

THE QUEST FOR COOPERATION IN COMPLEX GOVERNANCE SYSTEMS

MARK LUBELL, UC DAVIS

[CENTER FOR ENVIRONMENTAL POLICY AND BEHAVIOR](#)

MNLUBELL@UCDAVIS.EDU

ENVIRONMENTALPOLICY.UCDAVIS.EDU

@ENVPOLICYCENTER



“The theory of collective action is the central subject of political science. It is the core of the justification for the state.” Ostrom, 1998, Presidential Address to APSA

...and sustainability, human behavior, and complex adaptive systems....



Data Source: Protected lands: CPAD 2017a, Baylands: SFEI, Infrastructure: CalTrans, Vegetation: CalVeg/
Conservation Lands Network, Wetlands: USFWS.
Project layers: EcoAtlas, IRWM, Sonoma Creek TMDL, Adapting to Rising Tides Project.
Imagery: NAIP 2012
North American Datum 1983, UTM Zone 10N
Map created September 2017 by Laura Daly

0 15 30 60
Kilometers

IRWM

- Public Land
- Urban Area
- County Boundary

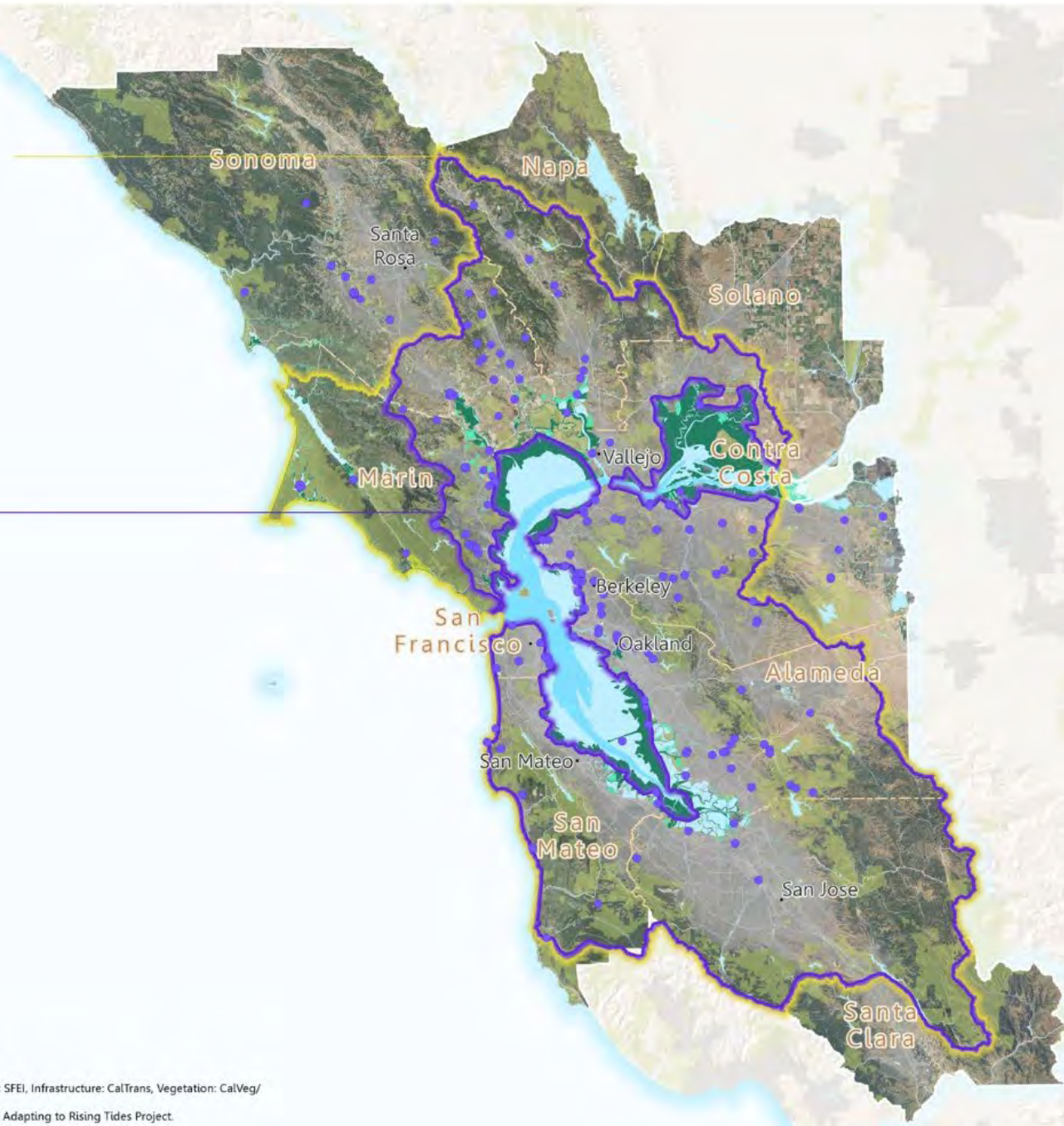
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0 15 30 60 Kilometers



