Generating Support for Climate Change Adaptation

Ellen Hanak
Public Policy Institute of California
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

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

<table>
<thead>
<tr>
<th></th>
<th>Current sea level</th>
<th>1.4 m sea level rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (2000)</td>
<td>10,610</td>
<td>13,730</td>
</tr>
<tr>
<td>Roads/rail (miles)</td>
<td>85</td>
<td>114</td>
</tr>
<tr>
<td>Buildings/content ($2000 M)</td>
<td>1,790</td>
<td>2,260</td>
</tr>
</tbody>
</table>

Hanak and Moreno (2012) Climatic Change

Heberger et al (2009) CEC
San Francisco Bay (~1,000 mi): calmer, large lowland fringe

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

<table>
<thead>
<tr>
<th></th>
<th>Current sea level</th>
<th>1.4 m sea level rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (2000)</td>
<td>140,000</td>
<td>270,000</td>
</tr>
<tr>
<td>Roads/rail (miles)</td>
<td>870</td>
<td>1,950</td>
</tr>
<tr>
<td>Buildings/content ($2000 M)</td>
<td>29,000</td>
<td>62,000</td>
</tr>
</tbody>
</table>

Flood risk will increase considerably

Heberger et al. (2009) CEC

Map courtesy of BCDC
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

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

Source: Governor's Office of Planning and Research (2011), 2010 local government survey
Sample: 461 cities and counties.
Bay Area local climate programs (2010)

Mitigation, emission reductions

Vulnerability, resilience

Counties: yes no NA

Cities: yes no + NA
Outline

- Key Bay Area adaptation issues
- Public perceptions
- Other policy drivers
Californians are ahead of nation in acknowledging global warming

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

<table>
<thead>
<tr>
<th>Region</th>
<th>SF Bay Area adults</th>
<th>California adults</th>
<th>Adults nationwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent saying</td>
<td>80</td>
<td>78</td>
<td>73</td>
</tr>
</tbody>
</table>

Percent saying global warming has already begun to happen

<table>
<thead>
<tr>
<th>Region</th>
<th>SF Bay Area adults</th>
<th>California adults</th>
<th>Adults nationwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent saying</td>
<td>65</td>
<td>60</td>
<td>52</td>
</tr>
</tbody>
</table>

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.

- More efficient buildings, appliances: 77% (All CA), 84% (SF Bay Area)
- Reduced industrial, refinery, commercial emissions: 82% (All CA), 84% (SF Bay Area)
- Land use planning to reduce driving: 77% (All CA), 82% (SF Bay Area)
- Reduced emissions from new cars: 78% (All CA), 82% (SF Bay Area)
- Lower carbon fuels: 79% (All CA), 82% (SF Bay Area)

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?

Percent saying not enough

- Federal government: All CA 55%, SF Bay Area 57%
- State government: All CA 48%, SF Bay Area 44%
- Local government: All CA 49%, SF Bay Area 43%

Source: PPIC Statewide Survey, July 2012
Lower concern about coastal/flood impacts than other threats

Percent saying they are very concerned about various impacts of global warming

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

<table>
<thead>
<tr>
<th>Strategy</th>
<th>U.S.</th>
<th>California</th>
<th>$= investment costs</th>
<th>R= regulatory program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand replenishment ($)</td>
<td>33</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seawalls ($)</td>
<td>33</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Induced retreat ($)</td>
<td>37</td>
<td>33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand dunes ($)</td>
<td>48</td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce new building [R]</td>
<td>51</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stronger building standards [R]</td>
<td>51</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prohibit rebuilding damaged structures [R]</td>
<td>47</td>
<td>55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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?

Many in CA want “government” to fund coastal actions

Who do you think should pay for the costs of preparing for the possible damage from climate change?

- The government
  - National: 38%
  - California: 50%

- People and businesses who would be affected
  - National: 60%
  - California: 48%

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?

- Coastal property taxes
- Everyone's income tax

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

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

Ellen Hanak: 415-291-4433, hanak@ppic.org

Thank you for your interest in this work.