Applying a Risk Management Framework to Prepare for Flooding & Sea Level Rise

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To Be Discussed:

1) Limitations to current practice of flood risk management
2) Understanding the problem we are trying to solve for
3) Value of adopting a risk-management approach to flooding and sea level rise, along with other hazards
4) Discussion questions

We have goals for mitigation, It's time for goals for adaptation

We know:

- **We can't buy our way out of disasters anymore, there are just too many** - What are the up-front investments needed to reduce the risk to an affordable level & make our quality of life better in the process (parks, marshes, natural system) - multi-benefit
- **This can't just be a city by city approach** - we need some regional cohesion, guidance, a strategic plan of attack
- **This is fundamentally a land use issue -** As stated in the recent Legislative Analyst Office (LAO) Report on Preparing for Rising Seas:

  > "The degree of SLR that is predicted over the next century clearly will affect land use decisions and create additional challenges for local governments - and the state - as they seek to expand housing options for Californians in coastal regions"

- **While climate adaptation is an emerging issue, there are existing multi-faceted approaches to managing risk that we can apply.**

The Missing Middle - What is the problem are we solving for?

"Interviewees who were able to gather the necessary information to complete vulnerability assessments... were unclear how to determine what specifically they should do next." LAO report 2019

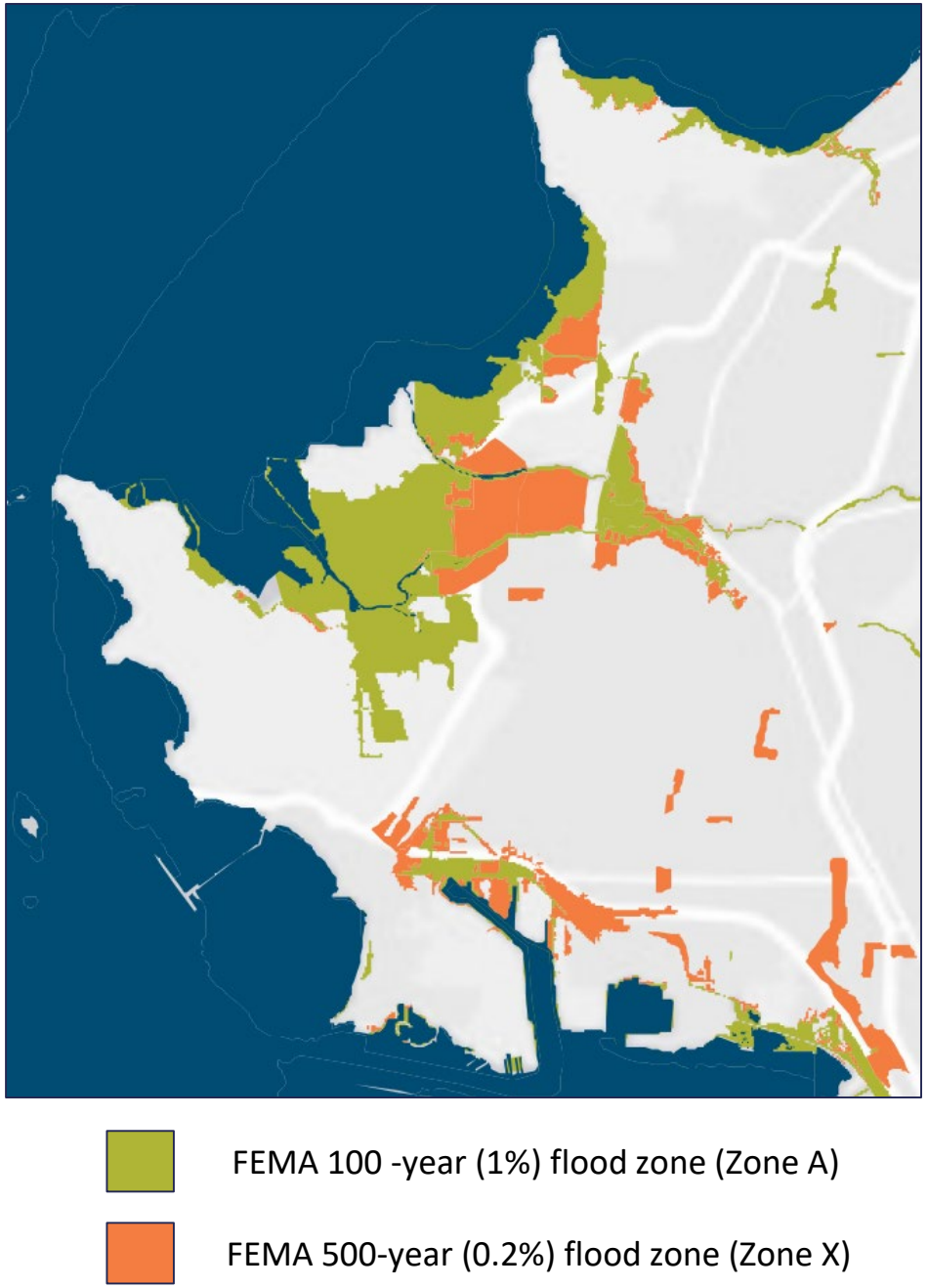
1. Vulnerability studies show we have problems.
2. We have lots of "solutions" to the problem – gray, green, hybrid etc.
3. To get from #1 to #2 we need to define the problem:

What is the level of protection needed based on value of assets in specific locations. What are the full range of strategies needed to manage risk?

LAO report focuses on 1 and 2, ignores 3.

Current State of Practice

- The current practice of flood risk management is most often to provide 100-year (1%) flood protection.
- “There is no solid basis of evidence, however, to justify a default 1% design level of flood protection especially given scientific projections that future flooding will be more frequent and intense due to climate change.” (BCDC ART 2017).
- A default 1% design level does not represent an attempt to achieve optimal balancing of risks and benefits:
  - e.g. why provide the same level of flood risk reduction for both a densely populated urban area with large immovable structures and a low-density rural area with less value in harm’s way?



Let’s Define the Problem

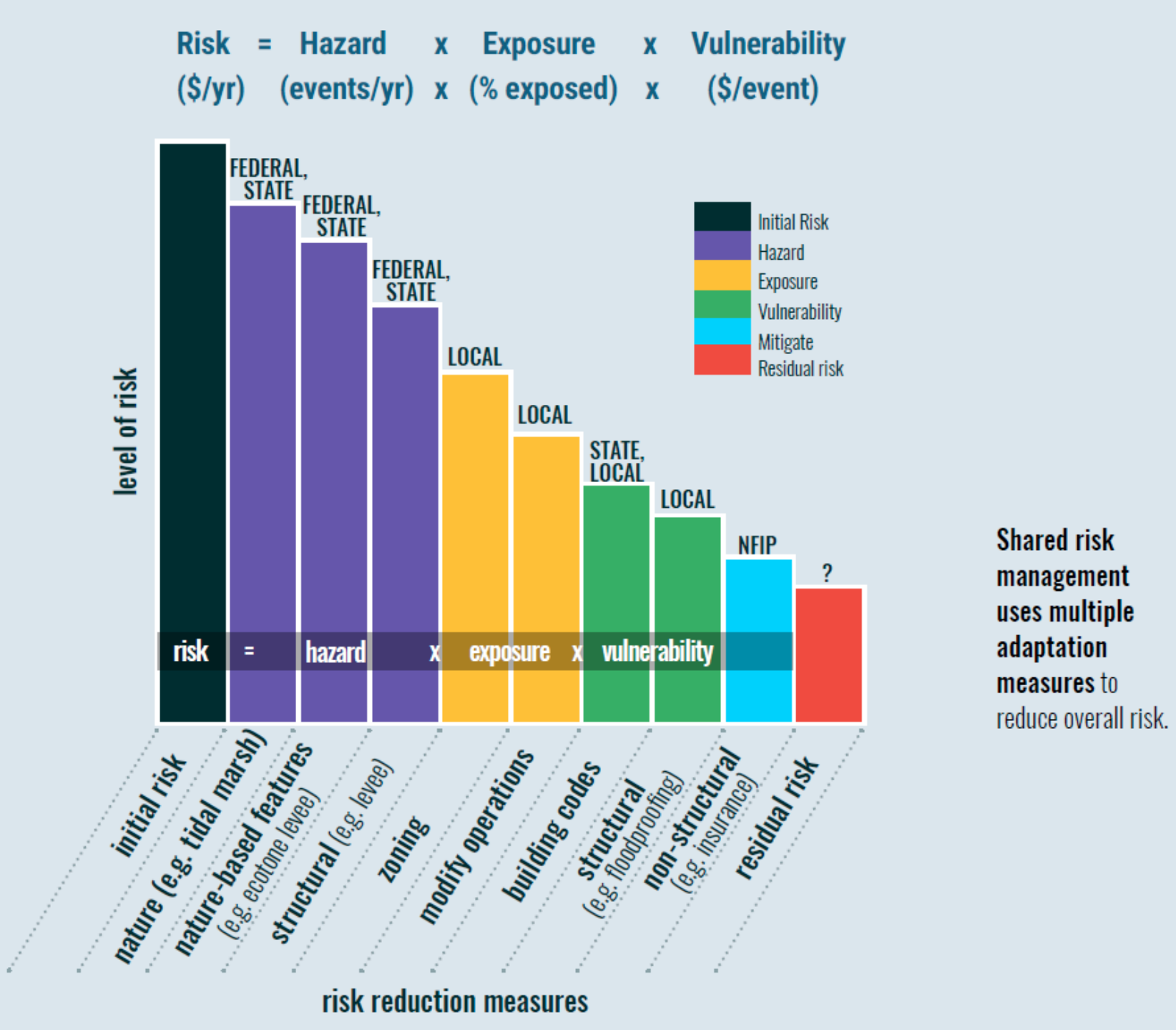
Questions We Need to Ask Ourselves:

- What are we trying to protect? Why?
- How much flood risk are we willing to accept? For how long?
- How do we pay for the cost of protection? Can we afford it?
- When does protecting a location/asset become untenable?

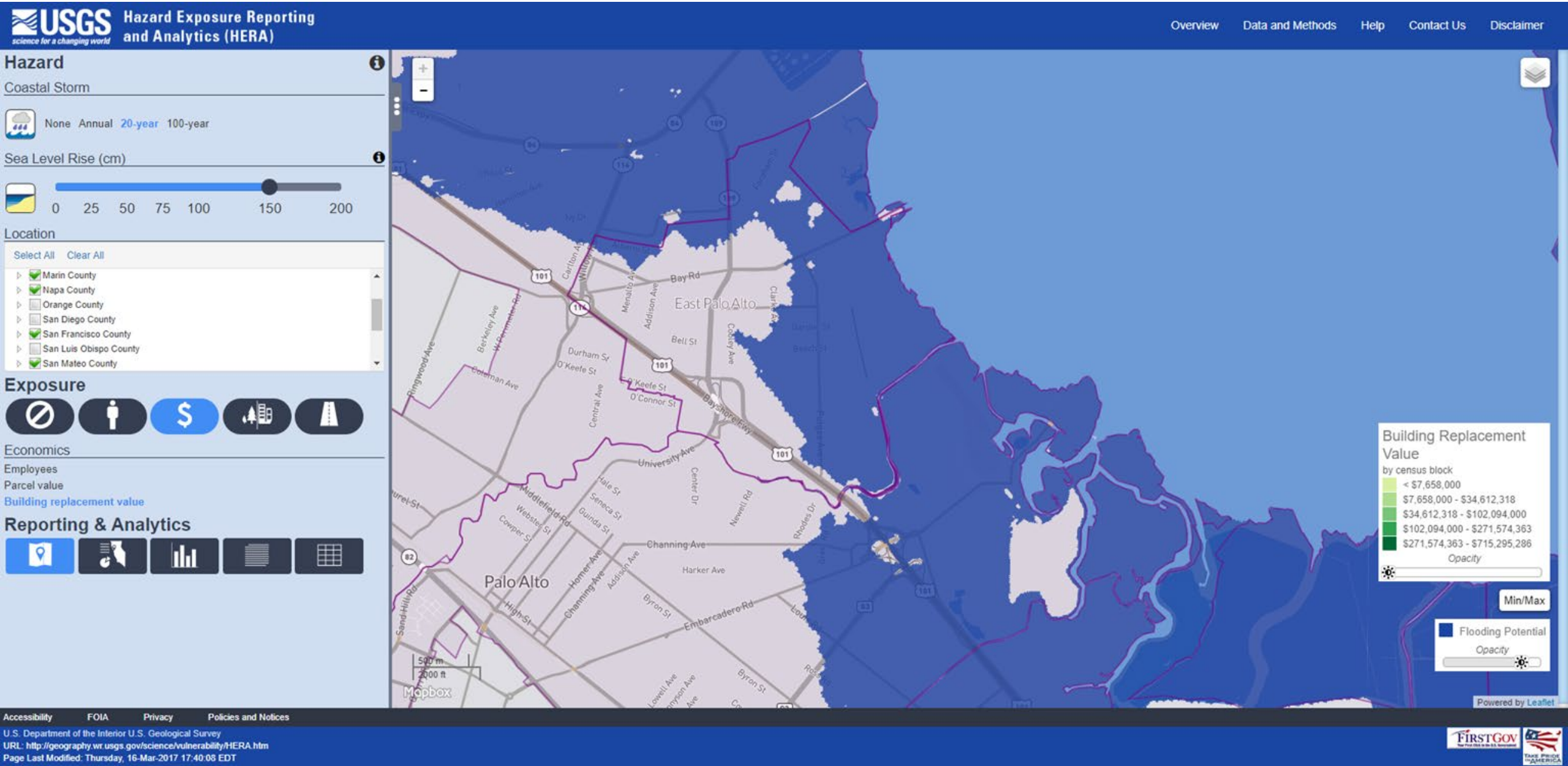
These are questions based on societal values and priorities, economics, and are inherently political in nature. They can’t be decided by scientists and engineers.