IRWM



SF Bay Joint Venture






SF Bay Joint Venture - Project Sites

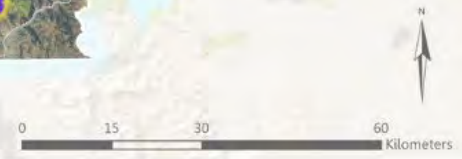


Wetland Type

-  Estuarine and Marine Wetland
-  Freshwater Emergent Wetland

-  Public Land
-  Urban Area
-  County Boundary

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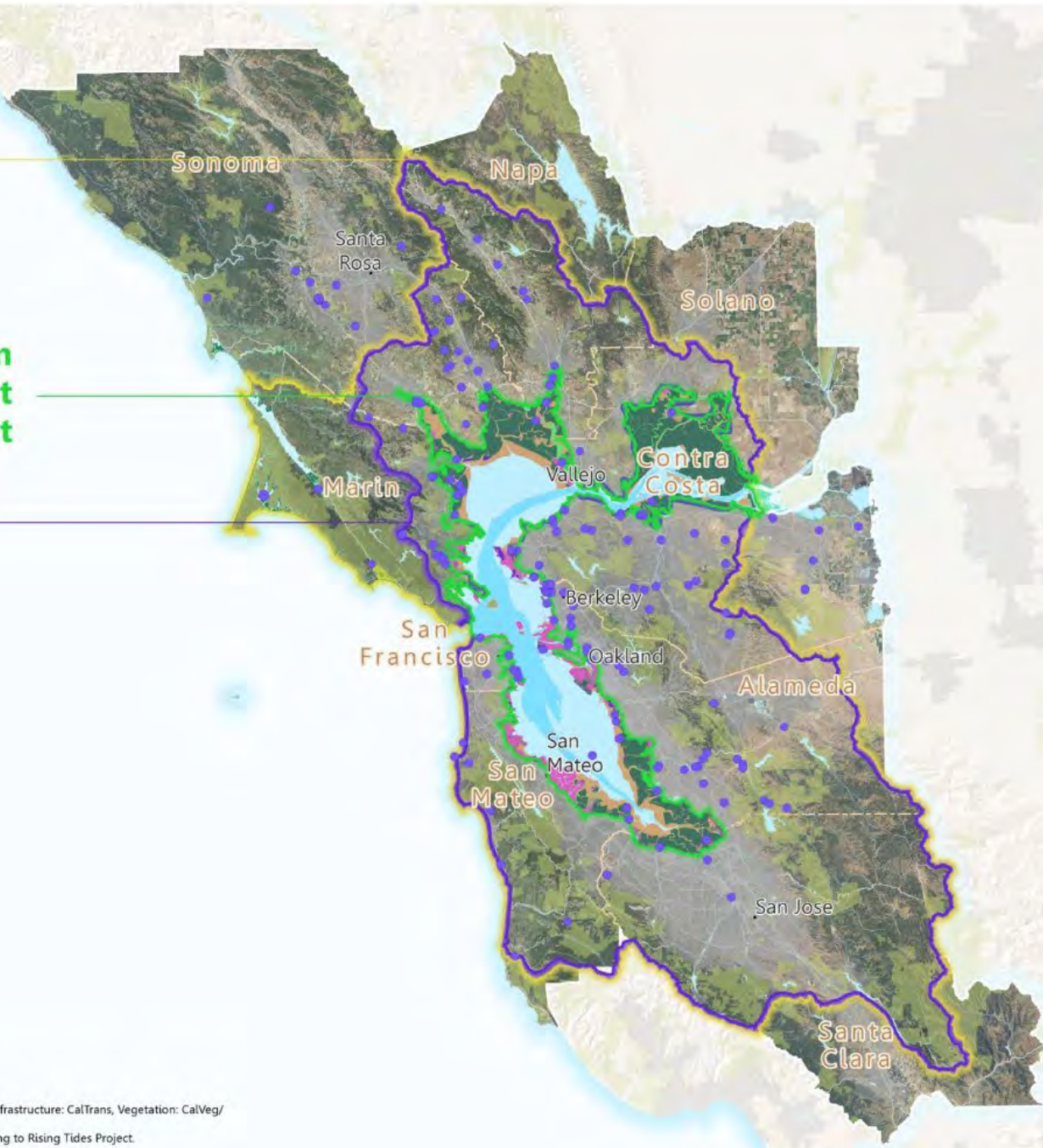
IRWM

Baylands Ecosystem
Habitat
Goals Project

SF Bay
Joint Venture

- Baylands**
- Shallow Bay
 - Deep Bay
 - Filled Bayland
 - Fully Tidal
 - Fully Tidal Bayland
 - Developed Island or Fill
 - Diked
-
- Public Land
 - Urban Area
 - County Boundary

Data Source: Protected lands: CPAD 2017a, Baylands: SFEI, Infrastructure: CalTrans, Vegetation: CalVeg/
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IRWM

Sonoma Creek TMDL

Baylands Ecosystem
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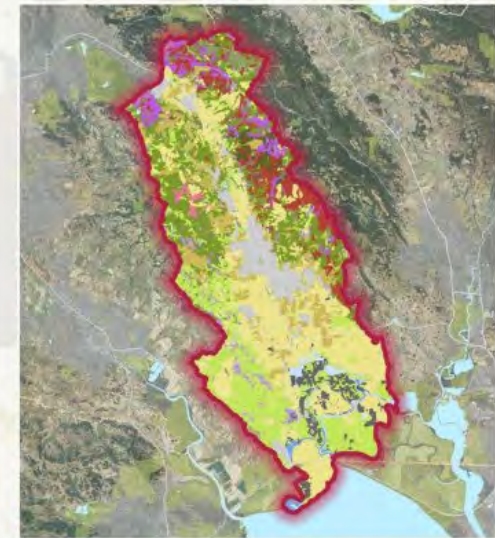
Vegetation

- California Bay Forest
- Coast Live Oak Forest / Woodland
- Coastal Salt Marsh / Coastal Brackish Marsh
- Douglas Fir Forest
- Grasslands
- Knobcone Pine Forest
- Mixed Chaparral
- Montane Hardwoods
- Permanent Freshwater Marsh
- Redwood Forest
- Barren/Rock

- Cultivated
- Rural Residential
- Urban

- Public Land
- Urban Area
- County Boundary

Data Source: Protected lands: CPAD 2017a, Baylands: SFEI, Infrastructure: CalTrans, Vegetation: CalVeg/
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IRWM

