x mostrar los efectos del cambio climático (en inglés) http://is.gd/JMShoF 7 days ago retweet

EcoAdvocate
EcoAdvocate
Check out CalAdapt for Climate Stories, resources & ask an expert. Localized maps, predictions. http://bit.ly/m6J7of 2 hours ago

@WholeEarthLib
Whole Earth Library
Overwhelmed by your California climate data? Useful visualization tools now online at http://cal-adapt.org/

@LCGrassfed
Left Coast Grassfed
Cal-Adapt -- Exploring #California's #ClimateChange Research: cal-adapt.org - Critical information & we know Knowledge=Power=Change

SustainUCSD
SustainUCSD
Share this information with your friends and family! Important news we all should know: http://cal-adapt.org/ #climatechange #green 6 hours ago

@kikoyam
Kikoyam
カリフィルニア気候変動まとめサイト。おそろしいできけば。http://cal-adapt.org/
Updates:
Cal-adapt:

- Data
- Funding
- Feedback
Thank you

Kurt Malchow
Climate Adaptation Coordinator
Natural Resources Agency

http://resources.ca.gov/climate_adaptation/

www.cal-adapt.org
Climate Adaptation Policy Guide

Adrienne Grieve
Cal Poly San Luis Obispo
Cal-adapt

PIER, 2011
Adaptation Policy Guide

1. Climate Impact Exposure
   - Sea level rise
   - Precipitation variation
   - Temperature

2. Sensitivity
3. Potential impacts

Impact Assessment

4. Adaptive Capacity
   - Existing plans or policy
   - Existing local capability
   - Economic sector

5. Risk & Onset
   - Likelihood of impact
   - Impact timeframe

6. Prioritize adaptive needs
7. Identify strategies

8. Evaluate & Prioritize Strategies
   - Probability vs. Risk
   - Costs
   - Time
   - Co-benefits

9. Phase & Implement
   - Timing
   - Funding
   - Responsible agency
   - Monitoring

Climate Science

Adapted from Boswell, Greve, & Seale, 2012
Vulnerability

- Exposure
- Sensitivity
- Potential Impact
- Risk & Onset
- Capacity to Adapt

Vulnerability
Policy in the Face of Uncertainty

Impact - A combination of institutional impact and community capacity to adapt.

Risk/Uncertainty - For an individual impact based on the scientific certainty and variance of impact sensitivity.

Cost - Ease of obtaining funding.

Co-benefits - Benefit to the community beyond adaptation.

Duration - Ease of implementation/from the perspective of times.

Social - Level of community &/or political support.
Feedback

Public Review Draft the California Climate Change Adaptation Policy Guide

http://resources.ca.gov/climate_adaptation/local_government/
EXTREME CLIMATE RISKS AND CALIFORNIA'S FUTURE
Climate Change Handbook For Regional Water Planning

Andrew Schwarz
Department of Water Resources
State-Federal-Nonprofit Collaboration
Regional Water Planning and Management are the Frontlines for Responding to Climate Change

• Land use, energy, flood protection, water supply/demand, and wildlife and landscape conservation decisions are made at the local and regional level

• Climate change impacts and vulnerabilities vary by region

• Lots of adaptive capacity at the regional level
Integrated Regional Water Management

97% of California’s population lives within an IRWM planning area

Prop 84
$1 Billion for IRWM

“...assists local public agencies to meet long term water needs of the state including the delivery of safe drinking water and the protection of water quality and the environment.”
Prop 84 IRWM Implementation
Round 1 Primary Benefit

- Water Quality: 19%
- Water Supply: 17%
- Water Conservation: 15%
- Watershed Protection: 6%
- Ecosystem Restoration: 7%
- Groundwater/Conjunctive Use: 14%
- Water Recycling: 15%
- Stormwater Management: 4%
- Flood Management: 3%
Climate Change Analysis

- Assess Vulnerability
- Measure Impacts
- Evaluate Strategies (including adaptation and mitigation)
- Implement Under Uncertainty
Linking Up With Other Efforts

California Adaptation Policy Guide
EXTREME CLIMATE RISKS AND CALIFORNIA'S FUTURE
State and Federal Resources for Local Government

Tina Curry
California Emergency Management Agency
California’s Standardized System

- **State** – Statewide resource coordination integrated with federal agencies
- **Regional** – Coordinates among operational areas
- **Operational Area** – Coordinates all local governments within the geographic boundary of a county
- **Local** – County, city or special district
- **Field** – On-scene responders
My Hazards: Interactive Website

Wildfire Hazards

California wildfires typically burn hundreds of thousands of acres each year. California law requires CAL FIRE (California Department of Forestry and Fire Protection) to identify areas based on the severity of fire hazard that is expected to prevail there. These areas, or “zones,” are based on factors such as fuel (material that can burn), slope and the expected chance of burning. There are three zones, based on increasing fire hazard: Moderate (M), High (H) and Very High (VH).

