



CLIMATE CHANGE ADAPTATION IN SLO COUNTY

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"Some say its irrevocable. Others say its irreversible. Given such an absence of consensus, I suggest we do nothing drastic".

BOTH MITIGATION AND ADAPTATION ARE NEEDED

MITIGATION = brakes
ADAPTATION = airbags



Mitigation AND Adaptation



WHAT IS CLIMATE CHANGE ADAPTATION?

- ✘ Increasing the resilience and resistance of natural and socioeconomic systems to climate change.
- ✘ Resilience = ability to bounce back after disturbance
- ✘ Resistance = ability to withstand disturbance
- ✘ Adaptation includes both responding to and preparing for climate change impacts.

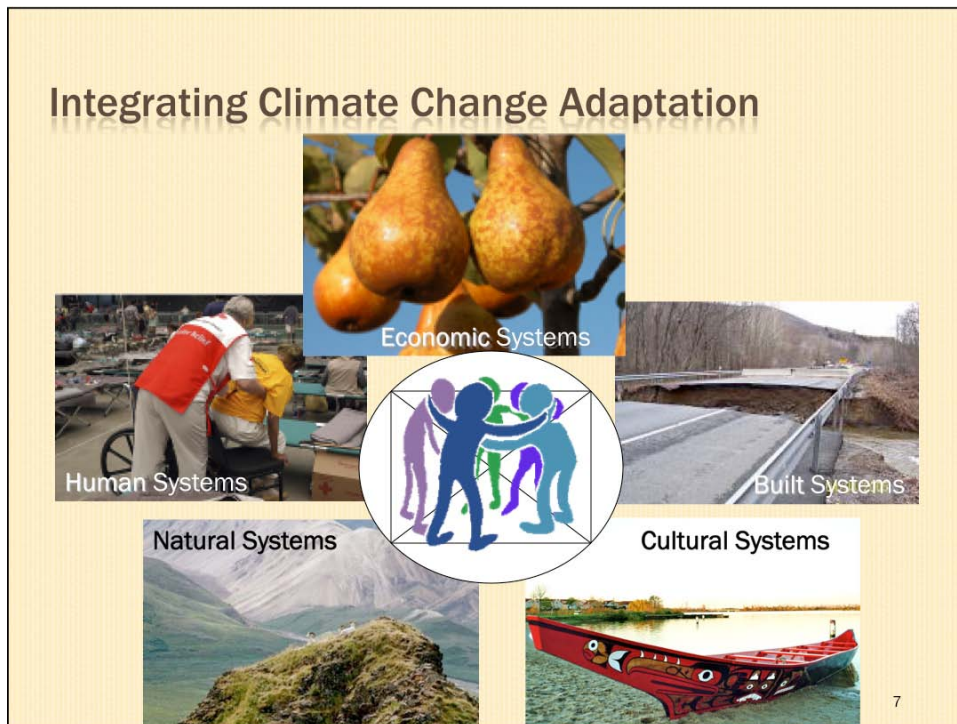
ClimateWise Process

What it does

- + Provides up-to-date scientific information
- + Provides regionally-specific projections
- + Works across disciplines to develop complementary strategies
- + Creates new lines of communication

What it doesn't do

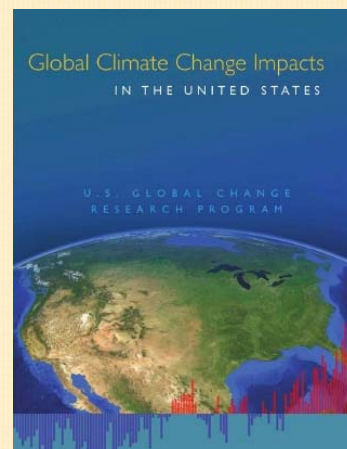
- ✘ Instill NCCSP'S values or recommendations
- ✘ Take a political stance
- ✘ Create a full adaptation plan for the County
- ✘ Implement strategies or recommendations



