

Generating Support for Climate Change Adaptation

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Bay Area Climate Change Communication Strategies Workshop
June 26, 2013



Outline

- Key Bay Area adaptation issues
- Public perceptions
- Other policy drivers



CA's ocean coastline (~1,250 mi): high-energy, most land at elevation



Bay Area ocean coastline at risk from 100-yr flood

	Current sea level	1.4 m sea level rise
Population (2000)	10,610	13,730
Roads/rail (miles)	85	114
Buildings/content (\$2000 M)	1,790	2,260

Heberger et al (2009) CEC

Hanak and Moreno (2012) Climatic Change

Erosion will be a major issue, plus lowland flooding in limited areas



San Francisco Bay (~1,000 mi): calmer, large lowland fringe



**Bay Area bay coastline
at risk from 100-yr flood event**

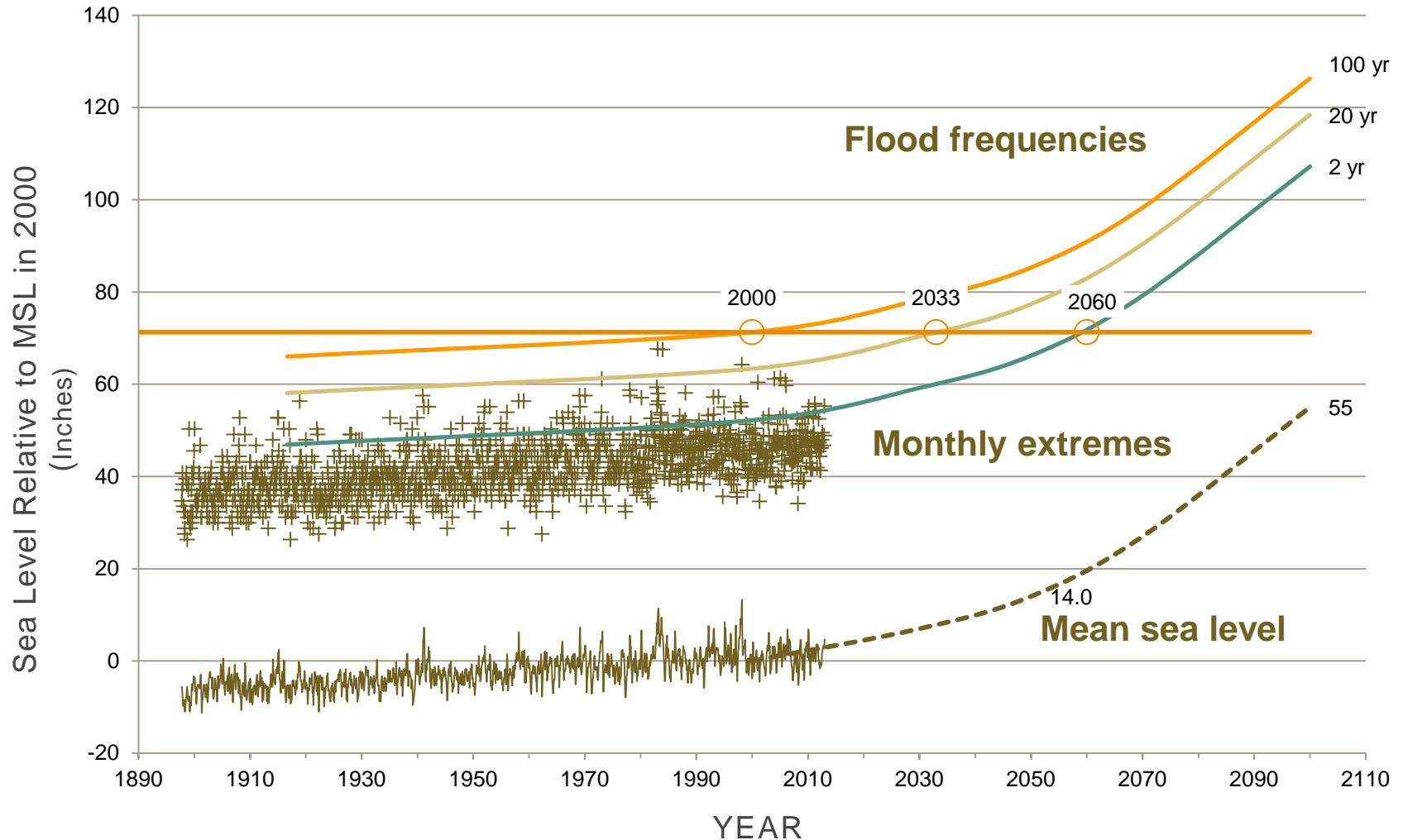
	Current sea level	1.4 m sea level rise
Population (2000)	140,000	270,000
Roads/rail (miles)	870	1,950
Buildings/content (\$2000 M)	29,000	62,000

Heberger et al. (2009) CEC

Flood risk will increase considerably



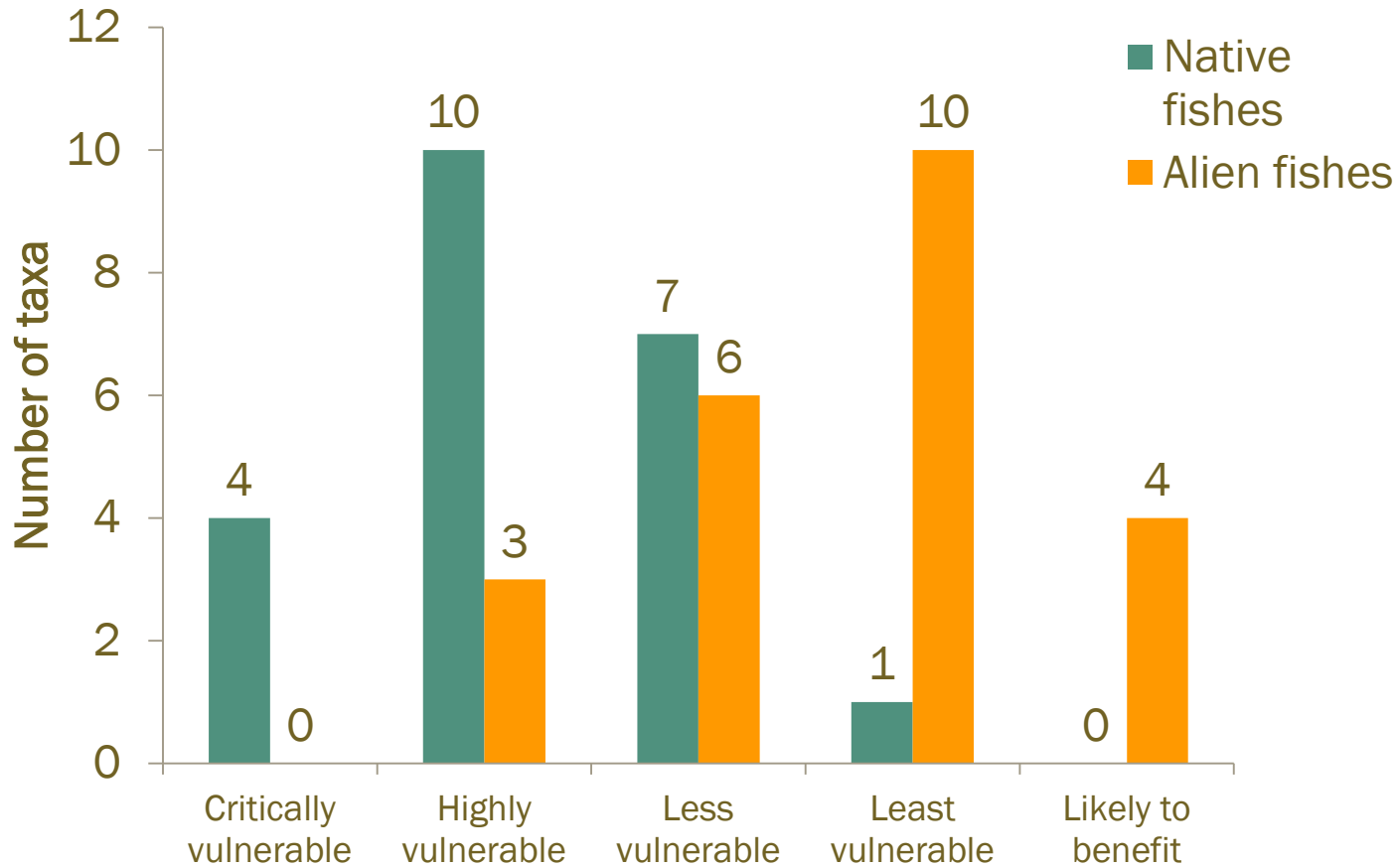
Today's rare flood risks will become the new normal



