Assessing the Local Impacts of Climate Change

California Climate Action Planning Conference – CCAPC 2013
California Polytechnic State University, San Luis Obispo
February 1, 2013  8:30am – 9:45am
Meet the Panel!
Corinne Bartshire, Dewberry
Dr. Kelly Main, Cal Poly
Matthew Heberger, Pacific Institute
Who are YOU?

Representative for:
- Local Jurisdiction
- State Agency
- Private Sector
- Non Profit
What have you done?

Participated in a Climate Action Plan
Used Cal Adapt
Prepared a “Vulnerability Assessment”
Participated in a Local Hazard Mitigation Plan
Read the California Adaptation Planning Guide
What is a Risk Assessment?

The risk assessment provides the factual basis for activities proposed in the strategy that will reduce losses from identified hazards. A quality risk assessment makes a clear connection between the community’s vulnerability and the hazard mitigation actions. In other words, it provides sufficient information to enable the jurisdiction(s) to identify and prioritize appropriate hazard mitigation actions.

(Local Mitigation Plan Review Guide, FEMA)
Natural Hazards Risk Assessment

Local Mitigation Plan Review Guide

October 1, 2011

Identify the Hazards

Past Occurrences

Location and Extent

Probability

Impacts

FEMA

Dewberry
Impacts = Vulnerability Assessment

• Types and numbers of existing and future buildings, infrastructure, and critical facilities in the identified hazard areas

• Estimated potential dollar losses to vulnerable structures identified

• Populations

• Evaluation of land uses and development trends for consideration in future land use decisions
Climate Change Vulnerability Assessment

1. Exposure
2. Sensitivity
3. Potential Impacts
4. Adaptive Capacity
5. Risk and Onset
Climate Change Vulnerability Assessment

1. Exposure: What climate change effects will a community experience?

2. Sensitivity: What aspects of a community will be affected? (functions, structures, populations)

3. Potential Impacts: How will climate change affect the points of sensitivity?

4. Adaptive Capacity: What is or can be currently done to address the impacts?

5. Risk and Onset: How likely are the impacts and how quickly will they occur?
California Hazard Concerns

- Earthquake
- Flood
- Wildfire
- Drought
- Windstorm
Climate Change Exacerbations

• Flood
  • Higher temperatures melt snowpack
  • Intense rainfall events lead to more frequent, extensive flooding
  • Sea level rise – increases potential impacts from tsunami
  • Increased probability of levee failures

• Wildfire
  • Extreme heat events – more frequent, more intense, longer duration – dryer conditions

• Drought
  • More frequent and more persistent
  • Impact to agricultural products
Example – Sea Level Rise

- Scenario-based approach
- Low, Medium, High; acceleration rates

Areas of overlap show how single hazard scenarios may be used for multiple time slices
Example – Climate Change in HMP

- Identify climate change impacts on existing hazards and associated vulnerabilities
Example – Application of Flood Depth Grids

ROAD IMPACT CATEGORY
- Passage of Most Large Emergency Vehicles Prevented
- Greater than 6ft Average Flood Depth
- Cars/Light E.M.I. Vehicles Might Become Displaced
- Difficulty for Pedestrians
- Shallow Flooding
- No Flooding
Example – Airport Adaptation Planning

**Objectives**

- Assess airport climate risk
- Develop climate change adaptation guidebook
- Develop risk screening tool for airports (ACROS)
- Provide template for adaptation action plans

**Climate parameters:**

- Seasonal avg/max temperatures
- Changes in wind patterns
- Sea level rise
- Frequency of precipitation events
- Drought
- Hurricane intensity and frequency
Where do we use Vulnerability Assessments?

- Vulnerability Assessment
- Local Hazard Mitigation Plan
- Climate Action / Adaptation Plan
- General Plan
- Emergency Operations Plan

Safety Element
Land Use Element
Zoning Code
Development Ordinances
Thank you!
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