Sonoma Creek TMDL

**Baylands Ecosystem
Habitat
Goals Project**

**SF Bay
Joint Venture**

**Alameda County
ART Project**

Inundation (ft)

- 0 - 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 - 12
- 12+

- Public Land
- Urban Area
- County Boundary

Data Source: Protected lands: CPAD 2017a, Baylands: SFEI, Infrastructure: CalTrans, Vegetation: CalVeg/
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IRWM

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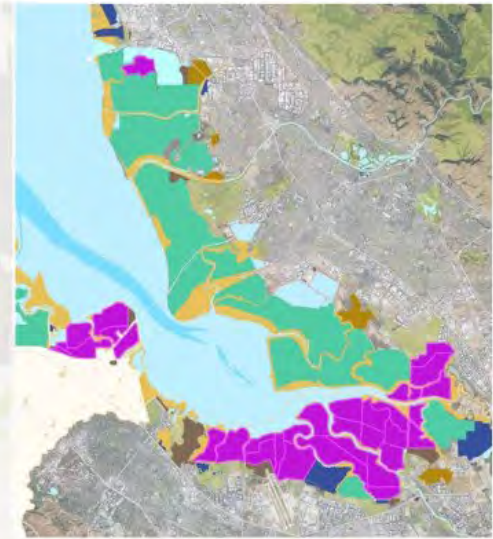
South Bay
Salt Pond
Restoration
Project

Habitat

- Salt Pond
- Inactive Salt Pond
- Storage or Treatment Basin
- Managed Marsh
- Tidal Marshes
- Farmed or Grazed Bayland

- Public Land
- Urban Area
- County Boundary

Data Source: Protected lands: CPAD 2017a, Baylands: SFEI, Infrastructure: CalTrans, Vegetation: CalVeg/
 Conservation Lands Network, Wetlands: USFWS.
 Project layers: EcoAtlas, IRWM, Sonoma Creek TMDL, Adapting to Rising Tides Project.
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IRWM

Sonoma Creek TMDL

**Baylands Ecosystem
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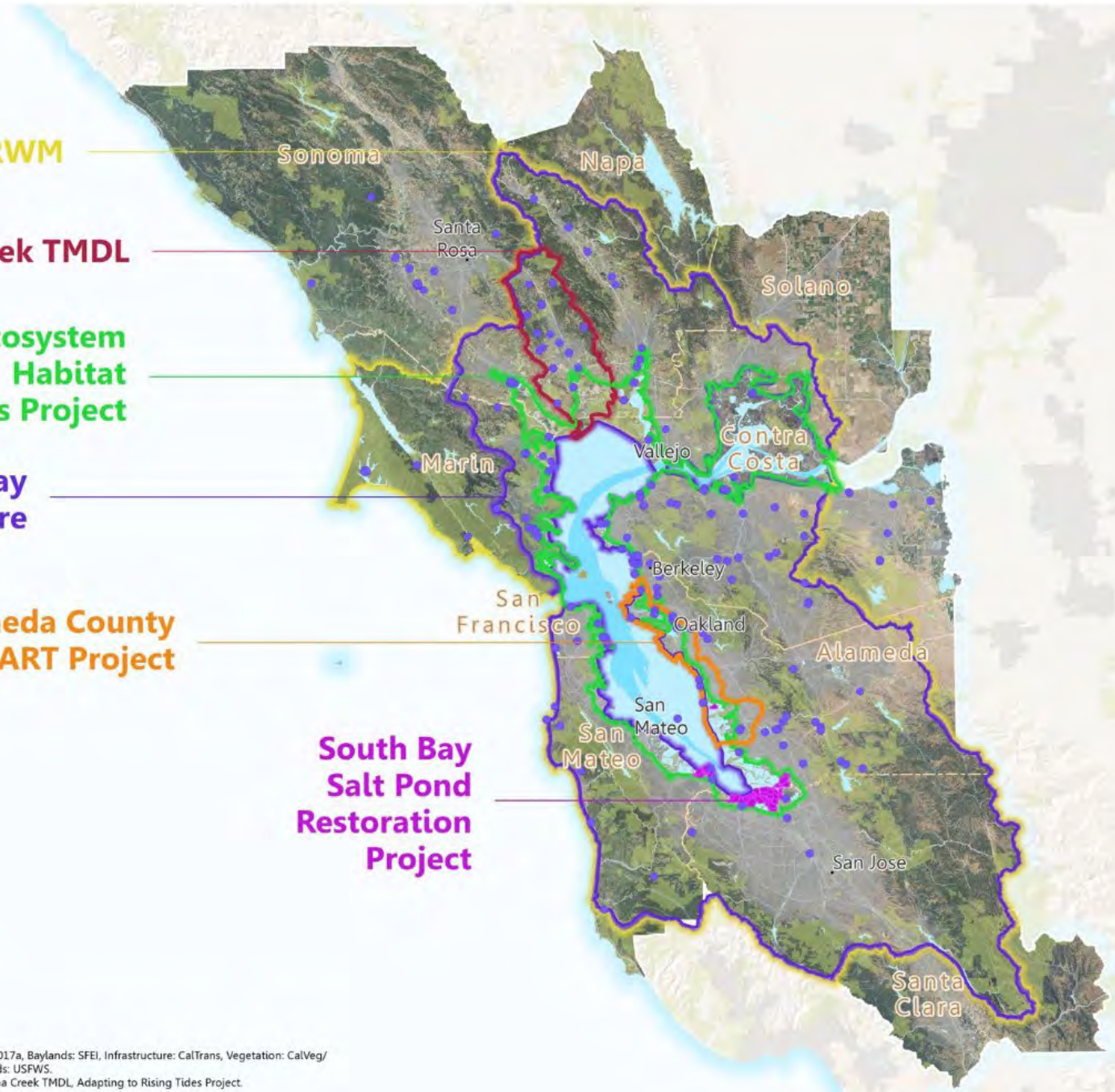
Public Land