Moving to a Flood Risk Management Model - *Sharing Risk*

- Need to manage exposure and vulnerability as well as the hazard
- Sharing risk using a combination of risk reduction measures.
- Goal is to reduce initial risk to an acceptable residual risk by managing the cumulative reduction in hazard and exposure and vulnerability.



Shared risk management uses multiple adaptation measures to reduce overall risk.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Hazard Exposure Reporting and Analytics (HERA)
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Data and Methods
Help
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Hazard
Coastal Storm
None Annual 20-year 100-year
Sea Level Rise (cm)
0 25 50 75 100 150 200
Location
Select All Clear All
Marin County
Napa County
Orange County
San Diego County
San Francisco County
San Luis Obispo County
San Mateo County
Exposure
Economics
Employees
Parcel value
Building replacement value
Reporting & Analytics
East Palo Alto
Palo Alto
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Bell St
Durham St
O'Keefe St
O'Connor St
University Ave
Channing Ave
Harker Ave
Embarcadero Rd
Byron St
Middlefield Rd
Webster St
Cowper St
Hale St
Seneca St
Guinda St
Center Dr
Newell Rd
Rhodes Dr
Homer Ave
Addison Ave
High St
Sand Hill Rd
Ringwood Ave
Berkeley Ave
Bayshore Freeway
Central Ave
Menalto Ave
Addison Ave
Cooley Ave
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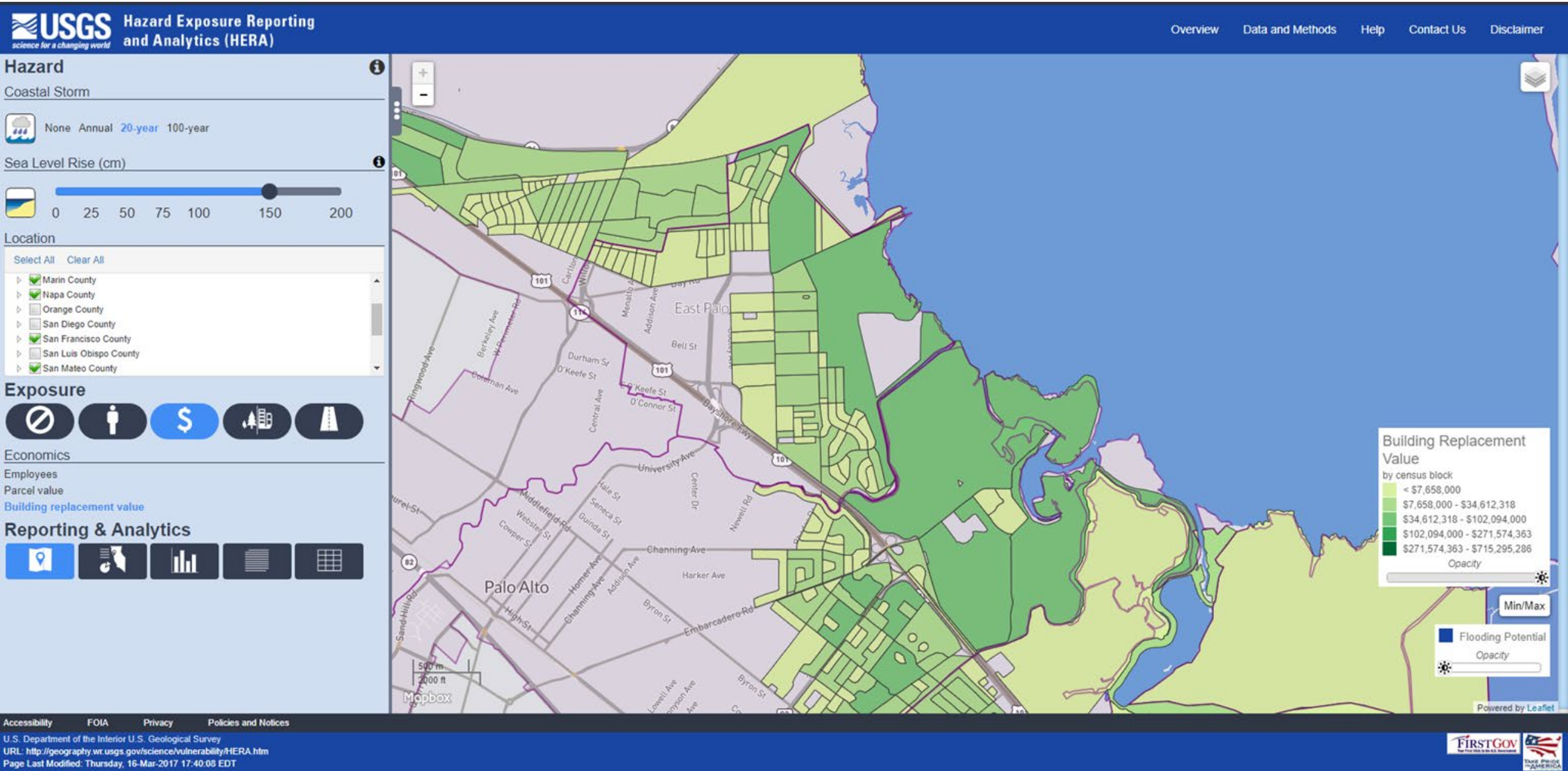
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Hazard

Coastal Storm

None Annual 20-year 100-year

Sea Level Rise (cm)

0 25 50 75 100 150 200

Location

Select All Clear All

- San Mateo County
- Santa Barbara County
- Santa Clara County
- Solano County
- Sonoma County
- Ventura County