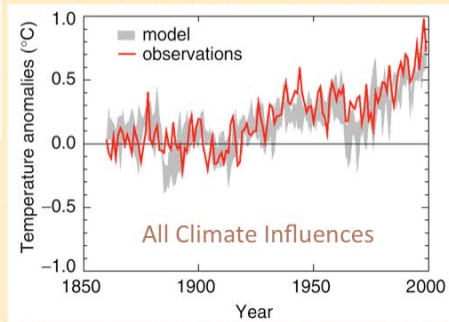
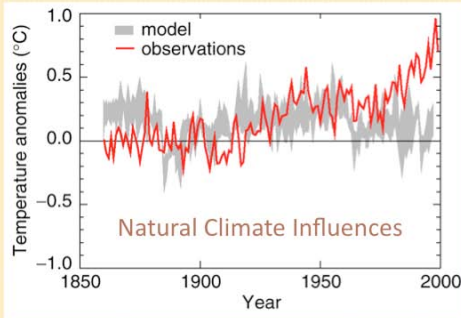
Primary Findings of the Latest U.S. Govt. Report

1. Global warming is unequivocal and primarily human-induced
2. Wide-spread climate-induced changes are already underway and expected to increase
3. Climate change **WILL** stress water resources worldwide
4. Crop and livestock production **WILL** be challenged
5. Thresholds **WILL** be crossed, leading to large changes in climate and ecosystems
6. Future climate change and its impacts depend on choices made today

Global Climate Change Impacts in the United States. 2009.
T. R. Karl, J. M. Melillo, and T. C. Peterson, eds. Cambridge University Press.



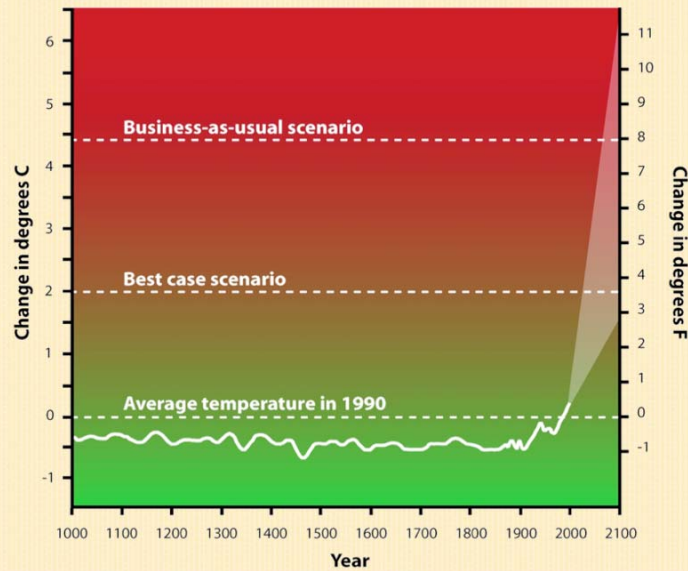
Is Climate Change Human Caused?



“Unequivocal” evidence:
the climate is changing and
it is human caused
(IPCC 2007)

