

To what extent Climate Change is taken into account in Californian mobility policies?

IVM

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Outline

- 1) Context & challenges
- 2) To what extent CC effects are taken into account in mobility policies (Adaptation)
- 3) To what extent CC responsibility is taken into account in mobility policies (Mitigation)

1) Context & challenges

Challenges (1/5): Demography

Rapid demographic growth

California:

By 2030: +500,000 inhab / year

→2010: 38 millions inhab

→2020: 44 millions inhab

→2030: 48 millions inhab

→2050: 60 millions inhab

San Francisco Bay Area:

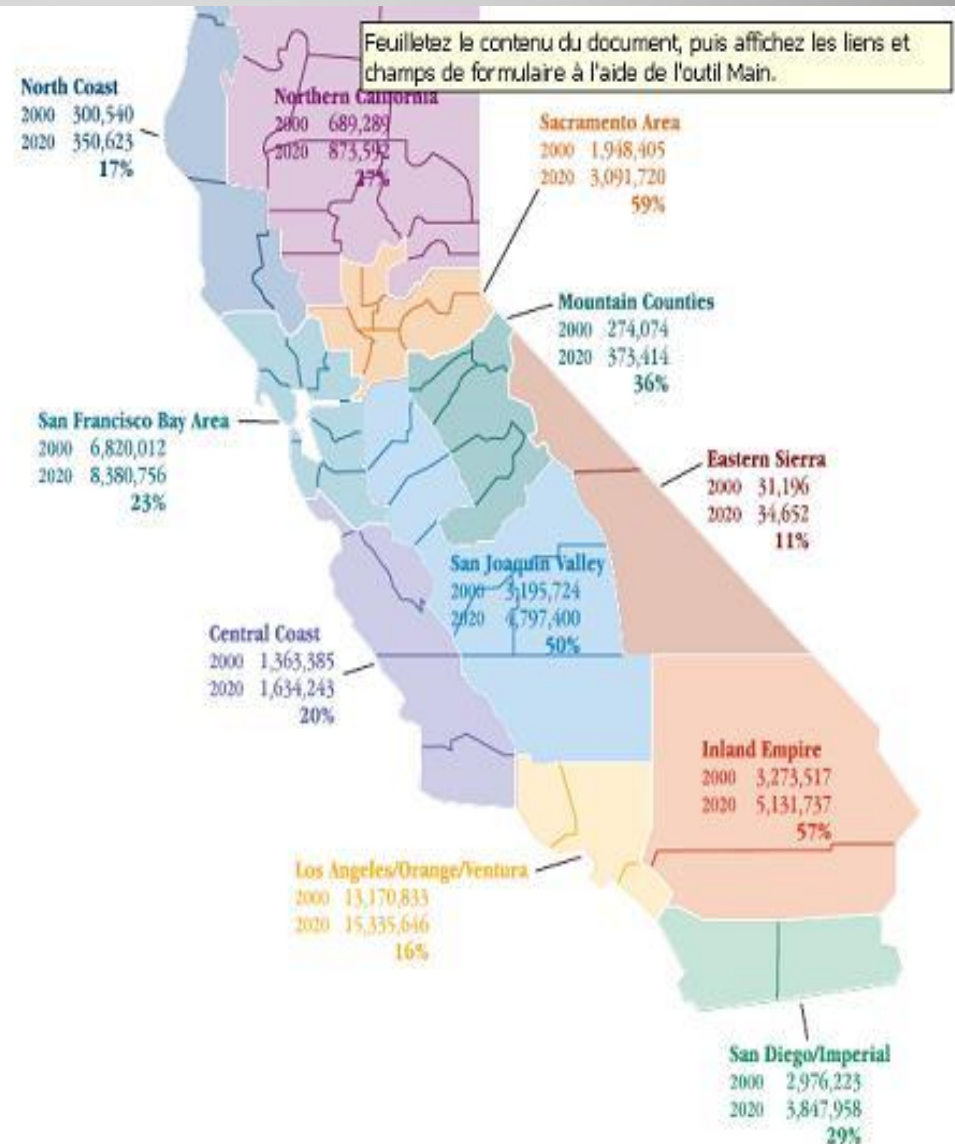
→2010: 7.2 millions inhab

→2035: 9 millions inhab
(+0.9%/year)