Source: ESA; Developed from Kriebel (2011)



Native biodiversity also threatened by temperature rise, more droughts



**Extinction vulnerability from climate change by 2100
San Francisco Bay Area fishes**

Source: Moyle et al. (2012) CEC



Climate change will accentuate tradeoffs and potential conflicts

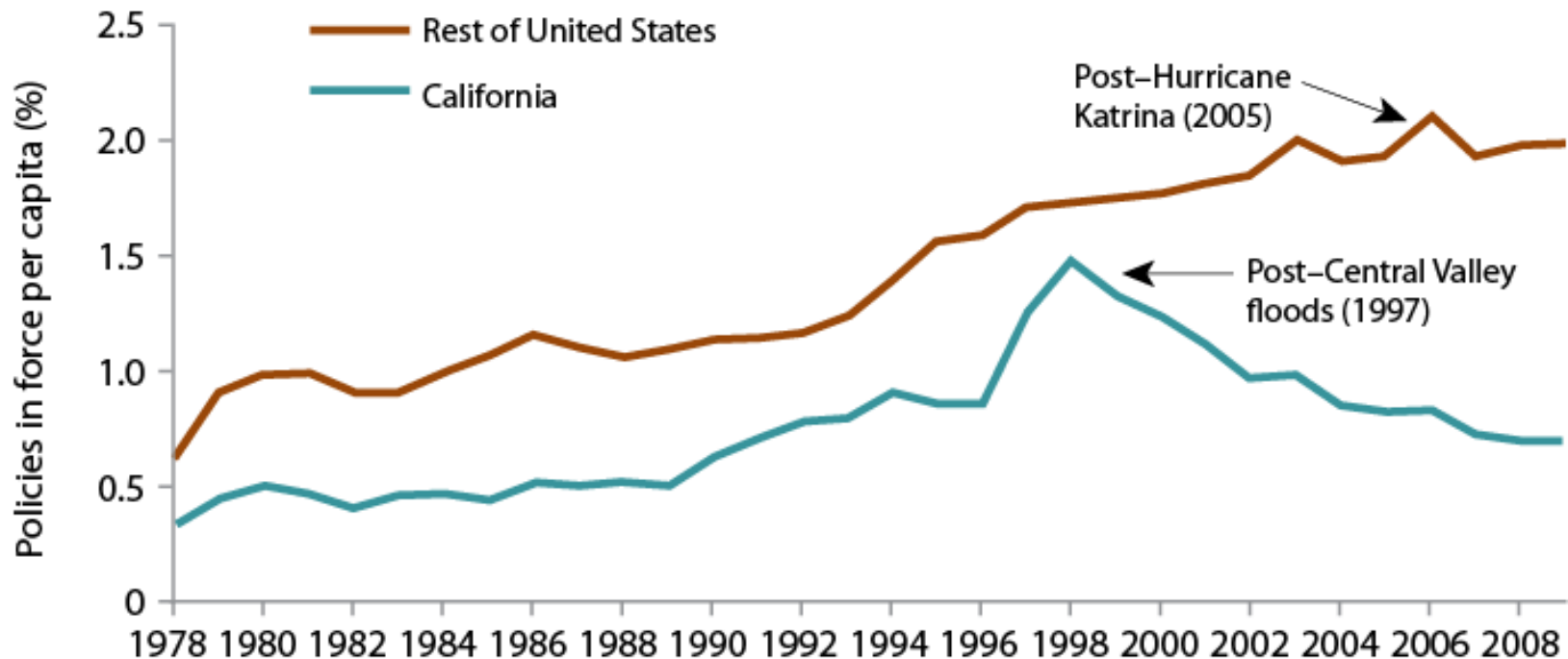
- Coastal management already a balancing act
 - Economic development
 - Public access
 - Natural values, species habitat
- Coastal adaptation tools heighten tradeoffs
 - Coastal armoring (10% of ocean coastline)
 - Higher building standards & insurance
 - Retreat
- More generally, hard to motivate costly preventive actions without a crisis

Source: Hanak & Moreno (2012) Climatic Change; Bedsworth & Hanak (2010) JAPA



An example of the salience problem: flood memory “half-life”

Trends in flood insurance policy holding

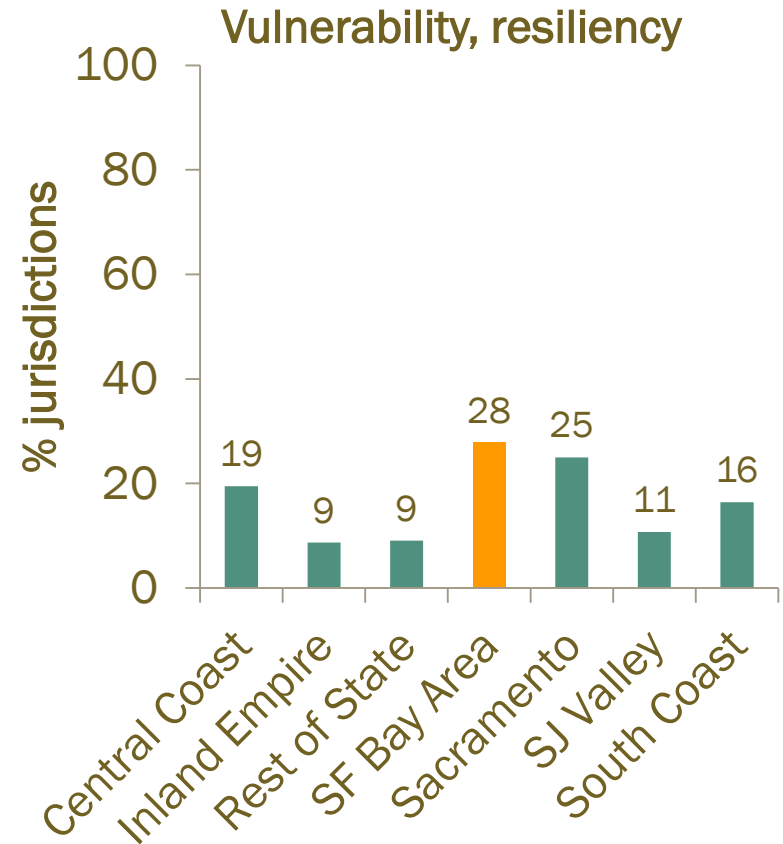
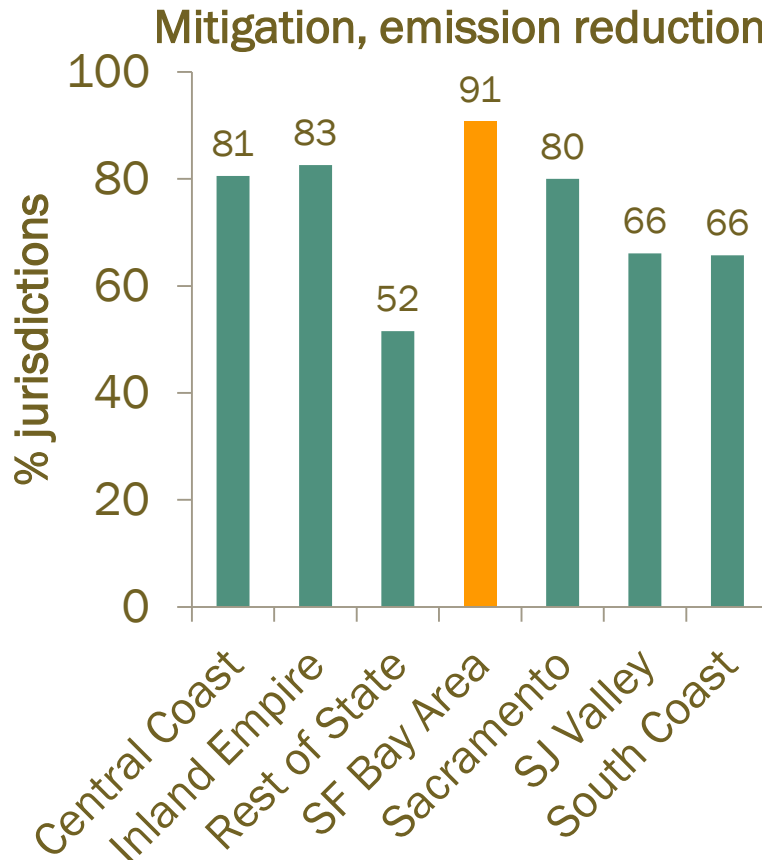


Source: Hanak et al. (2011) *Managing California's Water* (PPIC)