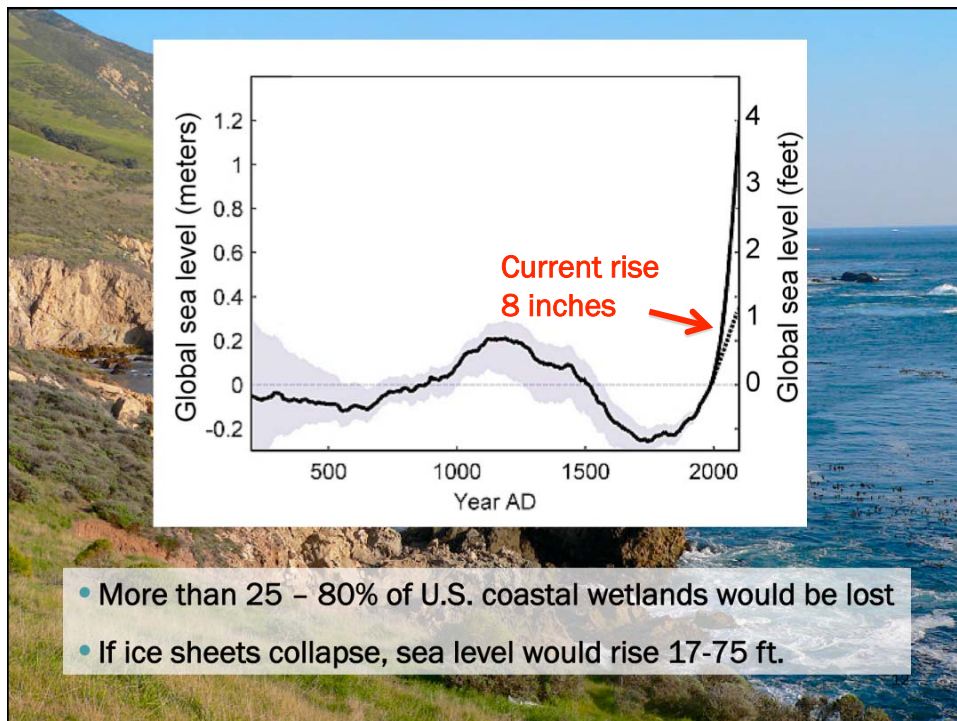
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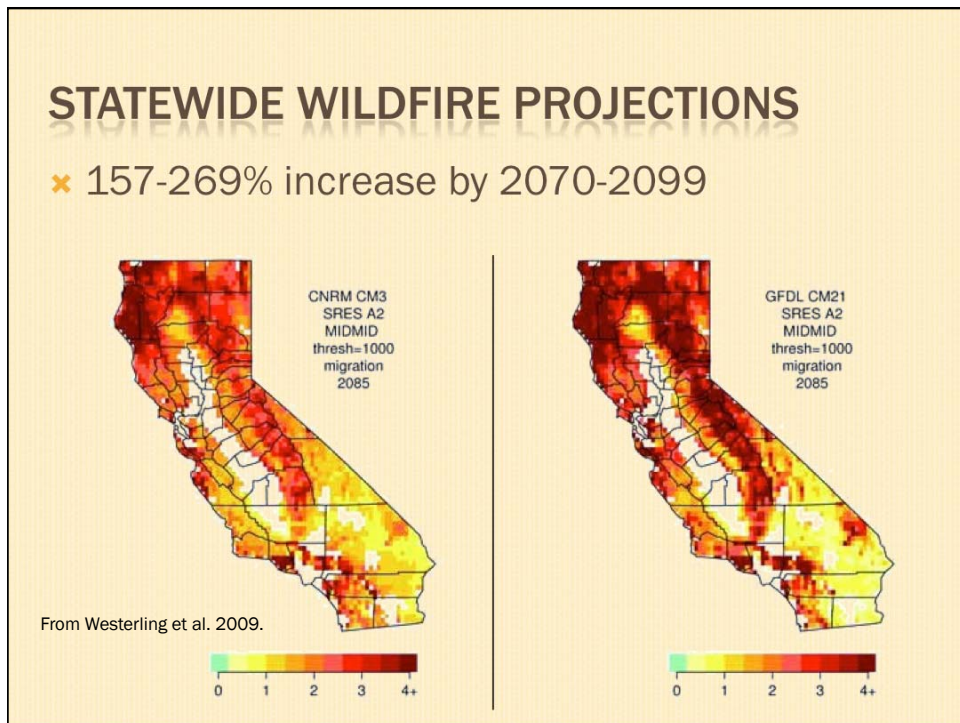
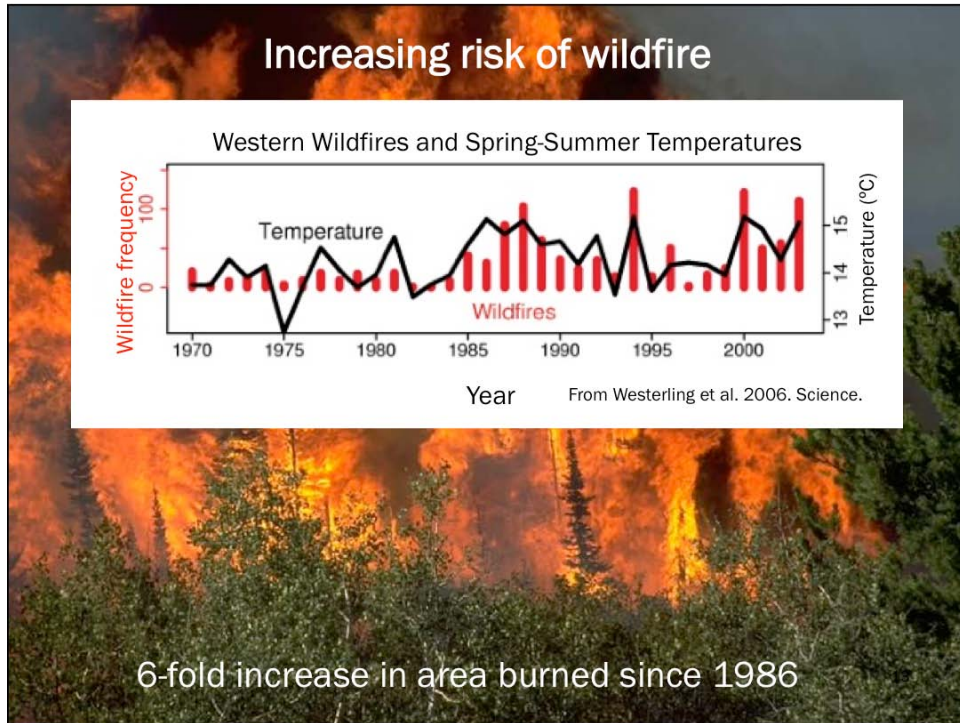
AVERAGE GLOBAL TEMPERATURE