Ageing population

SFBA pop > 65

2005: 11% → 2035: 25%



California Challenges (2/5): jobs

California:

By 2020: +30% → 20 millions jobs

San Diego: +51%

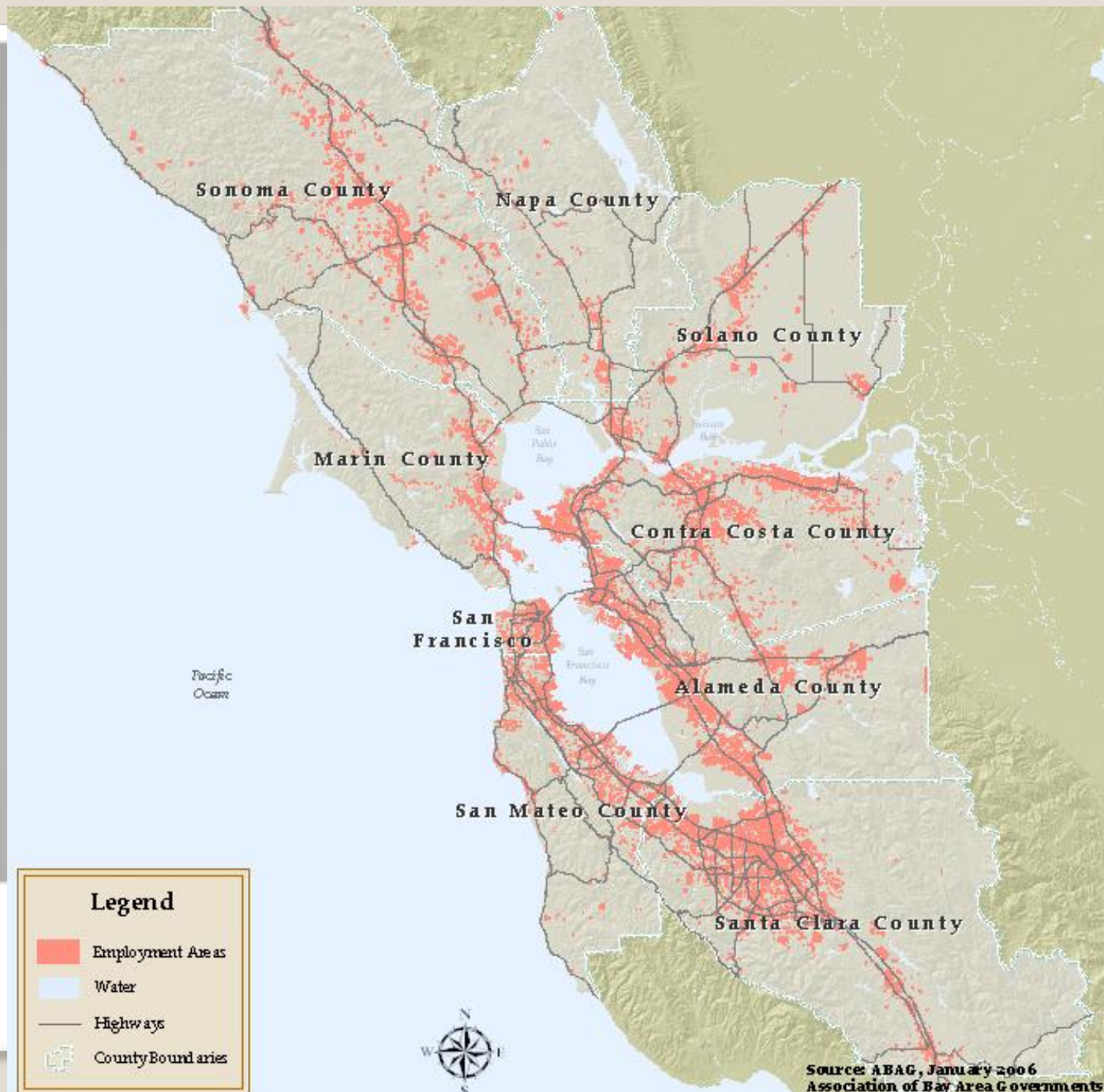
Sacramento Region: +40%

San Joaquin Valley: +40%

Los Angeles Region: +30%

San Francisco Bay Area:

2006: 3.5 millions jobs → 2035: 5,2 millions (+1.7% / year)



California Challenges (4/5): mobility

California

- 1 car for every licensed driver: 22 million cars, driving about 750 million miles a day
- 91% of Californian drivers drive alone to work
- Car trips represent 87% of all trips

By 2035:

Daily auto trips: + 32 percent

Vehicle miles traveled: +33 percent.

Daily hours of vehicle delay: + 135 percent,

San Francisco Bay Area:

- 21 million trips on an average weekday (3 trips per person each day)
- The most transit-rich region in California.: 188 million vehicle miles of service / 475 million passengers each year (Buses : 50% all service miles & 2/3 of passengers)
- Public transit: 6% of all trips Walking & biking account: 10 % of all trips

By 2035

Car trips : +32% & VMT: +33% → congestion :+ 103%

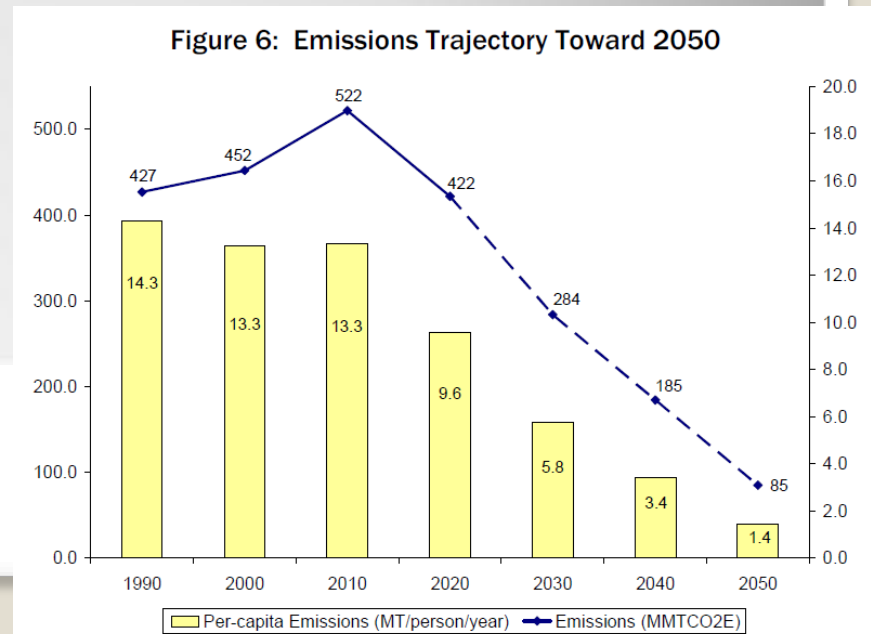
Inter-regional commuting : +100%

California Challenges (5/5): crisis

- State deficit: \$20.7 billion (\$6.3 billion for 2009–10 + \$14.4 billion for 2010–11)
 - State transit funding cuts: \$3 billion in the last 2 years
- Unemployment rate : 12,5%
- Home foreclosures: > 500.000