Urban Area

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0 15 30 60 Kilometers

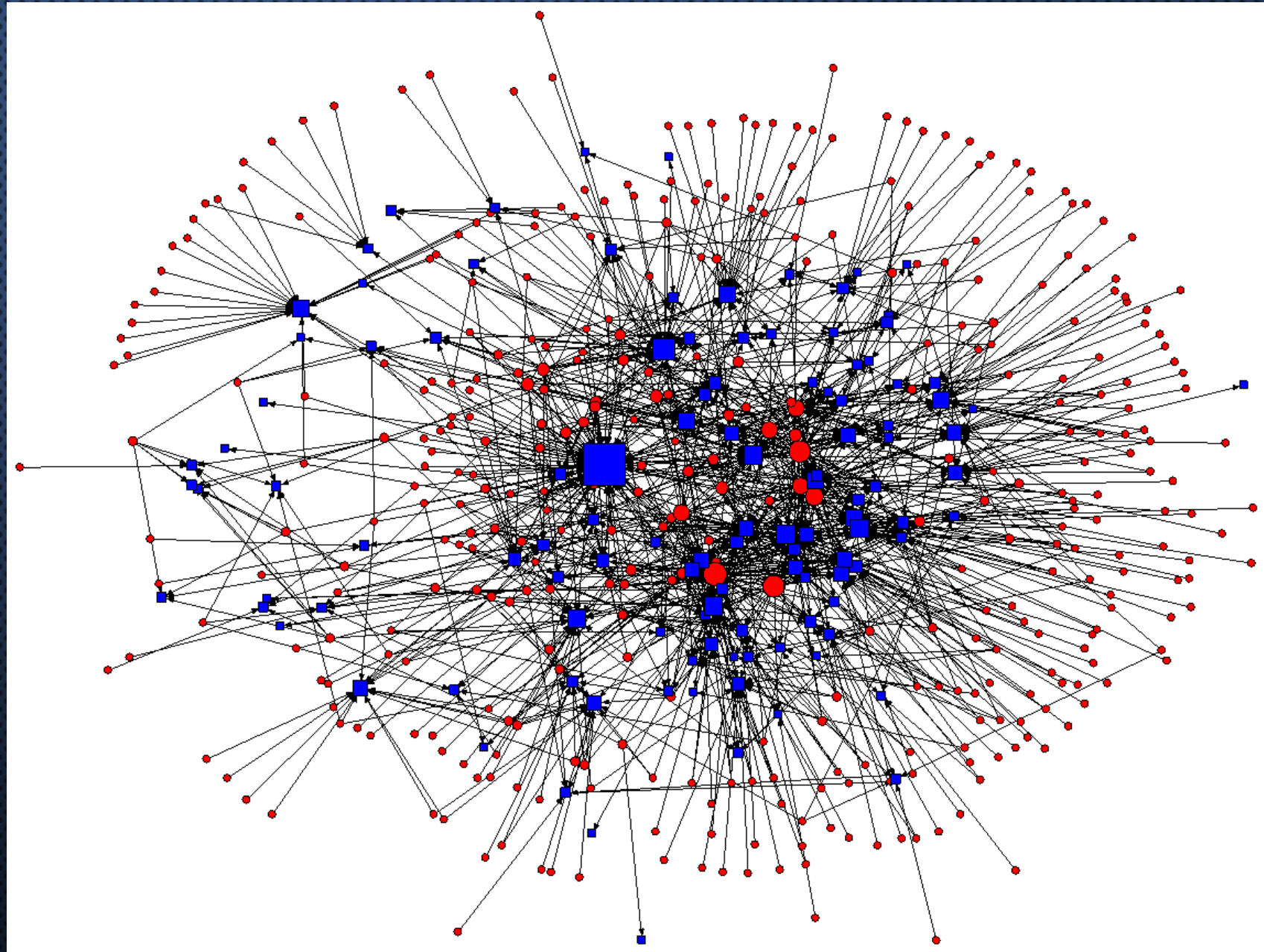


IDENTIFYING POLICY FORUMS

THERE ARE MANY DIFFERENT FORUMS AND PROCESSES AVAILABLE FOR PARTICIPATING IN WATER MANAGEMENT AND PLANNING IN THE BAY AREA. PLANNING PROCESSES ARE DEFINED AS FORUMS WHERE STAKEHOLDERS MAKE DECISIONS ABOUT WATER MANAGEMENT POLICIES, PROJECTS, AND FUNDING. IN THE SPACES BELOW, PLEASE LIST THE THREE MOST IMPORTANT PLANNING/MANAGEMENT FORUMS AND/OR PROCESSES THAT YOU YOURSELF HAVE PARTICIPATED IN DURING THE LAST THREE YEARS.

58% of respondents answered this question; majority nominated three institutions

THE BAY AREA ECOLOGY OF WATER MANAGEMENT GAMES



Lubell, M., Robins, G. and Wang, P., 2014. Network structure and institutional complexity in an ecology of water management games. *Ecology and Society*, 19(4).