See FEMA’s information about how to protect yourself from wildfire.

Wildfire Hazard Preparedness

For those living with wildfire hazards start protecting your property by creating 100 feet of "defensible space" around your structures. This includes removing all flammable vegetation and debris within 30 feet immediately surrounding your home, and, creating a "reduced fuel zone" that extends 70 feet beyond that.

Next, you can use "ignition resistant" materials in your construction, and make sure you have well marked access to your property and an emergency water supply.

For many more tips on keeping your property fire safe see the Fire Safety web page from Cal Fire.

http://myhazards.calema.ca.gov
My Plan: Hazard Maps for Mitigation Planning

http://myplan.calema.ca.gov
Hazard Mitigation Assistance

• Local Mitigation Plans
• State Mitigation Plan
  – Adaptation Policy Guide
• Hazard Mitigation Grant Program
• Federal and State Disaster Assistance
• www.calema.ca.gov
Successful Regional Coordination
Working together for a Sustainable Region

Paul Bunje
Los Angeles Regional Collaborative for Climate Action and Sustainability
Global Climate Change is a Profoundly Local Challenge

- ADAPTATION: Impacts are unique to each place
- MITIGATION: GHGs are emitted because of local economies

la regionalcollaborative.org
The Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC) came together in 2008 to coordinate regional climate action.

LA Collaborative Vision Team, January 2009

The Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC) came together in 2008 to coordinate regional climate action.

• laregionalcollaborative.org
The purpose of LARC is to share information, foster partnerships, and develop system-wide strategies to address climate change and promote a green economy through sustainable communities.

<table>
<thead>
<tr>
<th>Goals</th>
<th>Methods</th>
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<tbody>
<tr>
<td>Climate action</td>
<td>Coordination</td>
</tr>
<tr>
<td>Promote a green economy</td>
<td>Planning</td>
</tr>
<tr>
<td>Build sustainable communities</td>
<td>Resources</td>
</tr>
<tr>
<td></td>
<td>Engagement</td>
</tr>
</tbody>
</table>

- laregionalcollaborative.org
Coordination

- Cross-jurisdictional and public-private partnerships
- Leverage local, state and federal resources to implement the Framework
- Coordinate local planning efforts
- Coordinate grant writing
- Topical working groups

- laregionalcollaborative.org
A Greater L.A.: The Framework for Regional Climate Action and Sustainability

- Successful climate action actually requires a comprehensive sustainability plan

- la regionalcollaborative.org
Resources

• Information Sharing
• Promote Best-Practices
• Catalogue Successful Strategies
• Access to Research
  – USC Sea Grant – Sea Level Rise vulnerability assessment
  – UCLA Institute of the Environment and Sustainability – California Center for Sustainable Communities Research
  – UCLA Luskin Center for Innovation – Program on Local Government Climate Action Policies (Southern California Climate Action Database)
  – Antioch University – Masters in Sustainability
  – Electricore Inc. – Coordinated federal research projects

• laregionalcollaborative.org
Engagement

- **Steering Committee**: Building strong relationships
- **Public Outreach**: Website, talks, media
- **Quarterly Meetings**: Workshops on sustainability topics
- **Southern California Sustainability Forum**: the annual event for stakeholders to engage on local government and regional strategies. August 13-14, 2012

laregionalcollaborative.org
Integration and Collaboration

- Universities
- Environmental Nonprofits
- LA County
- Agencies
- Businesses
- Councils of Governments
- Community Groups

laregionalcollaborative.org
The San Diego Foundation
Climate Initiative

Nicola Hedge
San Diego Foundation
Successful Regional Coordination
Climate Action – 5 Years Ago

- Chula Vista, Del Mar and San Diego
- Chula Vista and San Diego

- US Mayors / Climate Registry
- Greenhouse Gas Inventories
- Local Climate Action Plans
- Other Regional Plans / Public Agencies
Climate Action - TODAY