CLIMATE CHANGE IMPACTS

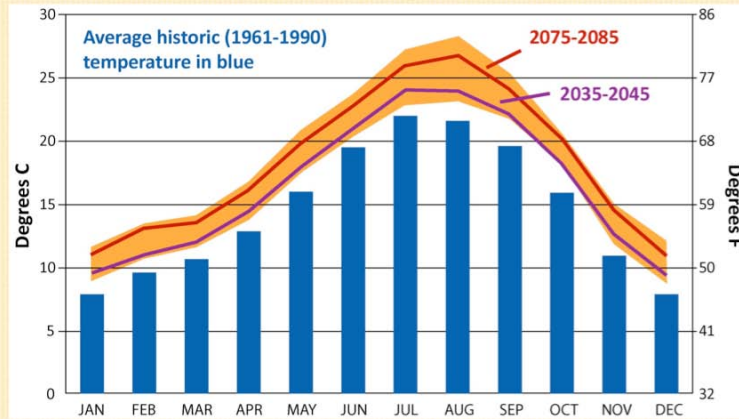
- ✗ Higher drought stress in summer
- ✗ Increase in severe storms
- ✗ Sea level rise
- ✗ Increased area burned in wildfire





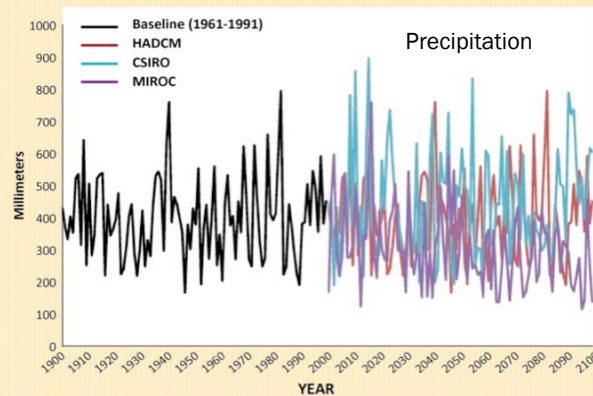
SAN LUIS OBISPO COUNTY PROJECTIONS

- ✘ 3-9° F warmer
- ✘ Longer, hotter summers



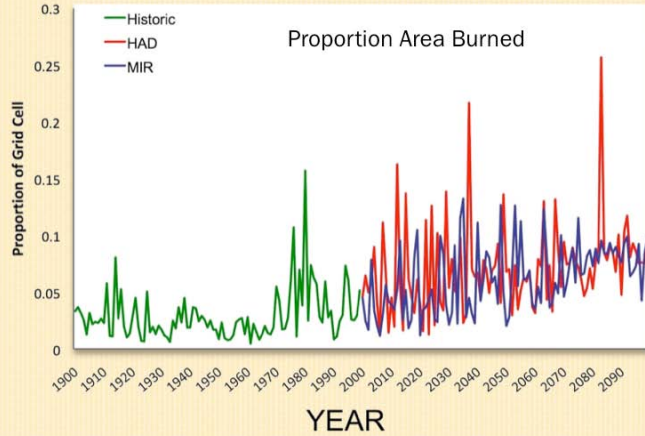
SAN LUIS OBISPO COUNTY PROJECTIONS

- ✘ Up to 1/3 less rainfall
- ✘ More frequent severe floods and droughts
- ✘ Drier soils