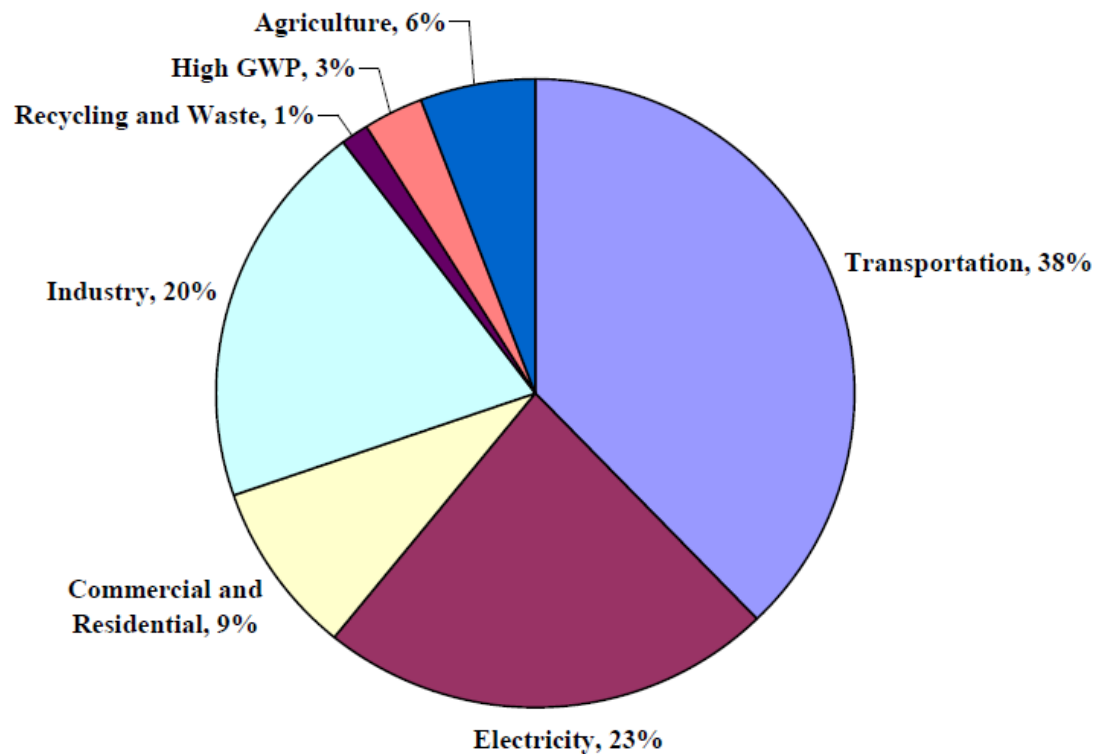
Challenges due to Climate Change

- Adaptation
 - Hazard & Vulnerability & Risk
- Mitigation

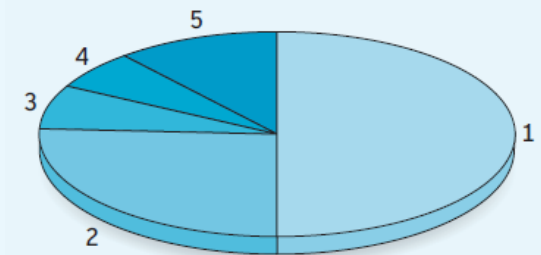


Transportation: key sector for mitigation strategy

Figure 1: California's Greenhouse Gas Emissions (2002-2004 Average)¹⁴



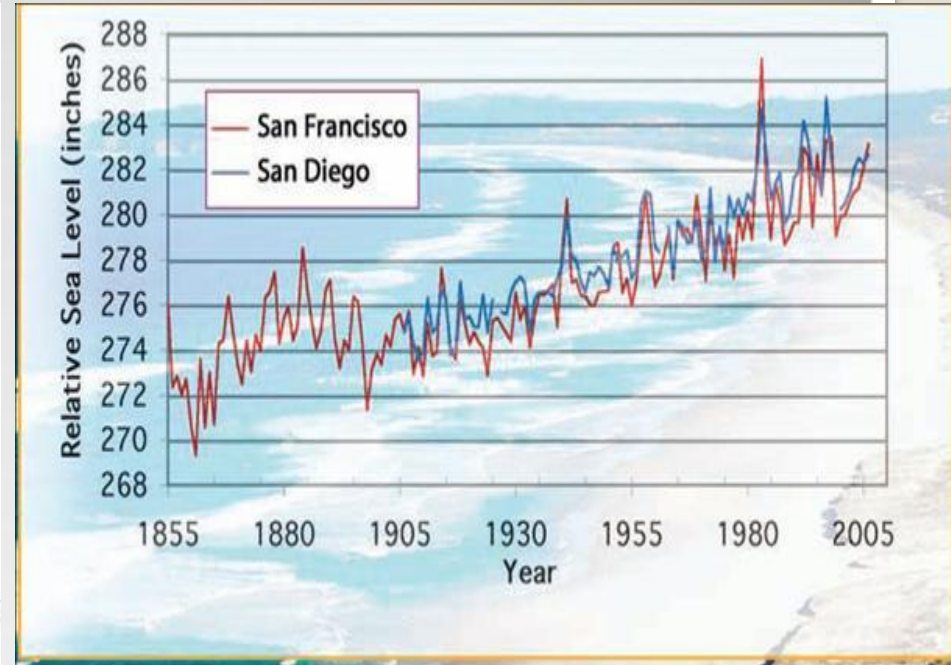
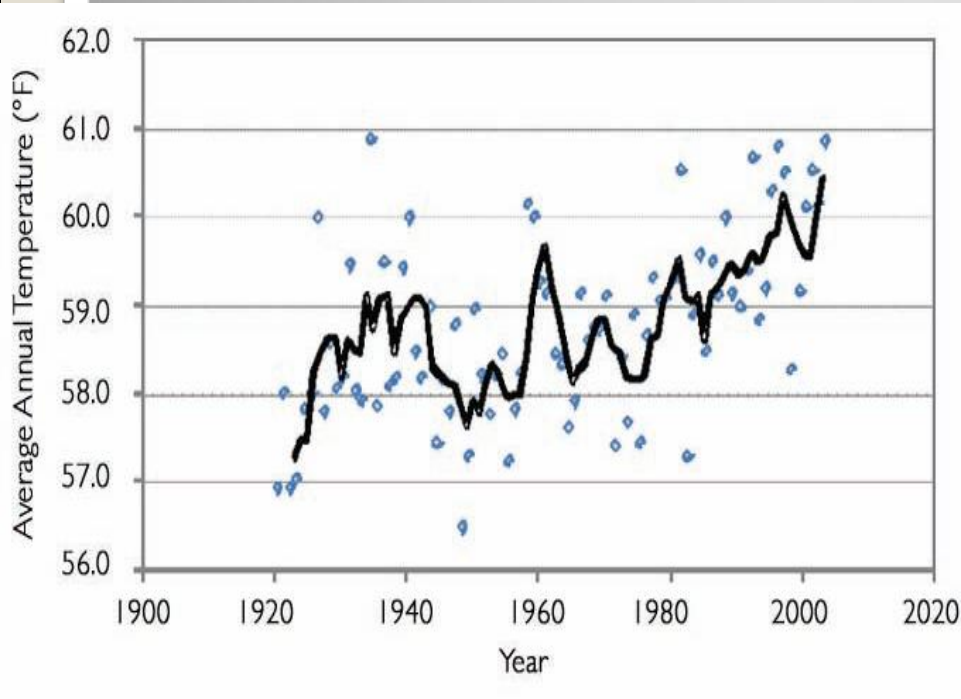
CO₂-Equivalent Emissions in the Bay Area, by Major Categories



Pollution Source	CO ₂ -Equivalent	Percent
1 Transportation	43	50%
2 Industrial/Commercial	22	26%
3 Power Plants	6	7%
4 Oil Refining	5	6%
5 Domestic	9	11%
Total	85	100%

Source: BAAQMD, 2006 Source Inventory of Greenhouse Gas Emissions
Emissions in million tons/year; data is for 2002

Adaptation challenges



Adaptation challenges



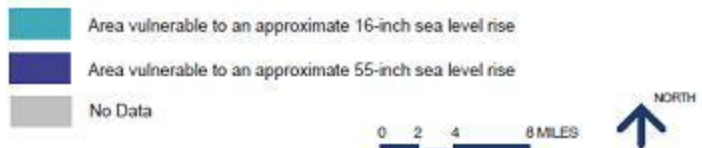
Adaptation challenges



Adaptation challenges



SHORELINE AREAS VULNERABLE TO SEA LEVEL RISE SAN FRANCISCO BAY AREA



SOURCE: Inundation data from Knowles, 2008. Additional salt pond elevation data by Slogel and Bachand, 2002. Aerial imagery is NAIP 2005 data.