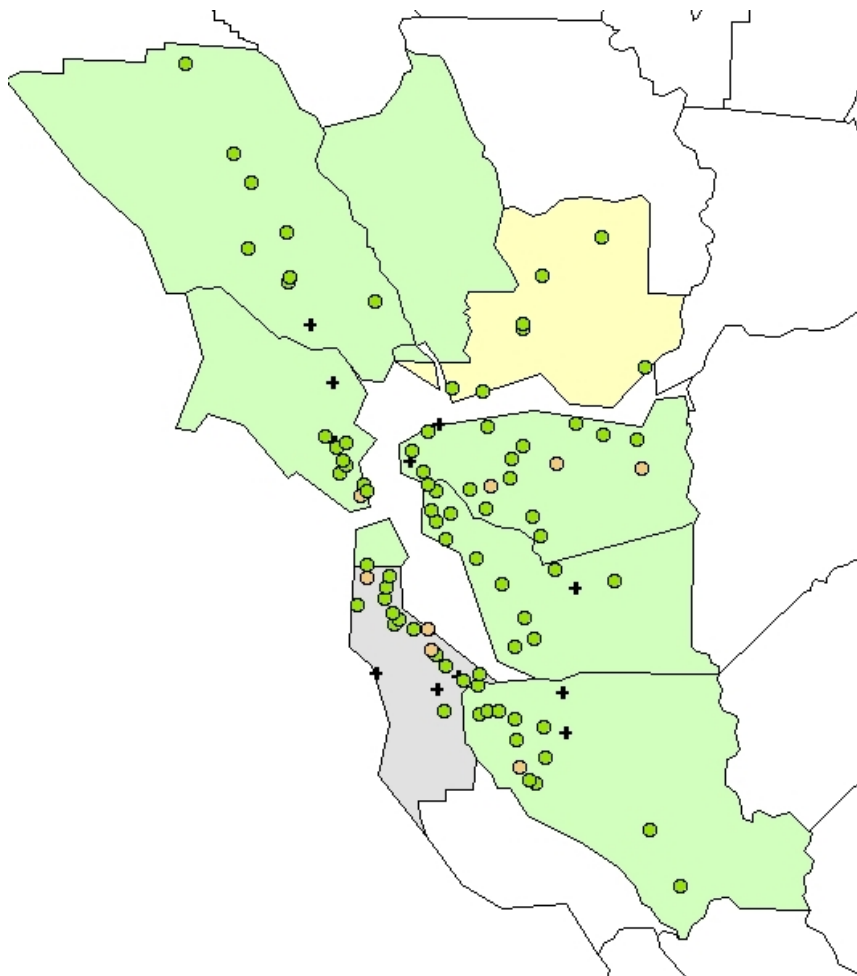
Bay Area communities are ahead, but adaptation trails mitigation

Local policies/programs adopted or in progress (2010)

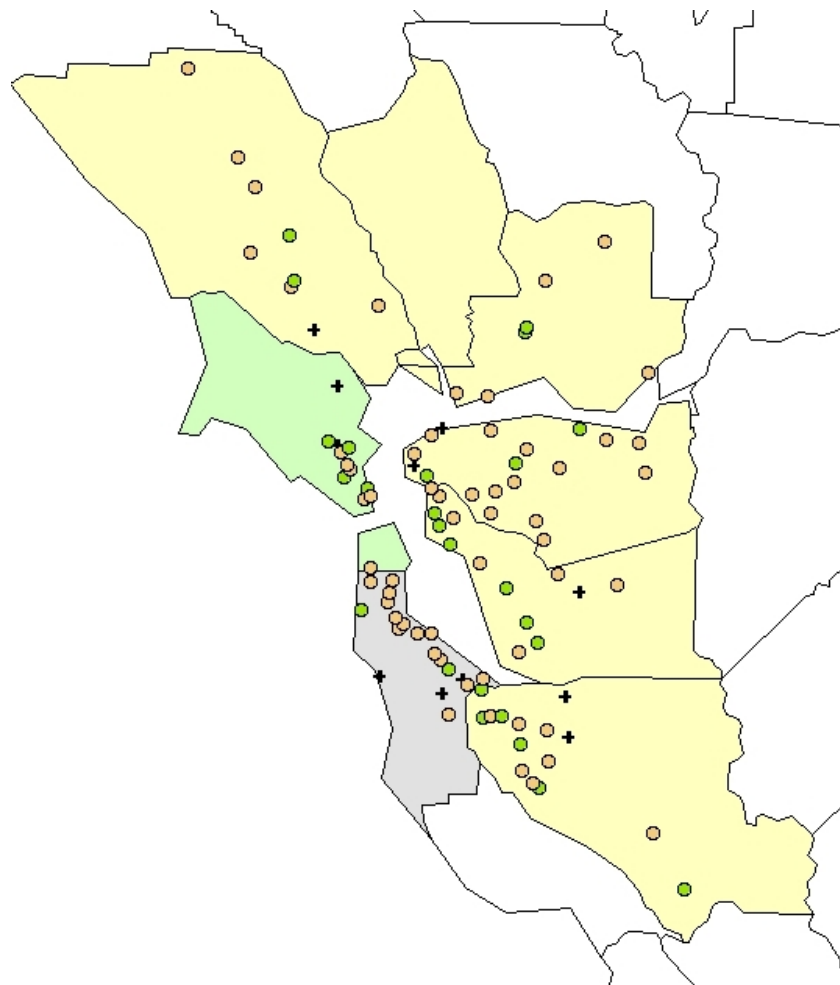


Bay Area local climate programs (2010)

Mitigation, emission reductions



Vulnerability, resilience



Counties:  yes  no  NA

Cities:  yes  no  NA



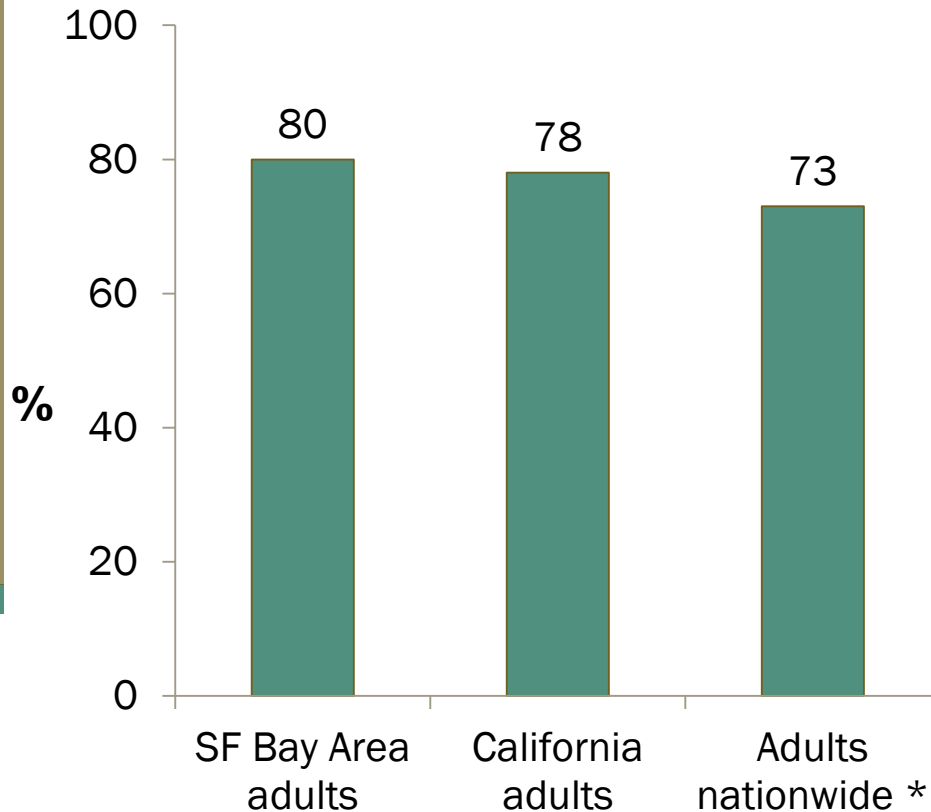
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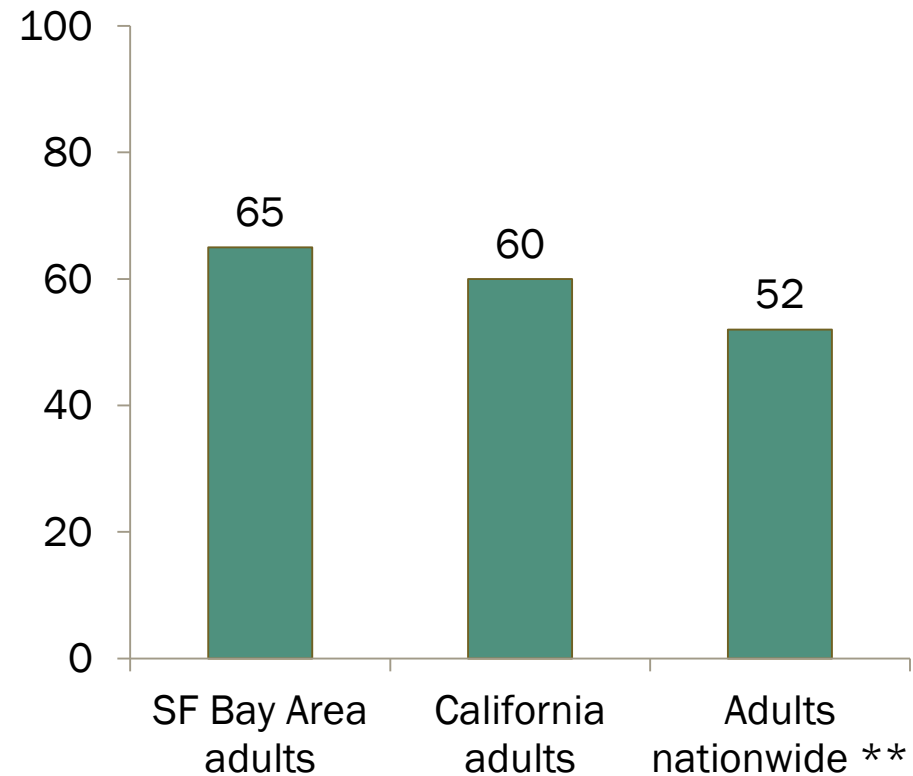