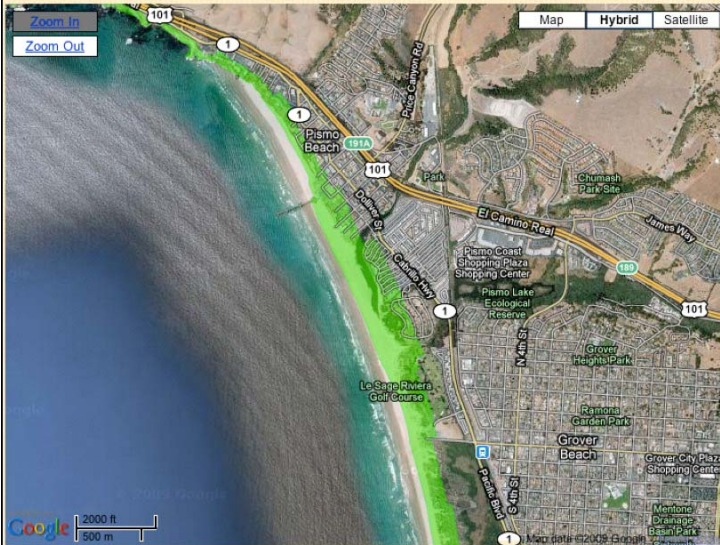
SAN LUIS OBISPO COUNTY PROJECTIONS

- ✘ Double or triple the area burned in wildfire
- ✘ 4+ feet of sea level rise



Impacts of Sea Level Rise on the California Coast

Areas and infrastructure vulnerable to flooding and erosion
 Please see [full report](#) for assumptions, methods, and conclusions.



Hazard Zones

- Area at risk from a 100-year coastal flood event
- Current area at risk
- Area at risk with a 1.4 meter sea-level rise
- Erosion
 - Area at risk from erosion in 2100 with a 1.4 meter sea-level rise
- Wetland Frontier
 - Areas where wetlands may migrate by 2100 if unimpeded