San Francisco Airport

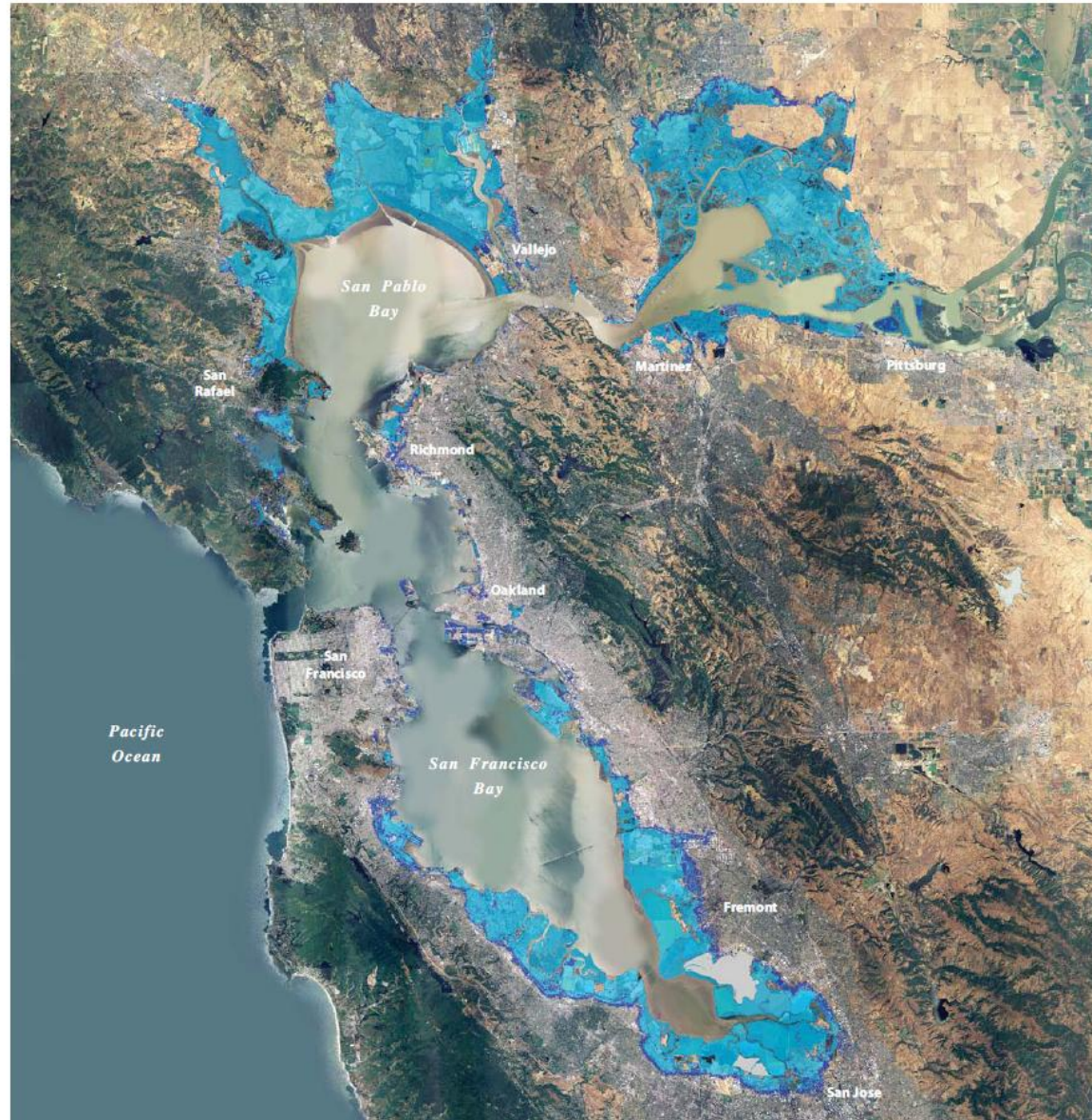


Oakland Airport



SAN FRANCISCO BAY AREA

- Area vulnerable to an approximate 16-inch sea level rise
- Area vulnerable to an approximate 55-inch sea level rise
- No Data



SOURCE: Inundation data from Knowles, 2008. Additional salt pond elevation data by Siegel and Bachand, 2002. Aerial imagery is NAIP 2005 data.