Californians are ahead of nation in acknowledging global warming

Percent saying world's temperature has gone up over past 100 years



Percent saying global warming has already begun to happen



California data from PPIC statewide survey, July 2012 (2,500 adults, ~550 Bay Area residents)

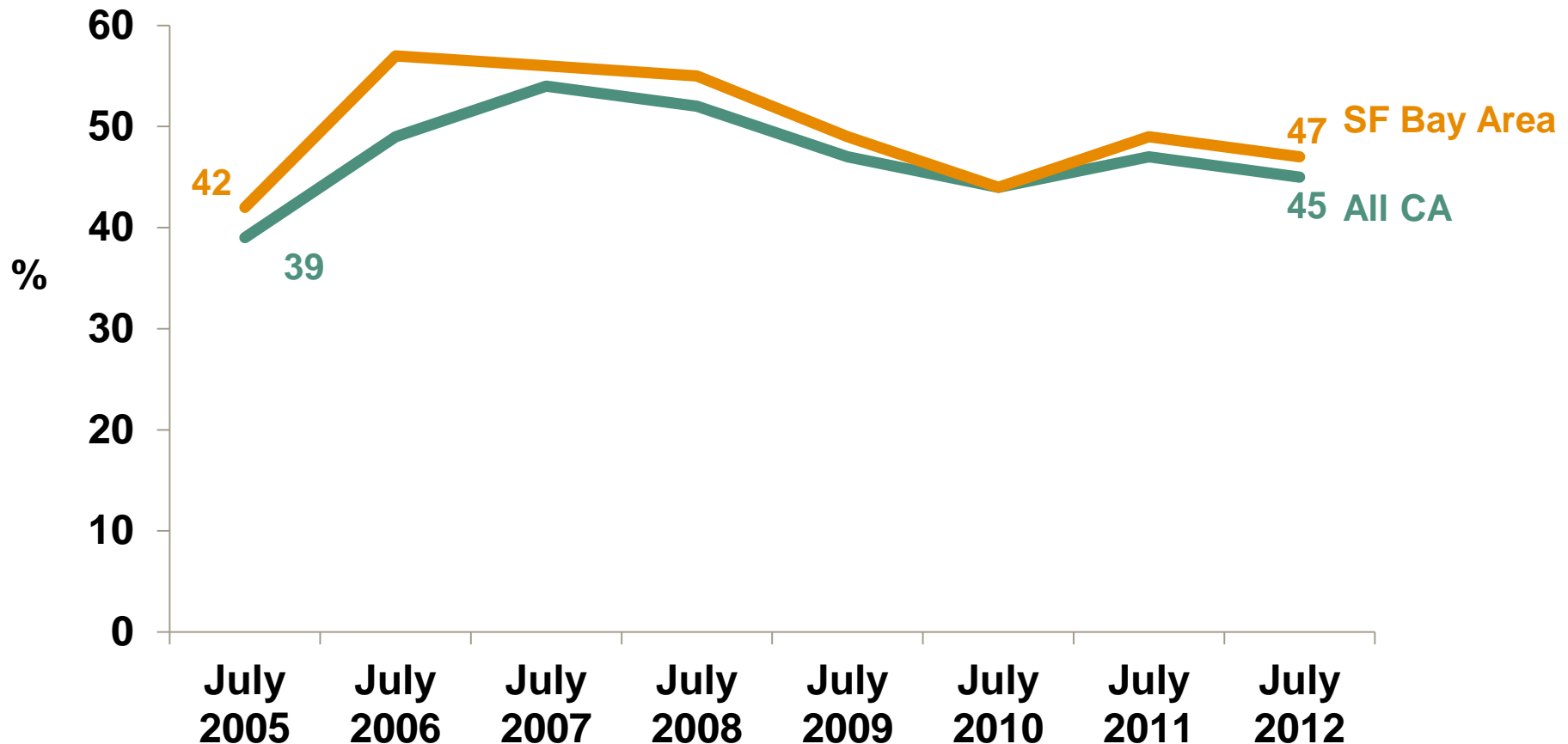
* June 2012 Washington Post/Stanford Poll

** March 2012 Gallup Poll



But fewer think global warming is a very serious threat for the state

Percent saying that global warming is a very serious threat to the economy and quality of life for California's future

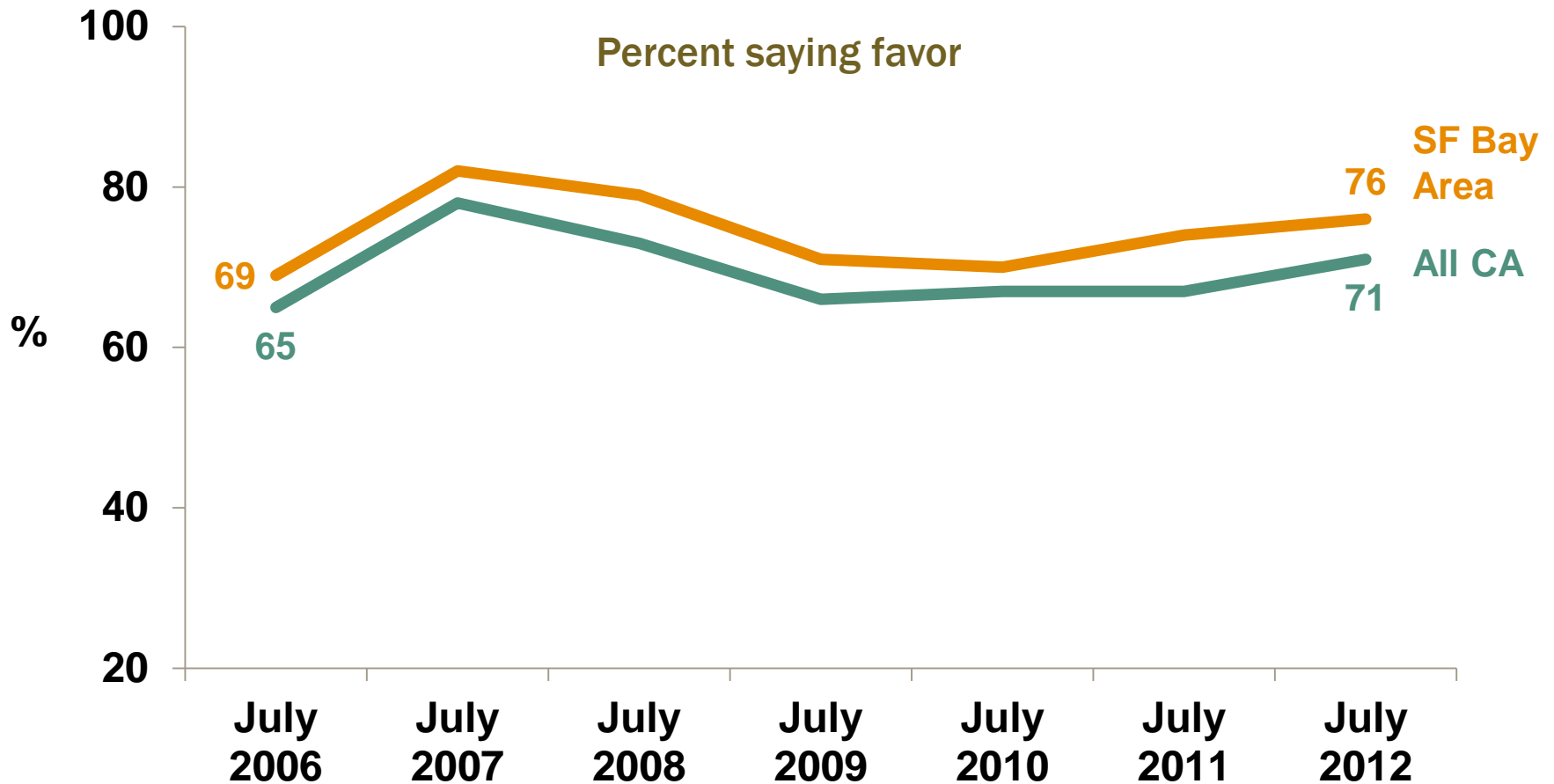


Source: PPIC Statewide Survey, July 2005-2012



Support for AB 32 has remained strong, even during recession

To address global warming, do you favor or oppose the state law that requires California to reduce its greenhouse gas emissions back to 1990 levels by the year 2020?