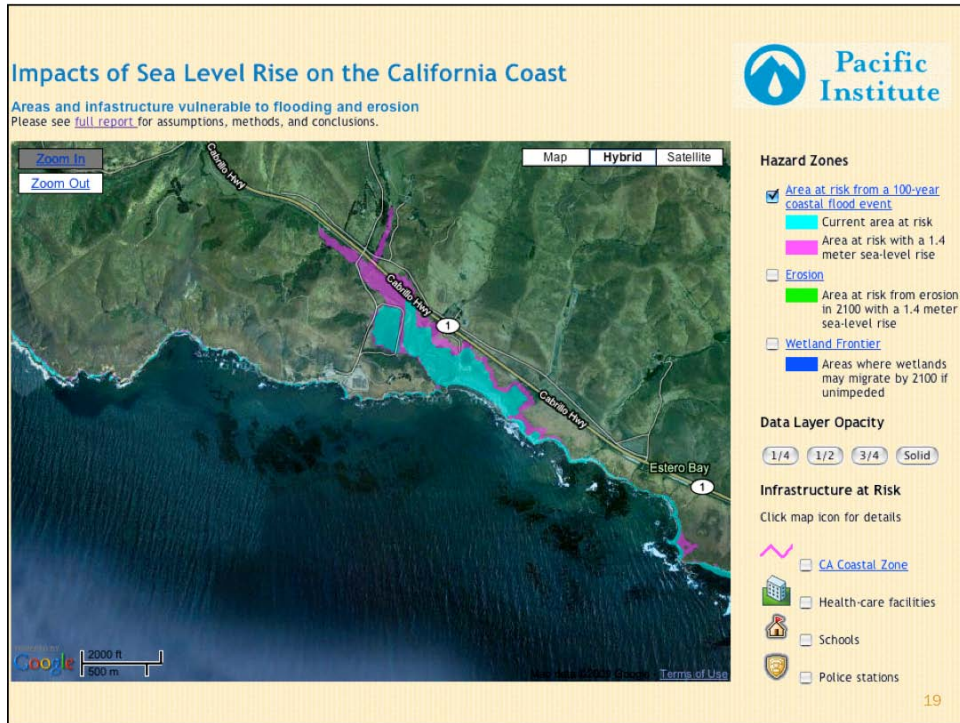
Data Layer Opacity

- 1/4
 1/2
 3/4
 Solid

Infrastructure at Risk

Click map icon for details

- CA Coastal Zone
- Health-care facilities
- Schools
- Police stations



THE COST OF CLIMATE CHANGE

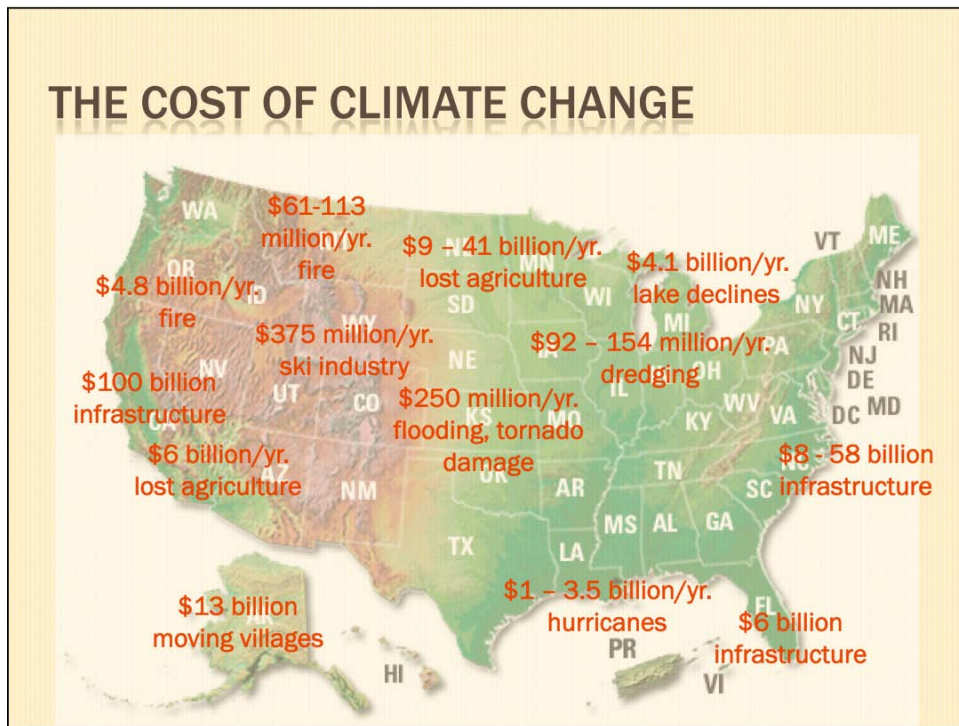
In California alone, nearly \$100 billion worth of property is at risk from sea level rise of 1.4m (Heberger et al. 2009).

More than 330 hazardous waste facilities, 55 healthcare facilities, 140 schools, 30 power plants, 3,500 miles of roads and highways, and numerous international airports.

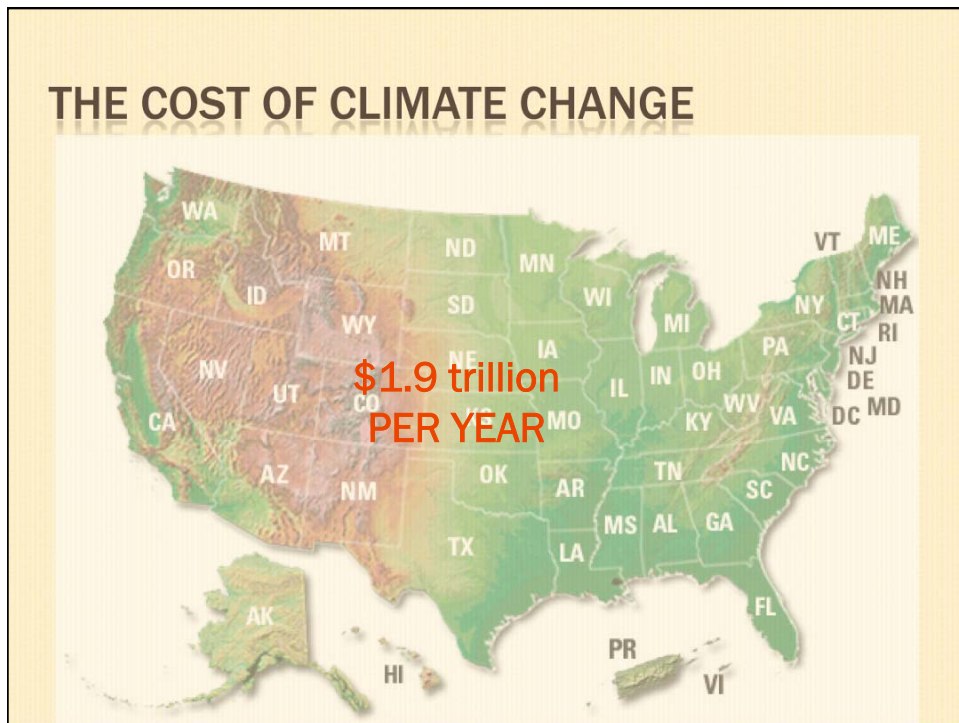
Heberger et al. 2009 (California Energy Commission Report)