The Reality of Environmental Governance....Past, Present, Future

- Polycentric and fragmented
- Complex adaptive systems
- Multi-level, cross-scale
- Multiple actors, institutions, and collective action problems

“Public policy is almost always a mess. Let's acknowledge the inevitable and figure out how to manage a messy situation. Trying to define a policy “problem” is hard enough. Trying to find a solution is even harder. Trying to do either in a policy-making structure **in which everyone is involved, *but nobody is in charge, is nearly impossible.*”**

--Phil Isenberg, 2016

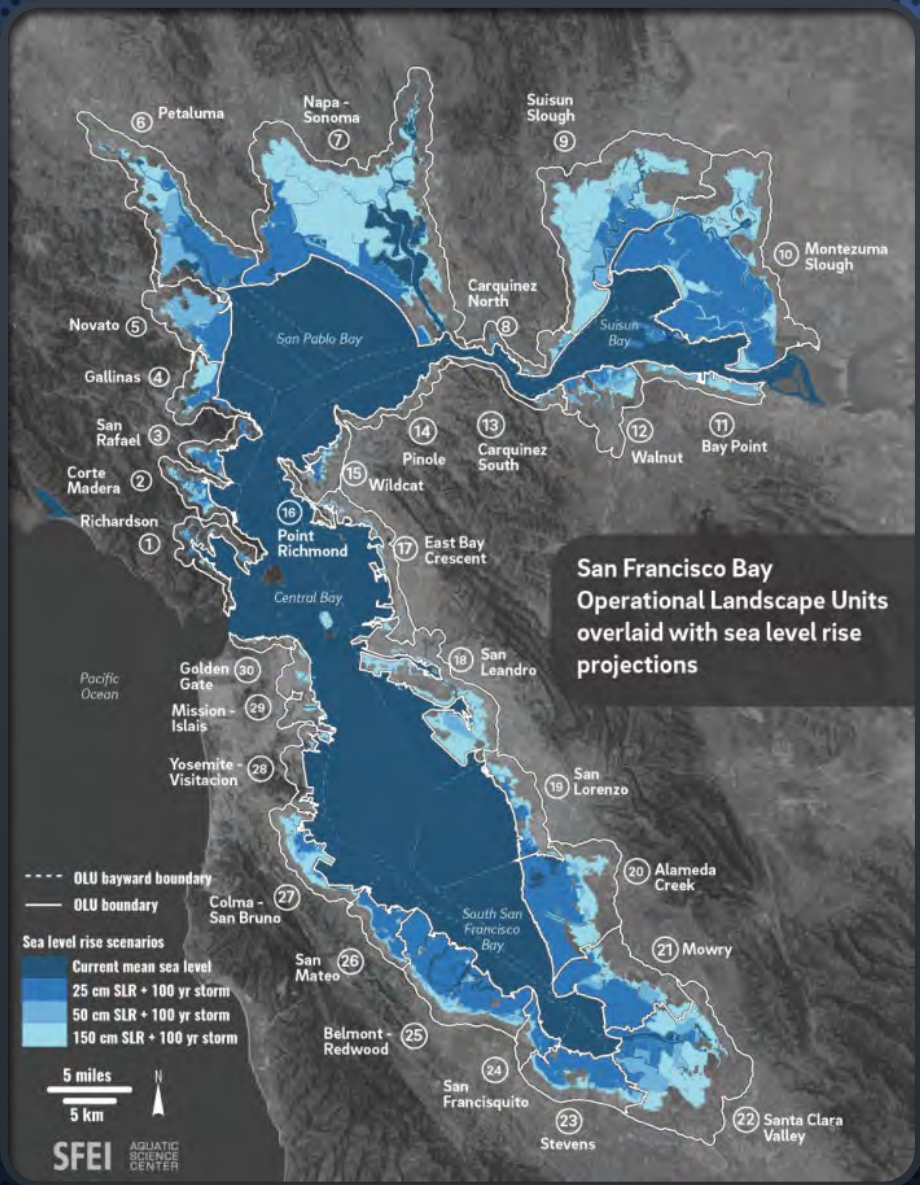
“To explain the world of interactions and outcomes occurring at multiple levels, we also have to be willing to deal with complexity instead of rejecting it.” Ostrom 2010, Nobel Address



“Findings reveal that the broad base of TD initiatives creates multiple access points to the talent pipeline for adolescents. However, because the heterarchical structure involves many actors, the unintended consequences are often related to (im)properly managing training and competition loads. **There is a need therefore for well-developed coordination mechanisms and good communication between the key actors involved.**”

Bjørndal, C.T., Ronglan, L.T. and Andersen, S.S., 2017. Talent development as an ecology of games: a case study of Norwegian handball. *Sport, Education and Society*, 22(7), pp.864-877.