Exposure

Economics

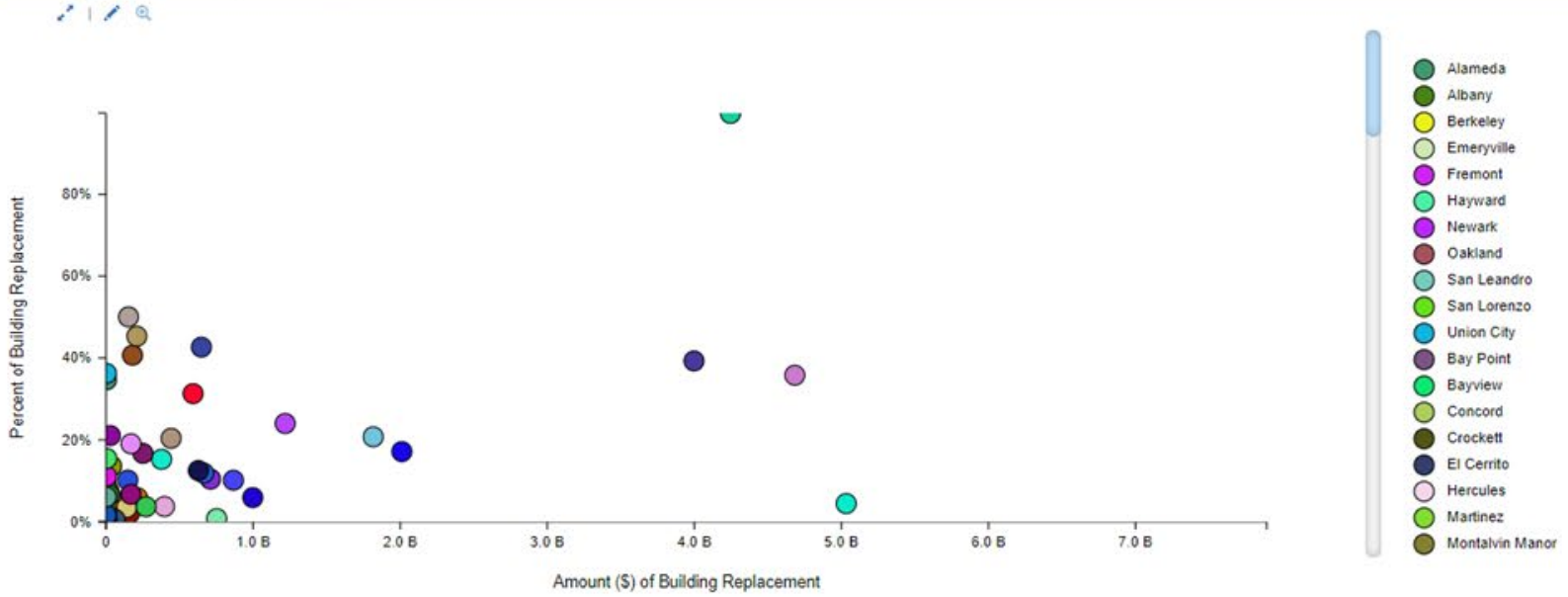
Employees
Parcel value
Building replacement value