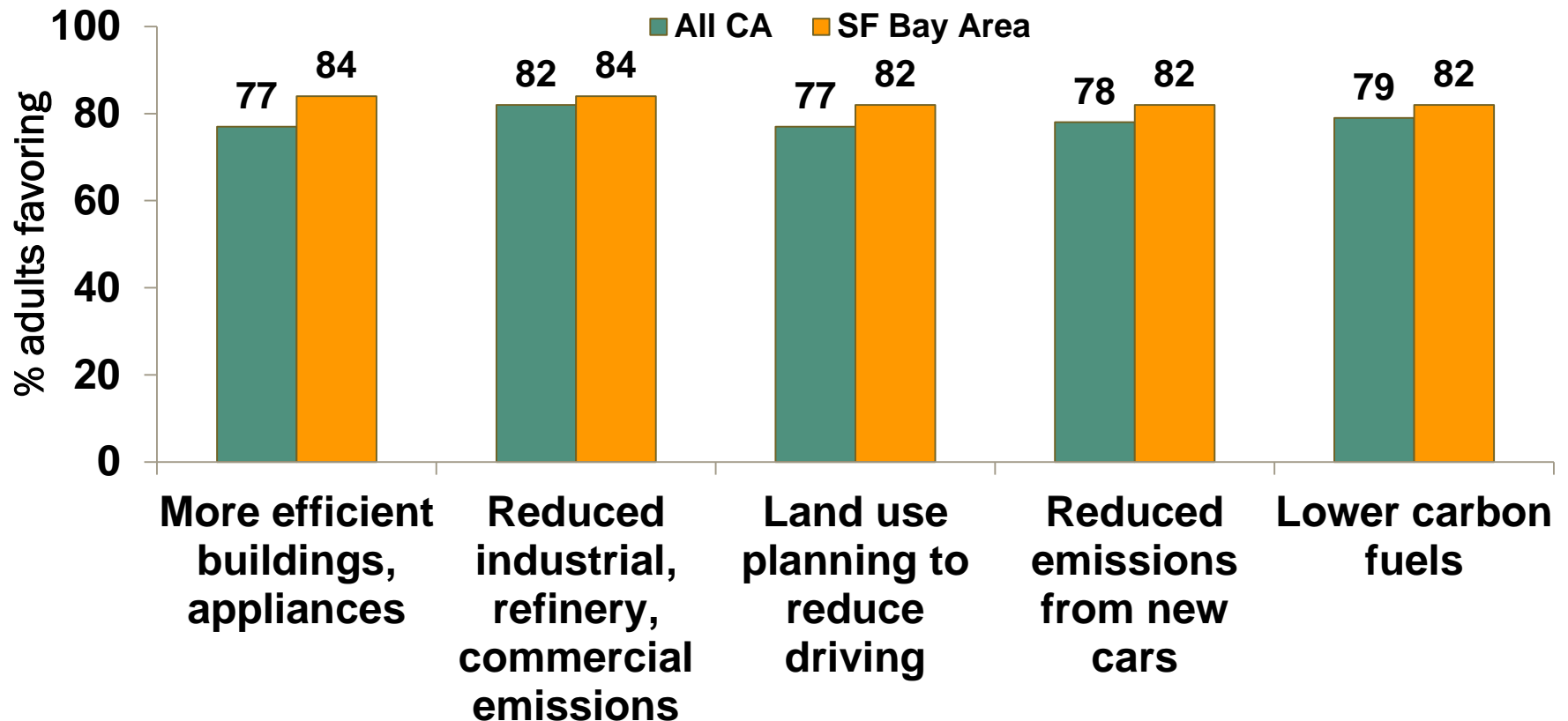


Source: PPIC Statewide Survey, July 2006-2012



Support generally even higher for specific mitigation policies

Please tell me if you favor or oppose the following plans to help reduce greenhouse gas emissions.

