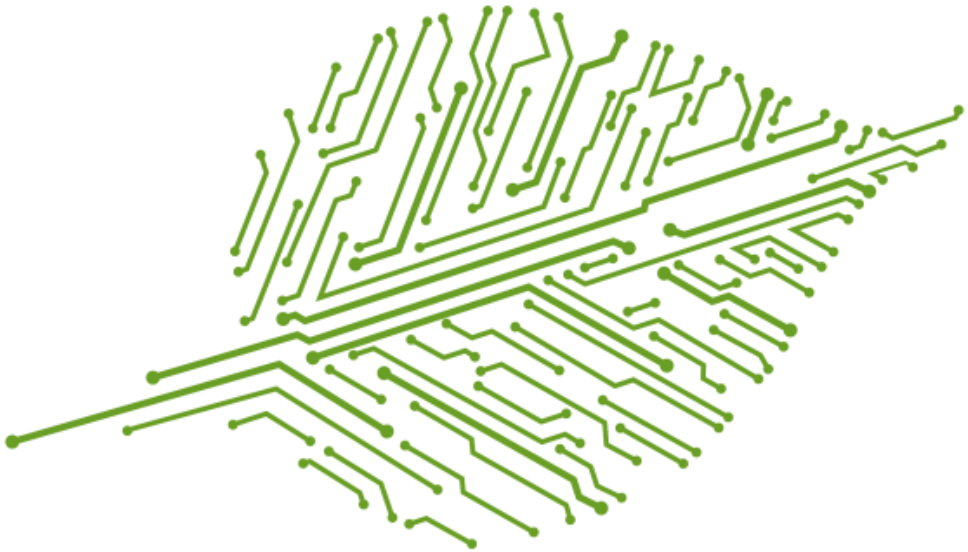


SILICON VALLEY 2.0

Senate Environmental Quality Committee

29 MAY 2015

County of Santa Clara Office of Sustainability

THE Strategic Growth Council

AECOM

THE GENESIS OF SILICON VALLEY 2.0

THE 5 FAULTY PRESUMPTIONS = ADAPTATION DEFERRED

- It is too speculative
- It is too far away
- It has no present benefits
- It costs too much
- (Re) Insurance and FEMA Will Take Care of It

SILICON VALLEY 2.0 PROJECT GOALS

A regional effort to minimize the anticipated impacts of climate change

- Identify driving climate stressors
- Identify assets threatened by climate change and the magnitude of the potential economic, social, and environmental impacts
- Identify potential strategies to minimize these impacts
- Develop a geo-economic decision-support tool
- Build the region's top priorities and strategies for an effective regional scale adaptation response
- Facilitate and coordinate regional climate adaptation planning and implementation efforts for Silicon Valley

SILICON VALLEY 2.0

KEY REGIONAL CLIMATE CHANGE VARIABLES


Sea Level Rise


Coastal Storm Surge


Riverine Flooding


Wildfire


Extreme Heat

VULNERABILITY ASSESSMENT

METHODOLOGY

- Analyses the vulnerability of each asset sector to each climate variable
- Comprised of three parts:

(1) Exposure analysis

- Based on GIS overlays of asset locations + climate variables

(2) Sensitivity analysis

- Sensitivity ratings (i.e. the impact of a climate variable on the asset's functionality) defined from literature reviews, expert interviews, and input from the TAC and other technical experts