DISCLAIMER: Inundation data does not account for existing shoreline protection or wave activity. These maps are for informational purposes only. Users, by their use, agree to hold harmless and blameless the State of California and its representatives and its agents for any liability associated with its use in any form. The maps and data shall not be used to assess actual coastal hazards, insurance requirements, or property values or be used in lieu of Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA).

Adaptation challenges



2) To what extent CC effects are taken into account in mobility policies (Adaptation)

Adaptation Actions

Key questions:

- 1) What specific hazards climate change may entail ?
- 2) How vulnerable a sector, community, or ecosystem is to the projected climate change ?

Level of exposure to a hazard

Degree of sensitivity to that hazard

Ability to respond

Barriers to adaptation

→ 2 ways:

→ reducing *vulnerability* to changing conditions

→ increasing *resiliency*: ability to bounce back once the changes are felt

State Adaptation actions

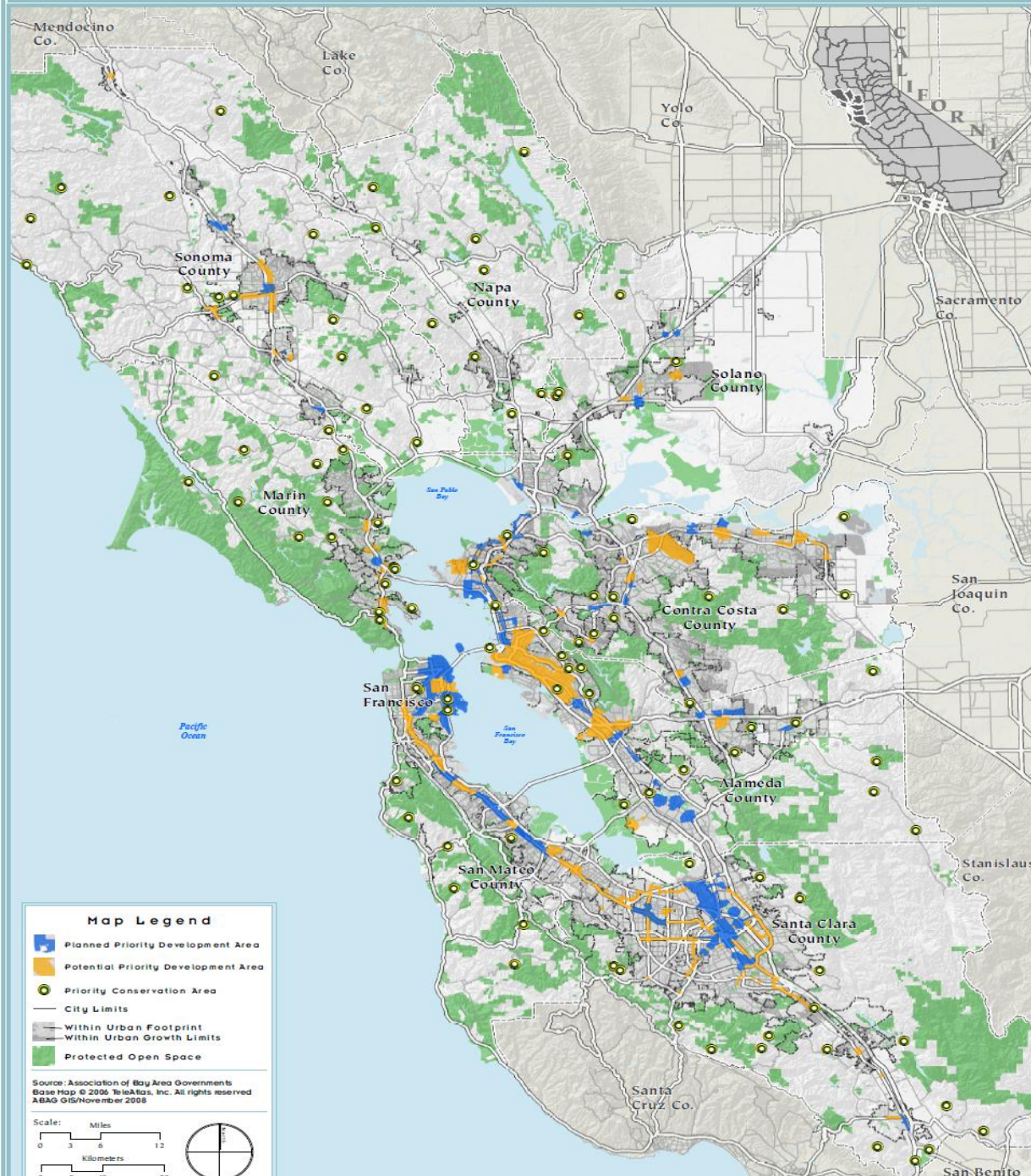
To date, state's main effort = to generate information on the nature of climate-related risks.