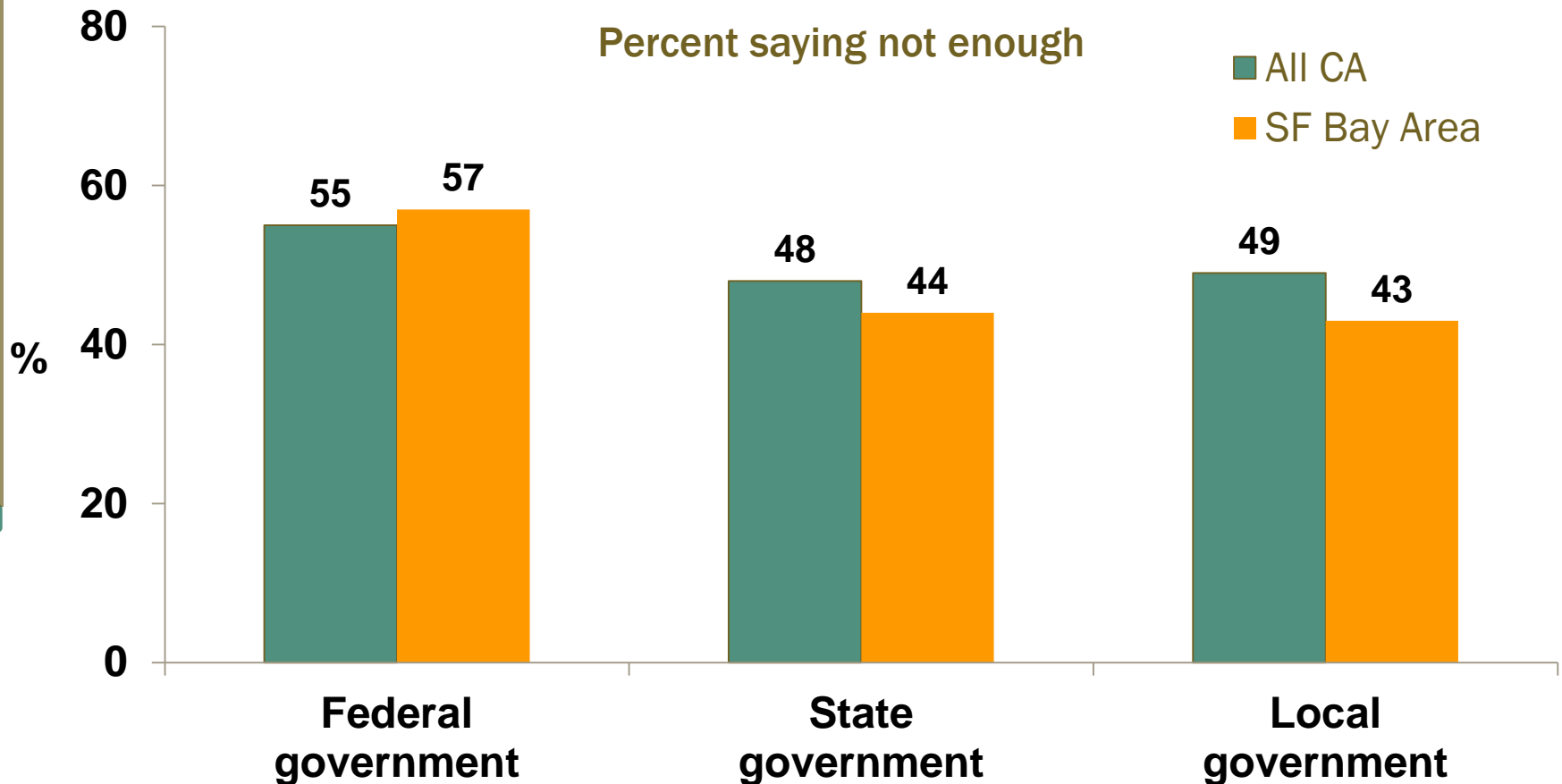


Source: PPIC Statewide Survey, July 2012



Most in Bay Area think state, local governments are doing enough

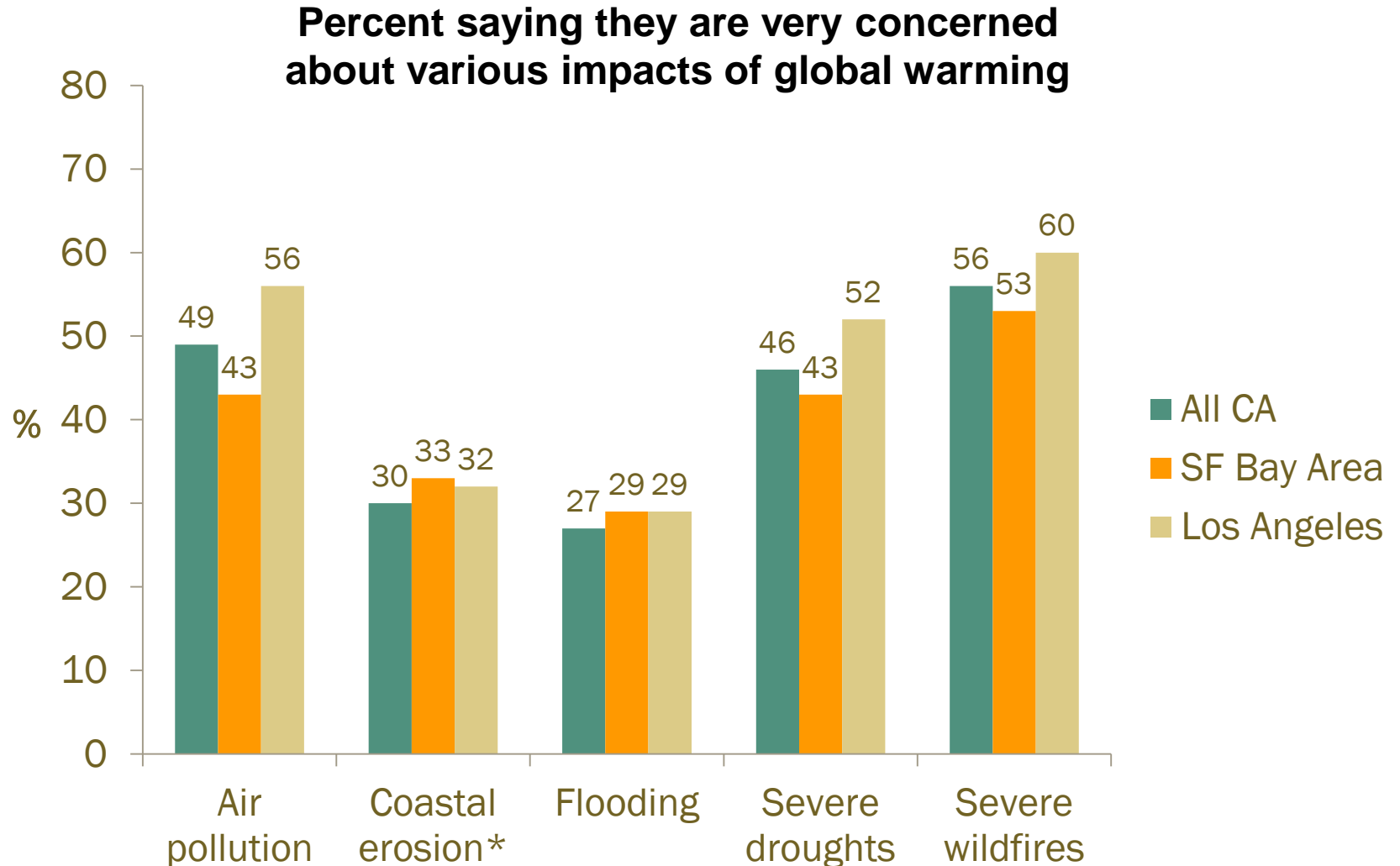
Overall, do you think that the ... government is doing more than enough, just enough, or not enough to address global warming?



Source: PPIC Statewide Survey, July 2012



Lower concern about coastal/flood impacts than other threats



Source: PPIC Statewide Surveys. *July 2009 survey results, the rest are from July 2011