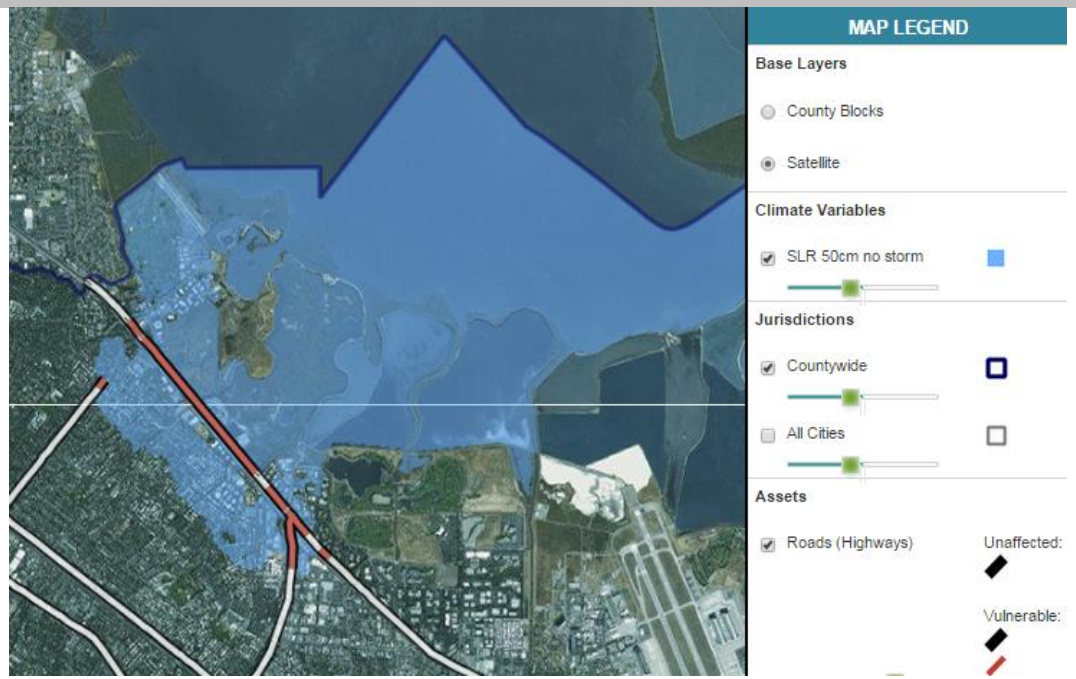
(3) Adaptive capacity

- Based on literature gap analysis

VULNERABILITY ASSESSMENT EXAMPLE

MILES OF HIGHWAY BY CLIMATE VARIABLE AND TIMEFRAME

- Exposure analysis: GIS based (from Caltrans, 2013)
- Sensitivity analysis:
  - High: roads permanently inundated
  - Medium: traffic delays
- Adaptive capacity: Low



ROADS (HIGHWAYS)	SLR	SLR + STORM SURGE	ADDITIONAL IMPACTS CAUSED BY STORM SURGE	RIVERINE FLOODING	WILDFIRE	EXTREME HEAT
Mid-Century Vulnerability	2	3	1	67	65	None
End-of-Century Vulnerability	3	6	3	67	65	288

PRIVATE/PUBLIC PARTICIPATION

SILICON VALLEY **2.0**

TECHNICAL ADVISORY COMMITTEE

KEY CONTRIBUTORS + PARTNERS

- Bay Area Joint Policy Committee
- Bay Area Climate Collaborative
- Bay Conservation and Development Commission
- City of Cupertino
- City of Mountain View
- City of San Jose
- Joint Venture Silicon Valley
- Pacific Gas & Electric
- Santa Clara County Public Health Department
- Santa Clara Valley Transportation Authority
- Santa Clara Valley Water District
- Sustainable Silicon Valley
- U.S. Army Corp of Engineers
- U.S. Geological Survey

NELSON NYGAARD raimi+associates the nature of community Point Blue AECOM

KEY CONTRIBUTORS & PARTNERS

LOCAL PARTNERS + STATE AGENCY SUPPORT

Working Groups

- **Ecosystems:** University of California Berkeley; Creekside Center for Earth Observation:; Point Blue; County of Santa Clara Planning Department; Santa Clara Valley Habitat Agency; ICF International
- **Public Health:** County of Santa Clara Public Health Department; Valley Medical Center; County Planning and Development Department Working Group for the Public Health Element of the General Plan
- **Solid Waste:** City of Sunnyvale; City of Palo Alto; Zanker Recycling

Project Partners

City of Palo Alto; FEMA; NASA-Ames Earth Science Division; FEMA; SPUR, Santa Clara County Department of Emergency Services; Association of Bay Area Governments, Santa Clara County Association of Planning Officials; Silicon Valley Leadership Group