Biennial statewide assessment of climate impacts: 2006, 2009.

Just beginning to address the implications for adaptation policy.

California Resources Agency develops California's first comprehensive Climate Adaptation Strategy (CAS)





Regional Adaptation Actions

3) To what extent CC responsibility is taken into account in mobility policies (Mitigation)

Mitigation actions

Mitigation actions:

**AB32: SB375 + AB1493 + LCFS +
many (small) other programs**

Mitigation actions

California cap-and-trade program

- to be developed by January 1, 2011, beginning in 2012.

first compliance period (2012):

- Electricity generation, including imports not covered by a WCI
- Large industrial facilities (over 25,000 per year)

second compliance period (2015):

- **Upstream treatment of transportation**, industrial, commercial and residential fuel combustion regulated where the fuel enters into commerce

Auction

- Minimum 10% in 2012, 25% in 2020

Mitigation actions

- **Light-Duty Vehicle GHG Standards**

- AB1493:

- CARB adopted AB1493 in 2004 and applied to U.S. EPA for a waiver under the federal Clean Air Act to implement it
 - The Pavley regulations incorporate both
 - performance standards: passenger car fuel 49.1 mpg & light duty trucks 32.7 mpg
 - and market-based compliance mechanisms.

- If not waiver => feebates

- Zero emission vehicle (ZEV) program require increasing numbers of ZEVs and near-zero emission vehicles

- Vehicle Efficiency Measures: to ensure that tires are properly inflated when vehicles are serviced

Mitigation actions

- **Light-Duty Vehicle GHG Standards**
 - **Low Carbon Fuel Standard (LCFS):**
 - 2007, reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020
- risk of leakages (Pavley/ CAFE; LCFS/CAFE)
- could be offset by increase in VMT in the LT
- **SB375: regional target + smart growth law**

SB375: Regional GHG reduction targets

Regional GHG reduction targets for cars and light trucks for 2020, 2035 and for 2050

- California Air Resource Board (CARB), in consultation with 18 Metropolitan Planning Organizations (MPOs) :
 - draft targets by June 10, 2010
 - final targets by September 30, 2010

- Incentives, “stick and carrot”
 - SB 732: SB 375’s Companion Funding Bill
 - Transportation Funding Incentives
 - Environmental Review Incentives

- Models & Best Practices Managements spreadsheet

Mitigation actions

- 1 Garantator for environment: ARB
- Transportation: ASIF framework
(IEA; Schipper et al., 2001)

Emissions =

[A. Activity (pkm=trips x km)] → SB375

X [S. mode Share (% pkm)] → ZEV, Rail, Tt(SB375)

X [I. fuel Intensity (quantity per Km)] → AB1493, Veh Eff Prog

X [F. Fuel mix (emission per quantity)] → LCFS

Percent of
Tt GHG
reduction

Percent of
Total GHG
reduction

9.6%

3,6%

66.2%

24.5%

24.1%

8,9%

MERCI

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