SEA LEVEL RISE ADAPTATION: A NEW COLLECTIVE ACTION PROBLEM



RESOURCE SYSTEM: COLLECTIVE ACTION PROBLEMS CREATED BY INTERDEPENDENCE

Panel 1: Community Clustering



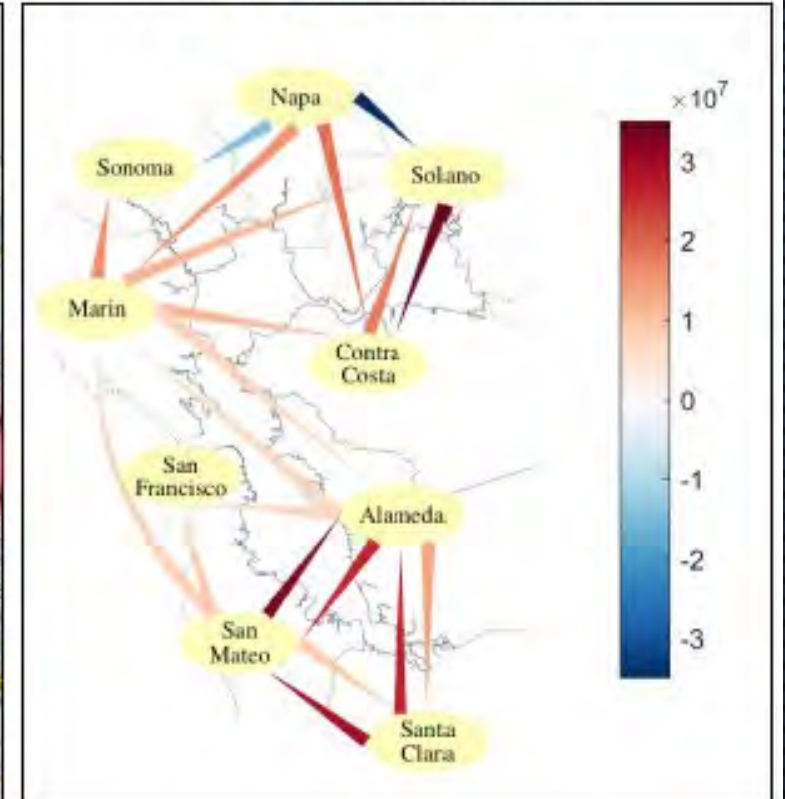
Shared Experience

Panel 2: Regional Traffic Response



Vulnerability
Interdependence

Panel 3: Physical Interactions



Adaptation
Interdependence

Not shown: Policy interdependence

GOVERNANCE RESEARCH SUMMARY

- MULTI-LEVEL INTERVIEWS FROM REGIONAL TO LOCAL, GOVERNMENT AND NON-GOVERNMENTAL STAKEHOLDERS
- 43 INDIVIDUALS INTERVIEWED AT AVERAGE OF 1 HOUR EACH.
- GOVERNANCE SOLUTIONS FOCUS GROUPS: NORTH BAY, SOUTH BAY, CENTRAL BAY
- REPORT 2017: "THE GOVERNANCE GAP: CLIMATE ADAPTATION AND SEA-LEVEL RISE IN THE SAN FRANCISCO BAY AREA"
- GOVERNANCE GAP SURVEY: JUNE 25-SEPT 10, 2018. 722 RESPONDENTS.
- VANTAGGIATO AND LUBELL, 2020. TRANSPORTATION CASE STUDIES
- ONGOING PARTICIPANT OBSERVATION: LUBELL ON BAY ADAPT LEADERSHIP GROUP
- ONGOING RESEARCH INCLUDING BOOK, ANALYSIS OF ON THE GROUND PROJECTS, GRADUATE TRAINING GRANT, COMPARATIVE STUDIES

A governance survey of involved stakeholders

We launched the survey on July 1st, 2018 and closed it on August 31st, 2018.

The survey comprised three main parts:

- stakeholders' perceptions of the problem;
- stakeholders' preferences concerning the actions;
- stakeholders' collaborative activities, within forums and bilaterally with other organizations.

We obtained 722 replies (22% response rate). Respondents represent 385 organizations (65 are involved in an individual capacity; 38 failed to disclose).

The Keys to Cooperation for Regional Sea Level Rise Adaption

Proposed Solution Concepts (Many of these now happening in BayAdapt)

Network Governance

1. Shared governance (“stay in your own lane”)
2. Lead agency (BCDC or other existing agency)
3. New “network” administrative agency (e.g.; Delta Stewardship Council)
4. **Climate Adaptation Vision or Commission (e.g. Delta Vision, Governor's Commission for a Sustainable South Florida, Western Water Commission)**
5. Institutional consolidation: special districts, regional governing boards

Climate Adaptation Planning

1. Update existing regional (SB375, Plan Bay Area, SF Bay Plan, other) and local plans (general plans, congestion management plans, local climate adaptation plans)
2. Overall regional climate adaptation plan
3. Separate but linked new plans for specific issues—sea level rise, temperature, drought
4. **Vision Plan and next step recommendations**

Funding Portfolio

1. Federal: special legislation, WRDA, transportation funding
2. State: Transportation and bond money, special legislation
3. **Regional/Local: parcel taxes, increases in fees, special taxation districts**
4. **Public-private partnerships**

Integrated Permitting

1. Expand scope of Long Term Management Strategy for Dredging and associated Dredged Materials Management Office
2. **Create new integrated permitting strategy for green infrastructure**
3. Habitat Conservation/Natural Communities Conservation Plan
4. Programmatic CWA Section 404, ESA Section 7, and other permits

Climate Science Enterprise

1. Create centralized web portal for all climate science information
2. **Climate science services center (data and assistance/guidance) hosted at agency, university, NGO, or consortium**
3. Internal independent science review board
4. External National Academy of Science review panel (e.g. Committee on Independent Scientific Review of Everglades Restoration Progress)