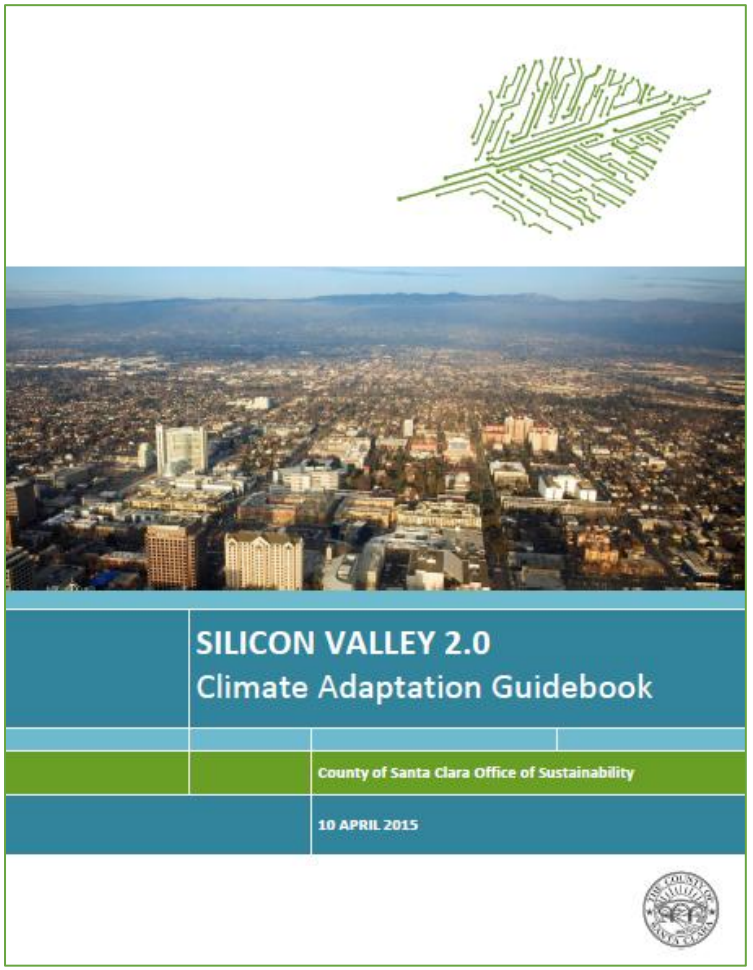
GOVERNOR'S OFFICE OF PLANNING AND RESEARCH · STATE OF CALIFORNIA

Abandoned Mine Lands
CALIFORNIA CONSERVATION

PUBLIC UTILITIES COMMISSION · EUREKA · STATE OF CALIFORNIA

CLIMATE ADAPTATION GUIDEBOOK

- A living Guidebook that provides a recommended set of short, mid, and long term strategies for implementation
- Contains recommended strategies containing details on timing, partners needed, co benefits, implementation steps and precedents
- Helps establish a proactive framework for collaboration between the County, cities, agencies, stakeholders



ECONOMIC CONSEQUENCES

METHODOLOGY

» RATING SCALE (ACROSS ALL 4 CRITERIA)

- Dynamic rating scale uses percentages of economic loss that can be applied across different criteria and jurisdictions.
- Uses the economic loss experienced in Santa Clara County during the 2008–2009 recession as the threshold for an “extreme” economic consequence rating (i.e., 8% of jobs were lost).

Ranges of Percent Economic Loss for Ratings

Low	0.0%	to less than	0.1%
Moderate	0.1%	to less than	0.3%
High	0.3%	to less than	1.6%
Very High	1.6%	to less than	8%
Extreme	8%	or greater	

ECONOMIC CONSEQUENCES

METHODOLOGY

» RATING SCALE, AS APPLIED COUNTYWIDE

- Rating scale for Replacement Costs, Interruption of Economic Activity, and Operational Costs based on estimated Countywide GDP
- Rating scale for loss of fiscal revenue based on estimated County and local jurisdiction property and sales tax revenue
- *NOTE: all values = 2014$*

Rating Scale for Replacement Costs, Interruption of Economic Activity, and Operational Costs

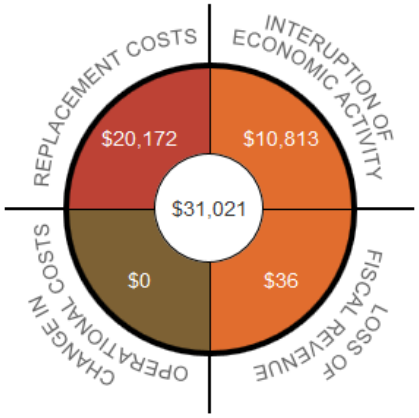
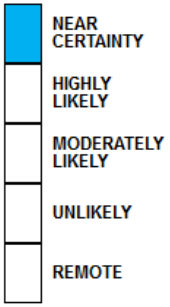
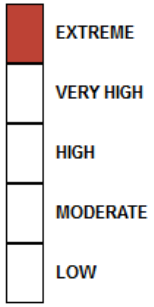
Low	$1	to less than	$100 million
Moderate	$100 million	to less than	$500 million
High	$500 million	to less than	$3 billion
Very High	$3 billion	to less than	$13 billion
Extreme	$13 billion	or greater	

Rating Scale for Fiscal Revenue Loss

Low	$1	to less than	$1,000,000
Moderate	$1,000,000	to less than	$4,000,000
High	$4,000,000	to less than	$18,000,000
Very High	$18,000,000	to less than	$90,000,000
Extreme	$90,000,000	or more	