Reporting & Analytics

Printer Friendly

Amount (dollars) and percent of community building replacement in hazard zones

Assuming 20-yr coastal storm with 150 cm of sea level rise



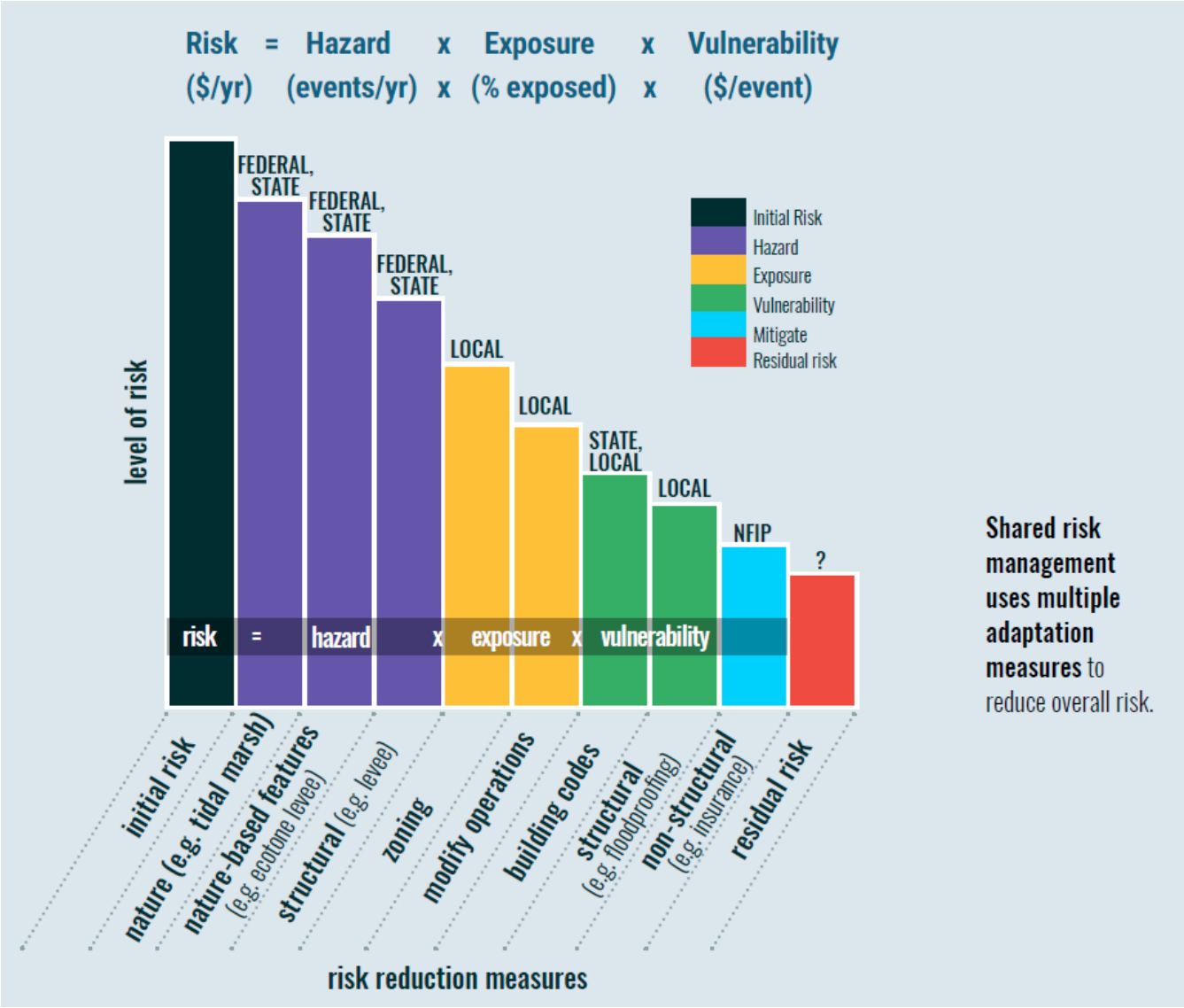
Amount (dollars) of building replacement in hazard zones and sea level rise projections

Assuming 20-yr coastal storm with 150 cm of sea level rise

Getting Clear on Roles and Responsibilities

A Regional Framework to manage flooding and Sea Level Rise can:

- Make sure we are asking the right questions
- Establish clear roles and responsibilities of appropriate agencies and organizations in each activity area to share risk
- Ensure resources are allocated to appropriate agencies and organizations to execute roles and responsibilities.
- Advance projects at local and/or sub-regional level that achieve desired risk reduction
- Track performance of risk sharing at the regional scale in Plan Bay Area



2020 Climate Bond Proposals

2020 Climate Bond Funding Comparison Chart			
	SB 45 (Allen) (millions)	AB 352 (Garcia) (millions)	Governor's Budget* (millions)
Resiliency/Climate Risk Reduction	**$4,129**	**$2,965**	**$4,750**
Wildfire, flood, drought and other natural disaster prevention and community resilience	$1,619	$ 1,250	
Safe drinking water and protecting water supply and water quality from climate risks	$1,170	$925	
Fish and wildlife protection from climate risks	$520	$475	
Agricultural land protection from climate risks	$190	$100	
Protecting coastal lands, waters, natural resources, and wildlife from climate risks	$630	$215	

*Governor's Budget directs 80% of funds to mitigate near-term risks (wildfire, floods and drought). The remaining 20% is reserved for reducing longer-term risks related to sea level rise and extreme heat. Includes $ for resiliency planning and demonstration projects to protect critical infrastructure.

For Discussion:

1. Can we agree that this risk-management approach is workable as a region? Do you agree we are on the right track?

1. How can we best organize ourselves to:
   - Continue to strengthen & integrate resiliency in Plan Bay Area
   - Develop Guiding Principles
   - Agree on Roles & Responsibilities of key stakeholders
   - Establish Work Groups to build out each activity area (columns)
   - Inform legislative programs to support framework