Civic Engagement

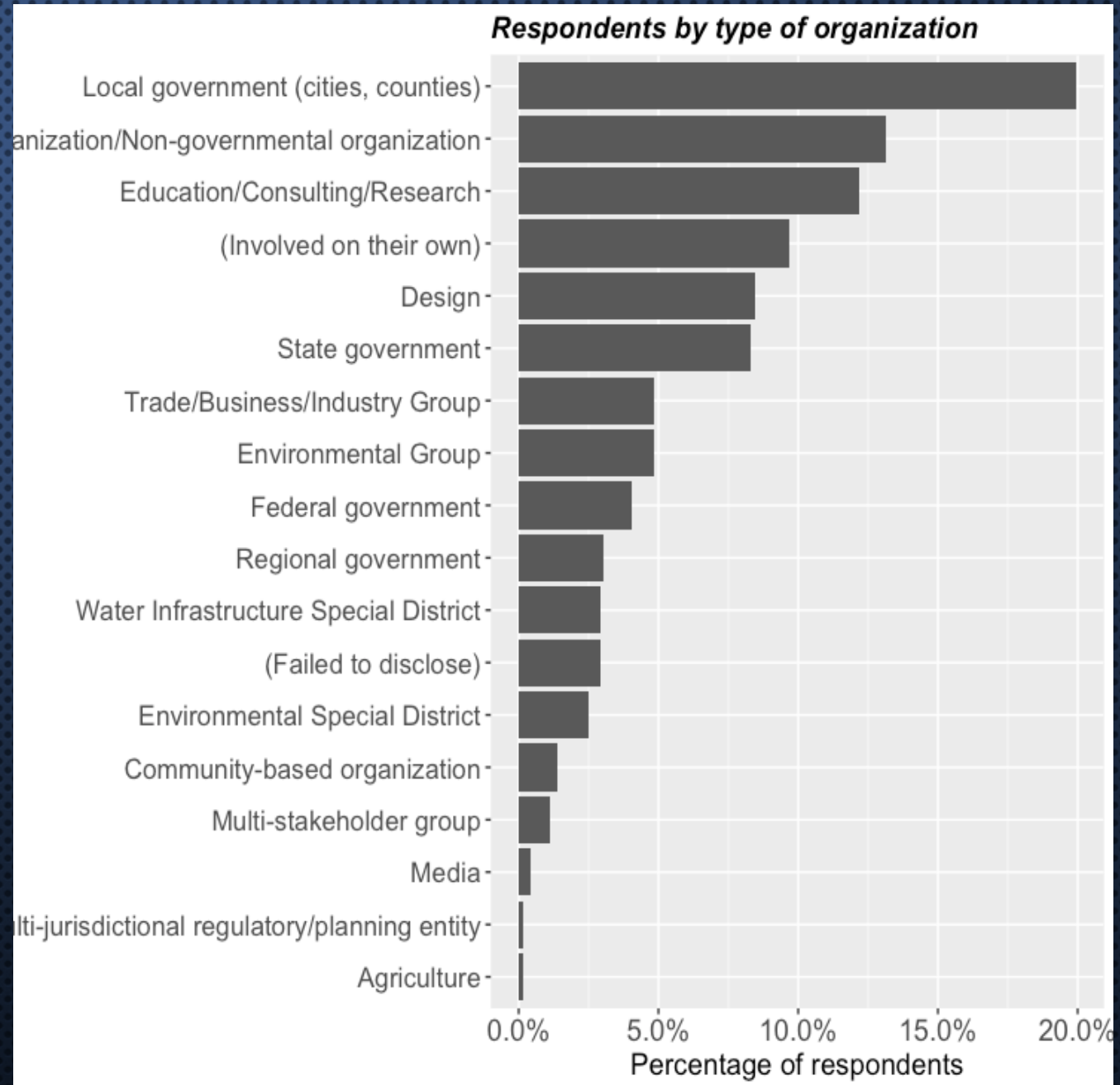
1. **Community-based adaptation meetings (e.g. Southern Marin Pilot Project)**
2. **Collaborate with cultural institutions (e.g.; museums, schools, NGOs)**
3. **Digital, alternative, and traditional media marketing**
4. **Citizen science and in situ visualizations**
5. **Climate Leadership Training Academy**

Political Leadership

1. **Create state and federal legislative caucus groups focused on climate adaptation**
2. Governor-sponsored regional climate adaptation dialog sessions

KEY 1: NETWORK GOVERNANCE

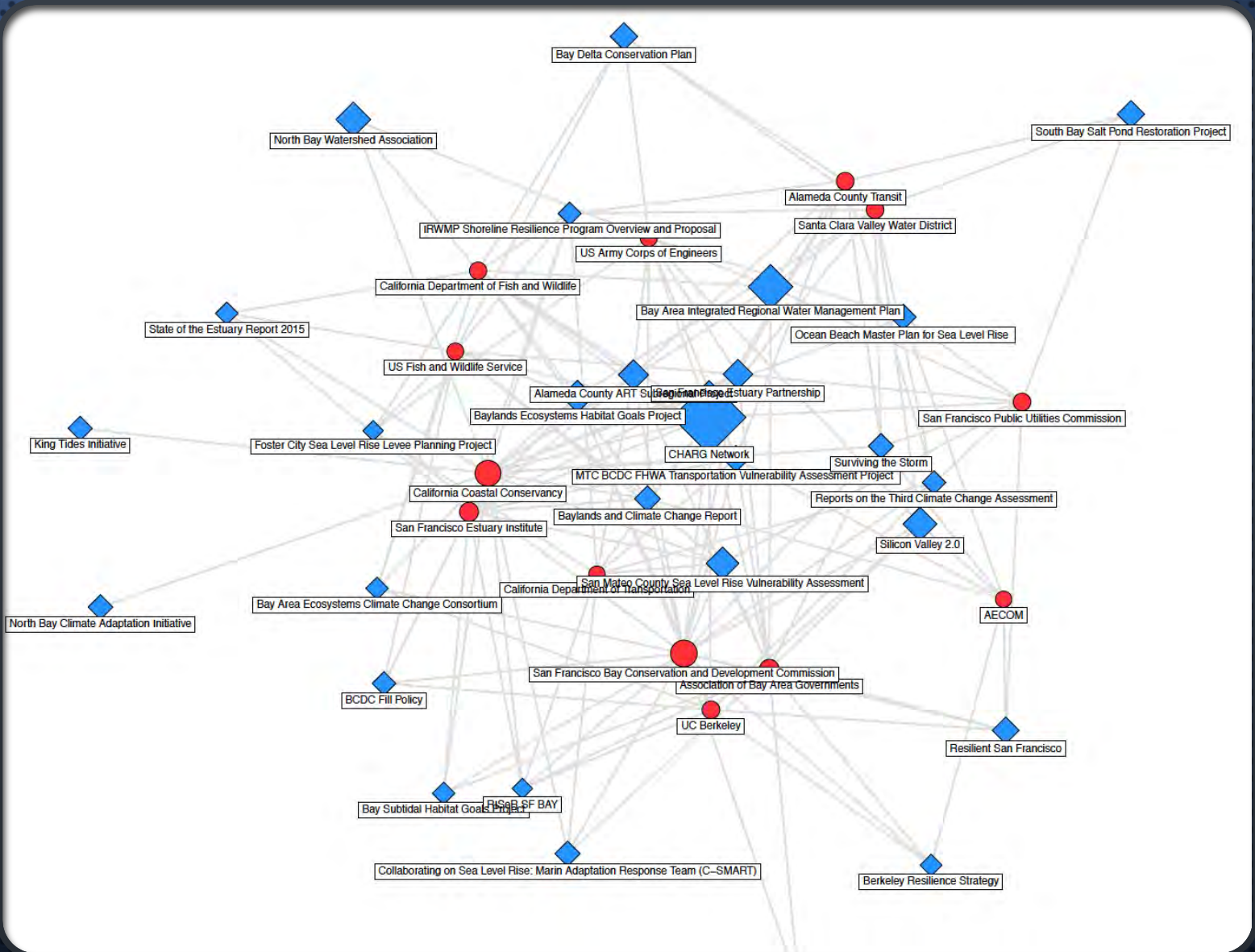
- Many types of organizations involved in sea level rise
- Most have sea level rise as regular part of their work, and involved on behalf of one organization