- **13 of 19** Local Governments committed to climate action
- **All 19** Local Governments performed GHG emissions inventories
- **9 of 19** Local Governments working on or adopted climate action plans

**US Mayors/Climate Registry**

**Greenhouse Gas Inventories**

**Local Climate Action Plans**

**Other Regional Plans/Public Agencies**

Port of San Diego: Mitigation & Adaptation Plan
SANDAG: SB375; Regional Climate Action Strategy
San Diego County Water Authority: Mitigation & Adaptation Plan
Regional Airport Authority: Mitigation & Adaptation
US Navy Region Southwest: Mitigation & Adaptation
Why a Climate Initiative?

- Successful Regional Coordination
• Successful Regional Coordination
Local Science and Research
Technical Expertise

- Successful Regional Coordination
Collaboration

• Regional Climate Protection Network
• Regional Collaborative on Climate Change
• San Diego Bay Sea Level Rise Strategy
• Co-fund partnership with Scripps Institution of Oceanography and County Water Authority

• Successful Regional Coordination
Community Engagement

- Successful Regional Coordination
Public Awareness

8 in 10 San Diegans are concerned about the impacts of climate change on future generations.

- Successful Regional Coordination
Climate Initiative Partners

Bank of America
QUALCOMM
THE KRESGE FOUNDATION

Beyster Family, Blasker-Miah Rose, Engel, Hattie Ettinger Conservation, Hervey Family and Orca Funds, as well as the Zell Family Foundation
EXTREME CLIMATE RISKS AND CALIFORNIA'S FUTURE
Bay Area Climate & Energy Resilience Project

Bruce Riordan
Bay Area Joint Policy Committee
Collective Impact
By John Kamis & Mark Kramer

Economies of Scale & Scope in River Basin Management
Gary Wolff, P.E., Ph.D.
Principal Economist and Engineer
The Pacific Institute, Oakland California
gwolff@pacifici.org and 510 251 1600

Introductory Remarks:
Water management in most parts of the world has long followed a pattern of functional specialization (FS). Water agencies, companies, or departments of government supply water. Other agencies, companies, or departments supply wastewater services. Yet a third group is charged with flood control and storm runoff management. Of course some water utilities supply both water and wastewater services, and some government departments include all three branches of the water sector. These may appear to be exceptions, but the internal organization of these departments is usually along functional boundaries with planning documents and capital improvement budgets separated by function.

In contrast, many view River Basin Management (RBM) and its close cousins, Integrated Water Resources Management (IWRM) and Watershed Management (WM), as the emerging and better paradigm for water management. The World Bank (1993) has long urged the adoption of a comprehensive, cross-sectoral approach to water management. Sarasgeldin (1995) labeled the French system of stakeholder-governed water institutions organized into six hydrologic basins, created in 1964, as a “model” to be emulated by...
YES

NO
April-May-June

• Report
• Event
• Briefings
• Commitments
Our Vision:

• Researchers + Practitioners
• Forum for Tough Discussions
• Support Center
Regional Coordination in the Sierra Nevada

Steve Frisch
Sierra Business Council
• Founded in 1994
• Works throughout the Sierra Nevada (20 Counties)
• Staff in San Francisco, Truckee, Bishop & Sonora
• Member-based Organization with about 750 members (business, government, non-profits, and individuals)
• Partnership Network reach of 12,000 active participants
• Promote public/private partnerships and private investment
• Strategic Plan Objective: Climate Change Adaptation and Mitigation
5 Inter-connected Programs

Sierra Nevada Carbon Cooperative

Sierra Nevada Biomass Initiative

Energy and Climate Leadership Program

Green Communities Program

Sierra Nevada Energy Watch

$7 M over 3 years

$450 K

$550 K

$320 K

$400 K

$4.8 M
SNEW Service Area

- 14 Counties
- 3 Implementers

Municipal, Special District, and Non-Profit Customers

- Sierra Business Council

Small Business Customers

- Sierra Business Council
- Staples
- RHA
Green Communities

- Local Government GHG Inventories
- Community Inventories
- Climate Action Plans
- 19 Local Government Inventories
- 17 Community Wide Inventories
- 3 Climate Action Plans
Sierra Energy and Climate Leadership Program
Sierra Nevada Biomass Initiative