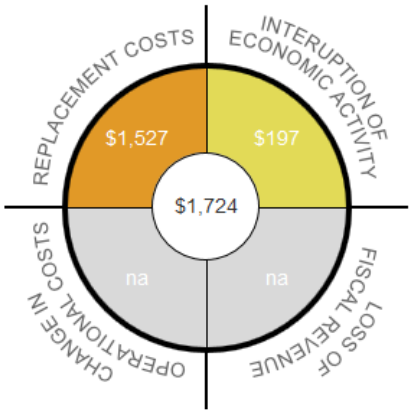
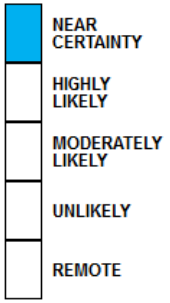
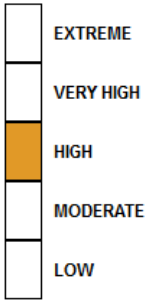
RISK FOR BUILDINGS / COUNTYWIDE

SEA LEVEL RISE [100 CM] + STORM SURGE [100-YEAR]

CLIMATE VARIABLE	ASSET	CONSEQUENCE	LIKELIHOOD	RISK
SEA LEVEL RISE + STORM SURGE	BUILDINGS			

RISK FOR WASTEWATER TREATMENT / COUNTYWIDE

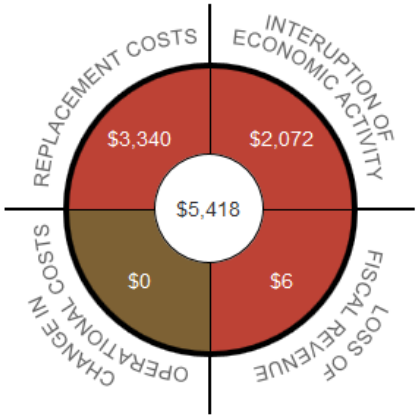
SEA LEVEL RISE [100 CM] + NO STORM SURGE

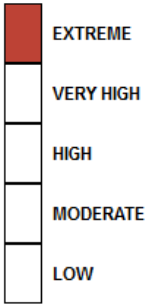
CLIMATE VARIABLE	ASSET	CONSEQUENCE	LIKELIHOOD	RISK
SEA LEVEL RISE + STORM SURGE	WASTEWATER TREATMENT			

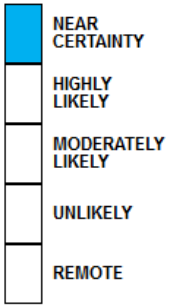
RISK FOR BUILDINGS / PALO ALTO

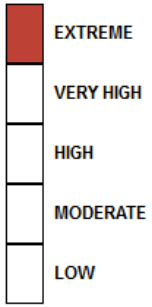
SEA LEVEL RISE [100 CM] + STORM SURGE [100-YEAR]

CLIMATE VARIABLE	ASSET	CONSEQUENCE	LIKELIHOOD	RISK
SEA LEVEL RISE + STORM SURGE	BUILDINGS			









Rating Scale for Replacement Costs, Interruption of Economic Activity, and Operational Costs

Low	$1	to less than	$10,000
Moderate	$10,000	to less than	$100 million
High	$100 million	to less than	$300 million
Very High	$300 million	to less than	$1.4 billion
Extreme	$1.4 billion	or greater	

Rating Scale for Fiscal Revenue Loss

Low	$1	to less than	$40,000
Moderate	$40,000	to less than	$200,000
High	$200,000	to less than	$1 million
Very High	$1 million	to less than	$5 million
Extreme	$5 million	or more	

“ALL THE ARROWS IN THE QUIVER”

PARTNERSHIPS, GUIDANCE, TOOLS AND PROGRAMS

» **FOUNDATIONAL DATA**

- Geospatial – maps impacts of climate vulnerabilities
- Geo-economic – connects environmental impacts to social assets and economic exposure

» **IMPLEMENTATION**

- Engagement frameworks
  - Owners, operators, policy-makers, private sector, regulatory agencies and capital projects drivers
- Structured Timeframes
  - Near- and medium-term “attainables”/measurables
  - Deliberate long-term planning (adaptation does not lend itself to deferred planning or reactive measures)
- Leaders and Teams
  - Who is responsible? Who is necessary? Who benefits?
- Tracking and Reporting
  - “Implementation Data” propels and improves implementation