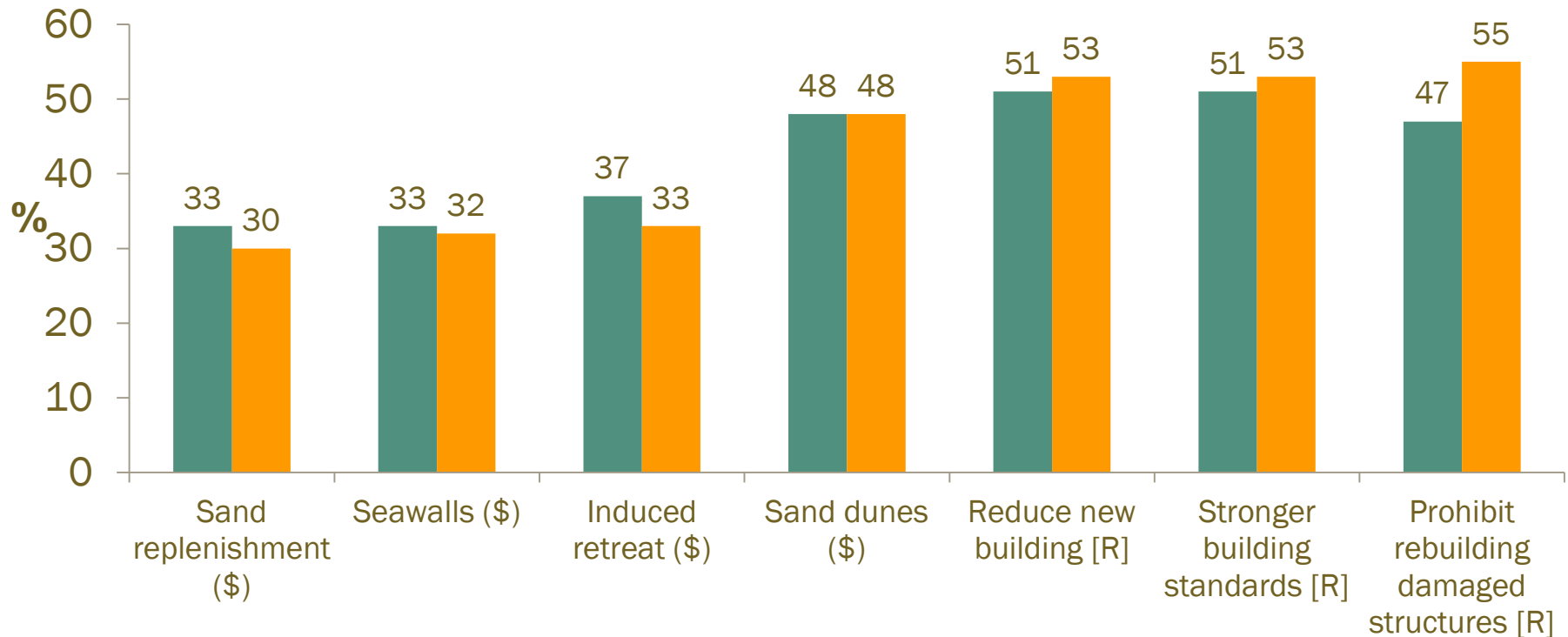


Support varies for specific coastal preparation strategies

Percent who strongly favor/somewhat favor/ leaning toward favoring

\$= investment costs
R= regulatory program

■ U.S. ■ California

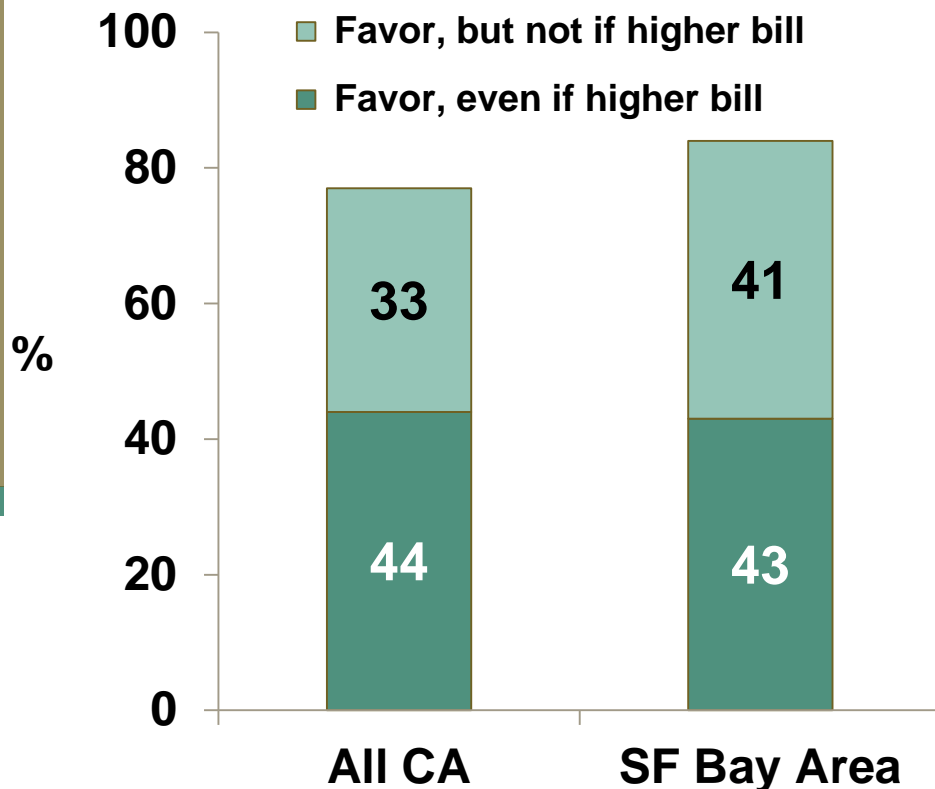


Source: Stanford Poll on Climate Adaptation, March 2013
US sample: 1,174 adults; CA sample: 440 adults



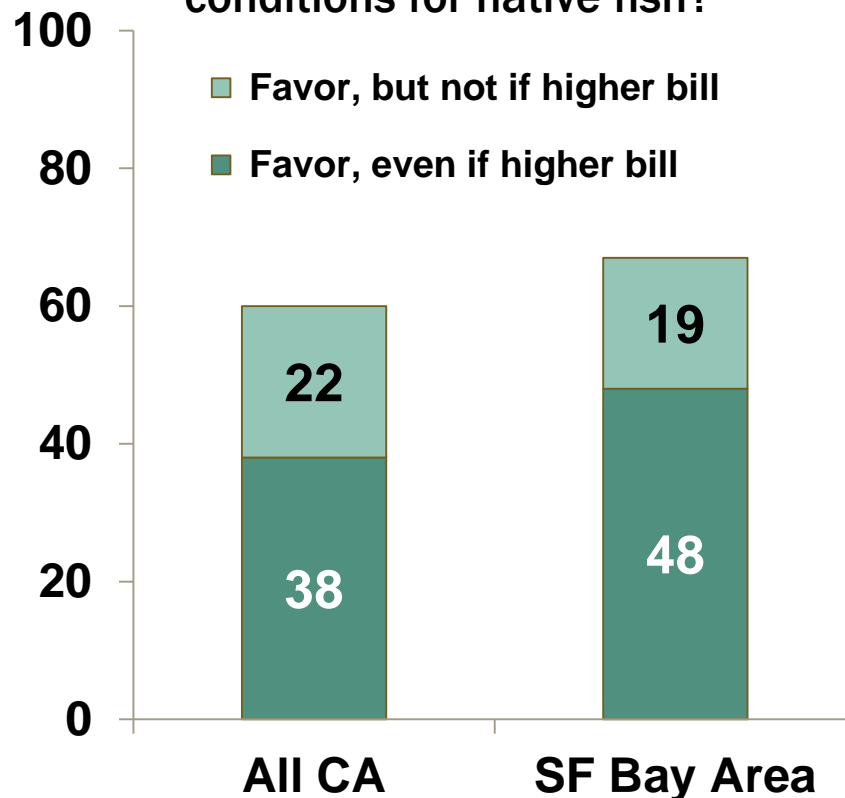
Support for action less clear when people's own money at stake

[Do you support] requiring one-third of the state's electricity to come from renewable energy sources, such as solar and wind power, by the year 2020?



Source: PPIC Statewide Survey, July 2012

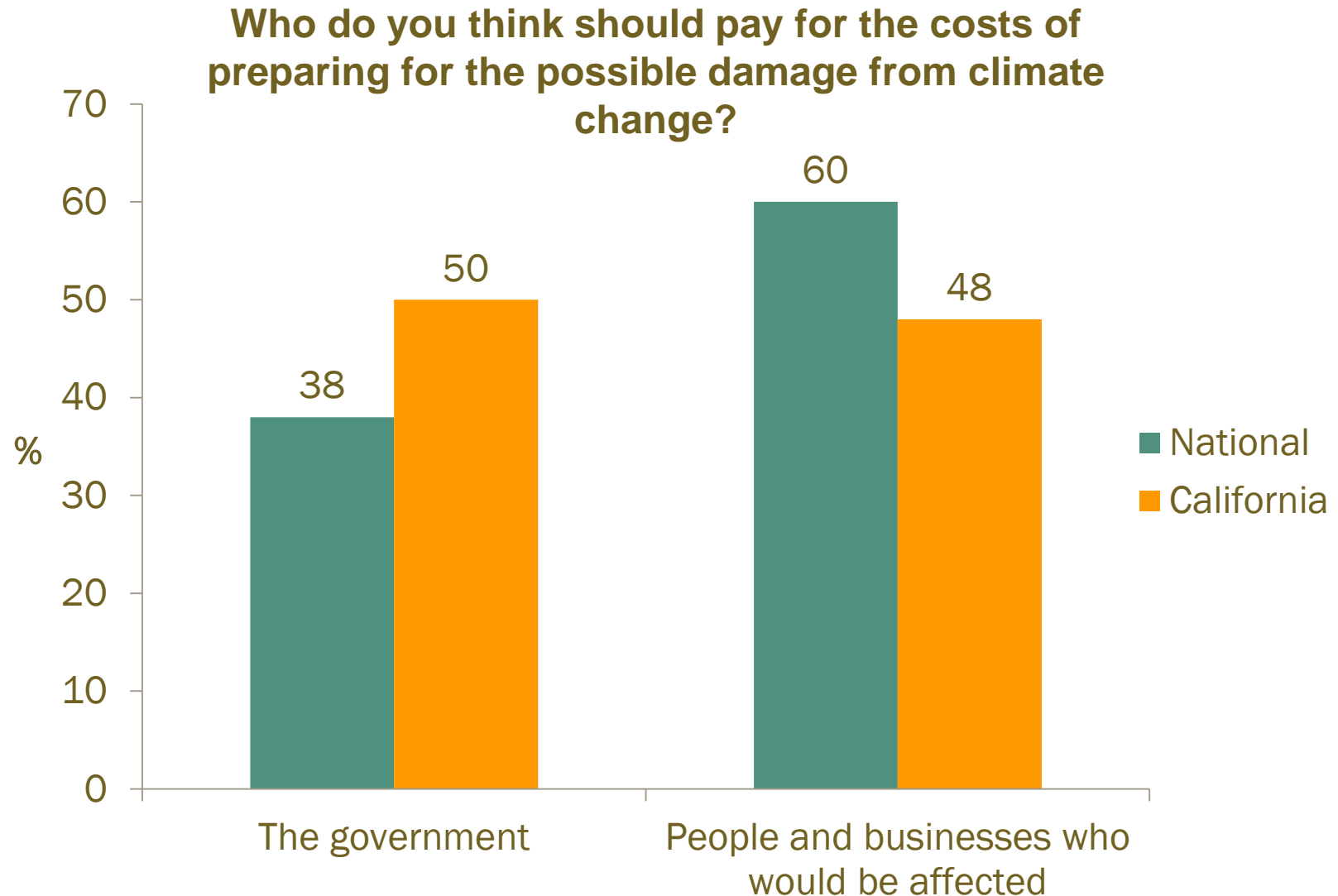
As you may know, California's native fish populations, including salmon and steelhead trout, have been declining statewide. Do you favor or oppose increasing state spending to improve conditions for native fish?