THE COST OF CLIMATE CHANGE



THE COST OF CLIMATE CHANGE



FIRST - MITIGATION

HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #1: Unsustainable ground water withdrawal reduces the resilience of riparian and aquatic species to climate change



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #1: Unsustainable ground water withdrawal reduces the resilience of riparian and aquatic species to climate change
 - + Monitor and regulate ground water withdrawal
 - + Incentives for water conservation
 - + Consider new types of crops that use less water



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #2: Native species will need connected habitat to shift their ranges as the climate changes.



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #2: Native species will need connected habitat to shift their ranges as the climate changes.
 - + Develop regional plans for habitat connectivity
 - + Develop incentives for private land owners to provide habitat
 - + Retain ranches and large tracts of land



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #3: Sedimentation from land use and wildfire is affecting water quality - will worsen



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #3: Sedimentation from land use and wildfire is affecting water quality - will worsen
 - + Encourage/educate changes to land use



- + Restore wetlands and riparian zones
- + Prescribed burning to retain healthy uplands

HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #4: Loss of wetlands, riparian areas, and floodplains has reduced aquatic and riparian species resilience to climate change



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #4: Loss of wetlands, riparian areas, and floodplains has reduced aquatic and riparian species resilience to climate change
 - + Restore/create wetlands, riparian zones, and floodplains
 - + Protect remaining ones from cattle, development



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #5: Sea level rise threatens coastal wetlands and intertidal zones



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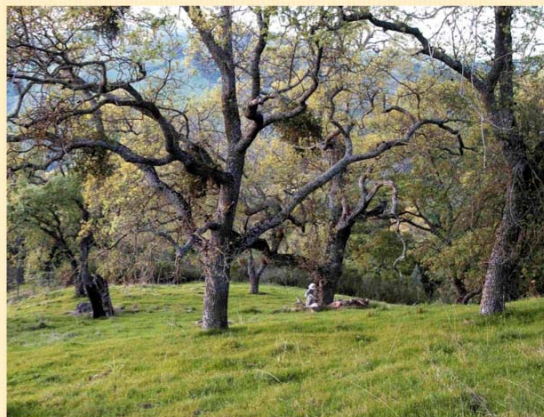
✘ Issue #5: Sea level rise threatens coastal wetlands and intertidal zones



- + Do not armor the coast
- + Rolling easements
- + Relocation of key developments

HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

✘ Issue #6: Loss of oak woodlands will be exacerbated by climate change



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #6: Loss of oak woodlands will be exacerbated by climate change
 - + Restore oak woodlands by protecting seedlings from cattle
 - + Incentives for oak woodlands on private land
 - + Develop more drought resistant oak



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #7: Most productive habitat for T&E species often found on private land



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #7: Most productive habitat for T&E species often found on private land
 - + Rework “Critical habitat” designations
 - + Include future habitat and movement corridors as well as current strongholds



HOW DO WE ADAPT TO/PREPARE FOR CHANGE?

- ✘ Issue #8: Renewable energy installations could further reduce the resilience of species and ecosystems to climate change



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✘ Issue #8: Renewable energy installations could further reduce the resilience of species and ecosystems to climate change

- + Incentives for rooftop solar over large solar plants
- + Take advantage of already degraded land –no developments in viable habitat or corridors