Source: PPIC Statewide Survey, Dec. 2012



Many in CA want “government” to fund coastal actions

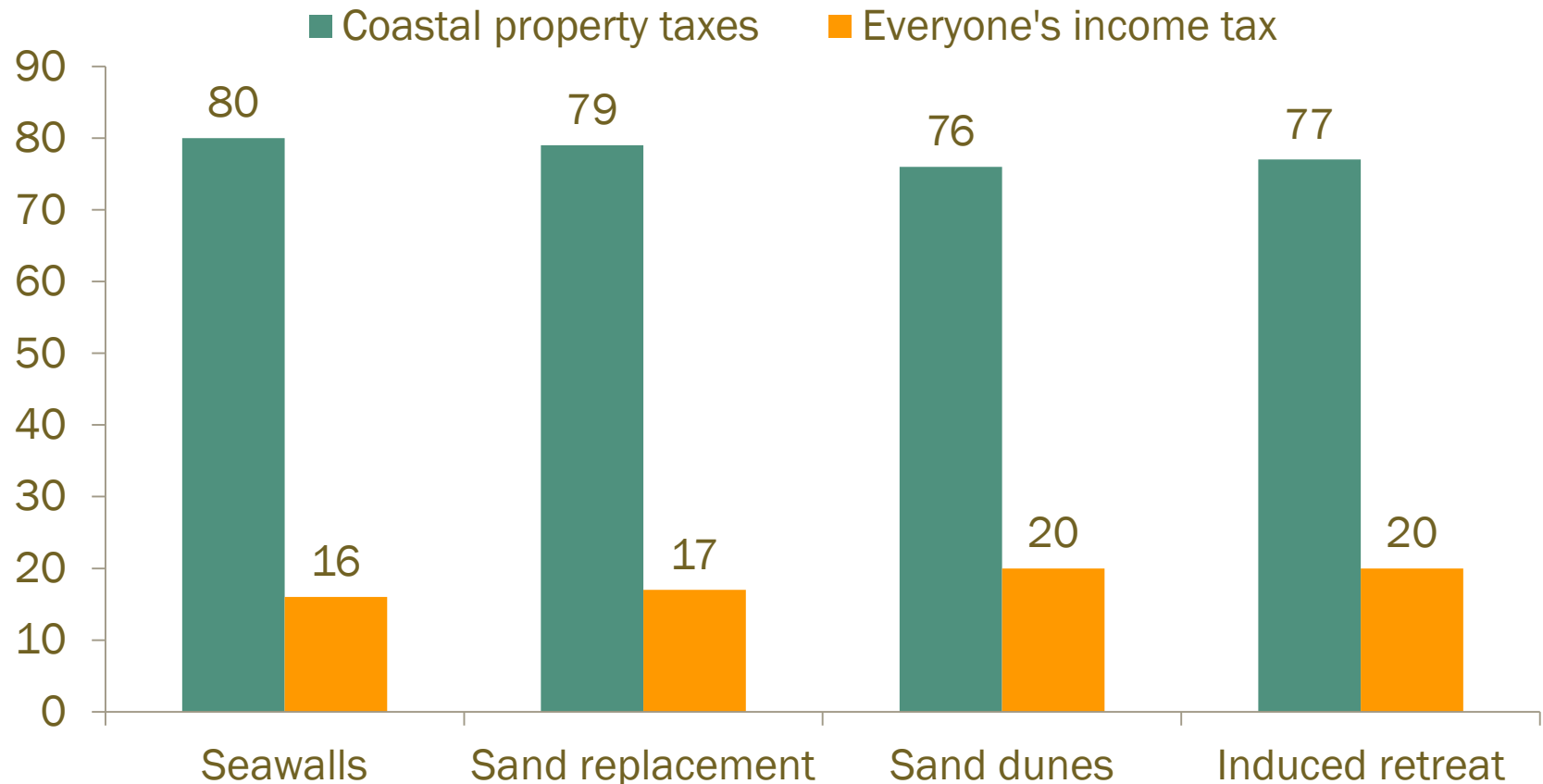


Source: Stanford Poll on Climate Adaptation, March 2013



But people say direct beneficiaries should fund resulting tax increases

Whose taxes should increase to pay for these measures?



Source: Stanford Poll on Climate Adaptation, March 2013.
California adults (national results similar)



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Other factors can help drive local climate action

- Co-benefits, especially near-term
 - Local quality of life (e.g., open space)
 - Local economy (e.g., jobs, cost savings)
- Local leadership
 - Staff, elected officials
 - Business groups

Source: Bedsworth and Hanak (2013) Global Environmental Change; (2010) JAPA



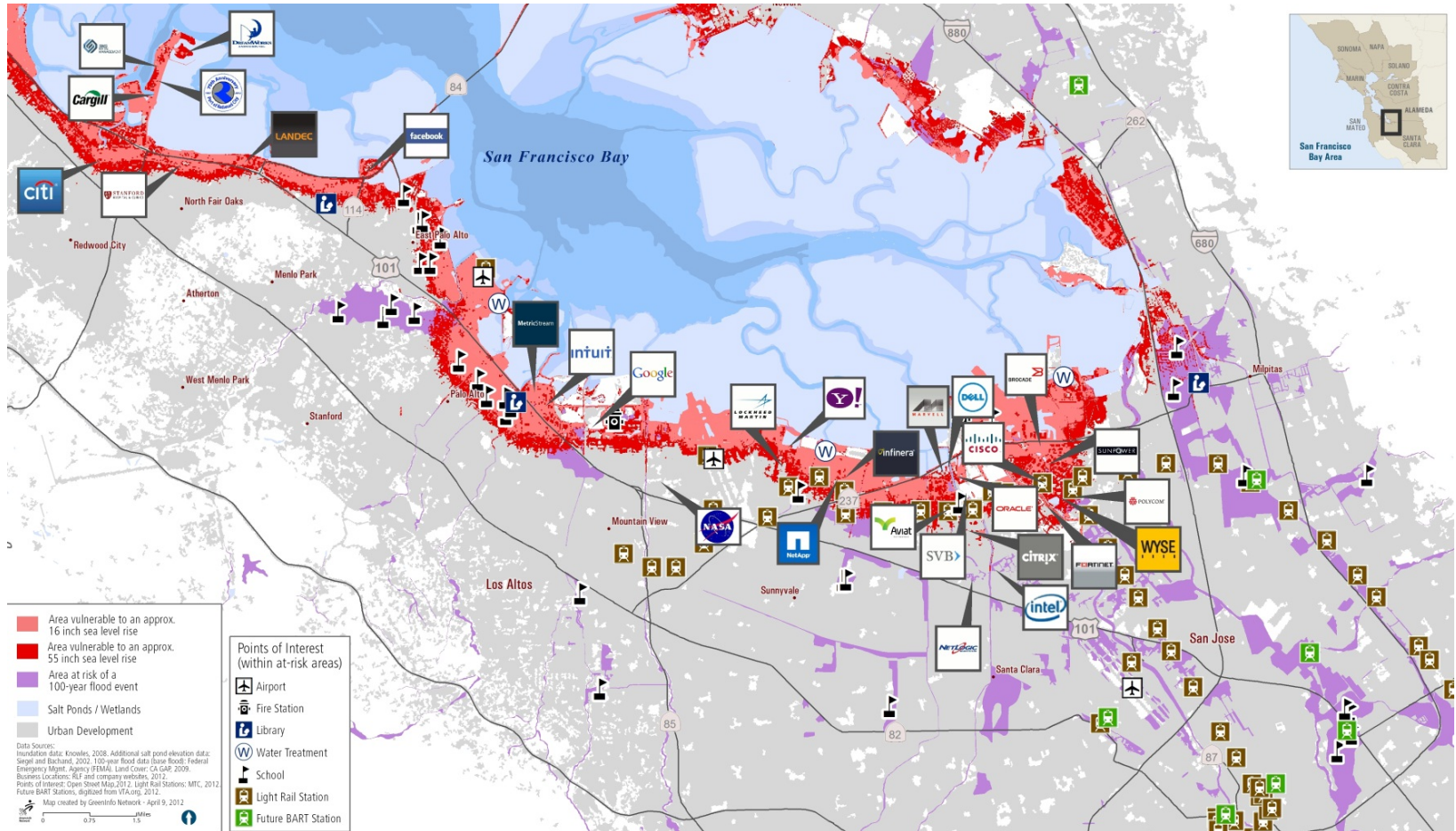
Don't let someone else's crisis go to waste

- Hurricane Katrina was instrumental in adoption of historic Central Valley flood package
 - State bond funding
 - New regulations
- Can Superstorm Sandy play a similar role in the Bay Area?



Making the adaptation case to business leaders

New Bay Area public-private partnership aims to enhance ecosystem and address extreme flood risks in Silicon Valley



Multiple pathways to business interruption



Source: ESA; Bing Maps



Just a few illustrations from Sandy that are relevant here...



Businesses under pressure



Airports under pressure



Workforce & customers under pressure



Wastewater systems under pressure



Thank you!

- For more information:
 - PPIC statewide surveys (ppic.org)
 - Stanford climate adaptation surveys (woods.stanford.edu)
 - Hanak et al. (2011) *Managing CA's water* (ppic.org)
 - Hanak & Moreno (2012) CA coastal mgmt with a changing climate. *Climatic Change*
 - Bedsworth & Hanak (2010) Adaptation to climate change. *J of American Planning Assn*
 - Bedsworth & Hanak (2013) Climate policy at the local level. *Global Environmental Change*



Notes on the use of these slides

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

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Thank you for your interest in this work.