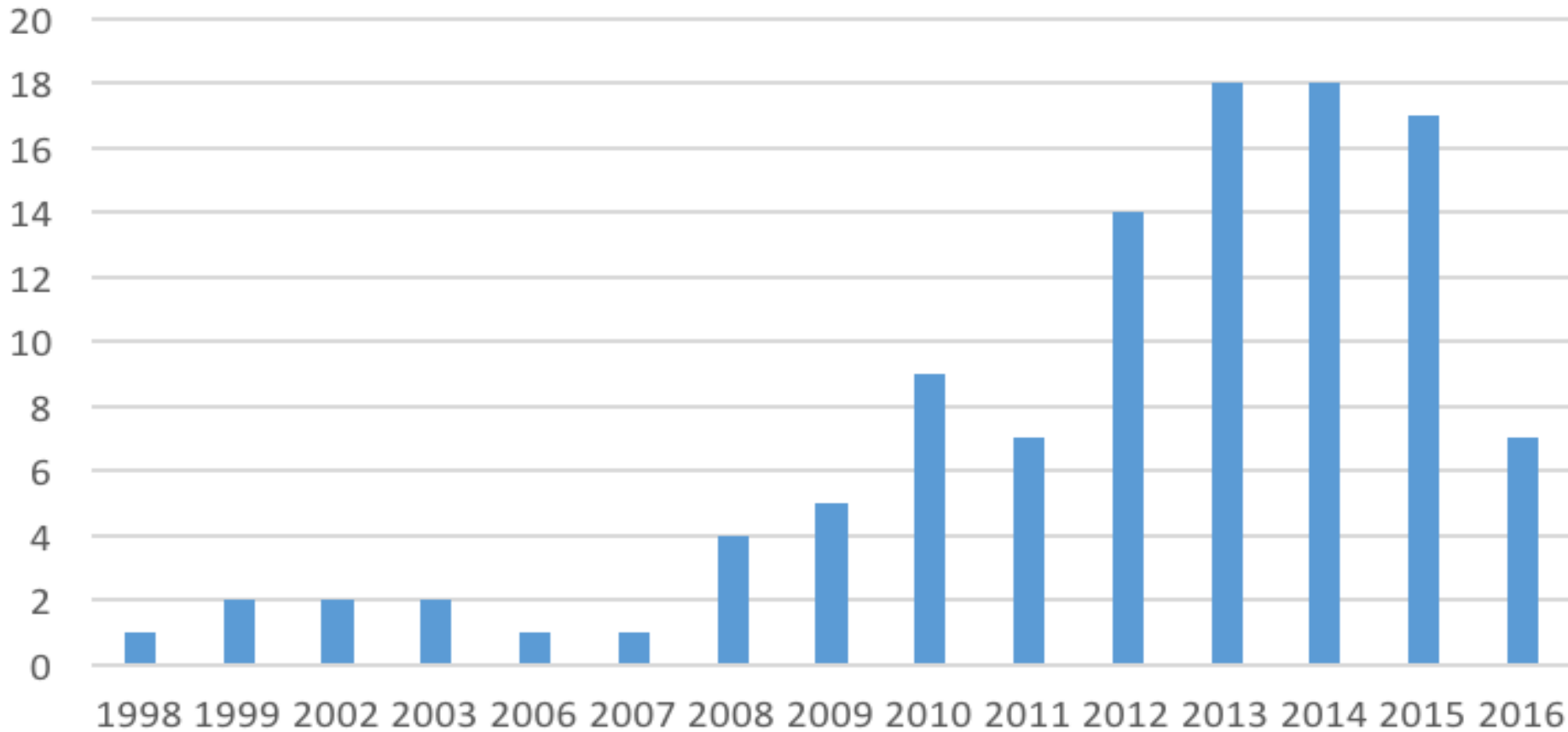
KEY 1: NETWORK GOVERNANCE

“PUBLIC POLICY IS ALMOST ALWAYS A MESS. LET’S ACKNOWLEDGE THE INEVITABLE AND FIGURE OUT HOW TO MANAGE A MESSY SITUATION. TRYING TO DEFINE A POLICY “PROBLEM” IS HARD ENOUGH. TRYING TO FIND A SOLUTION IS EVEN HARDER. TRYING TO DO EITHER IN A POLICY-MAKING STRUCTURE IN WHICH EVERYONE IS INVOLVED, BUT NOBODY IS IN CHARGE, IS NEARLY IMPOSSIBLE.”

--PHIL ISENBERG, 2016



Adaptation Project by Inception Date



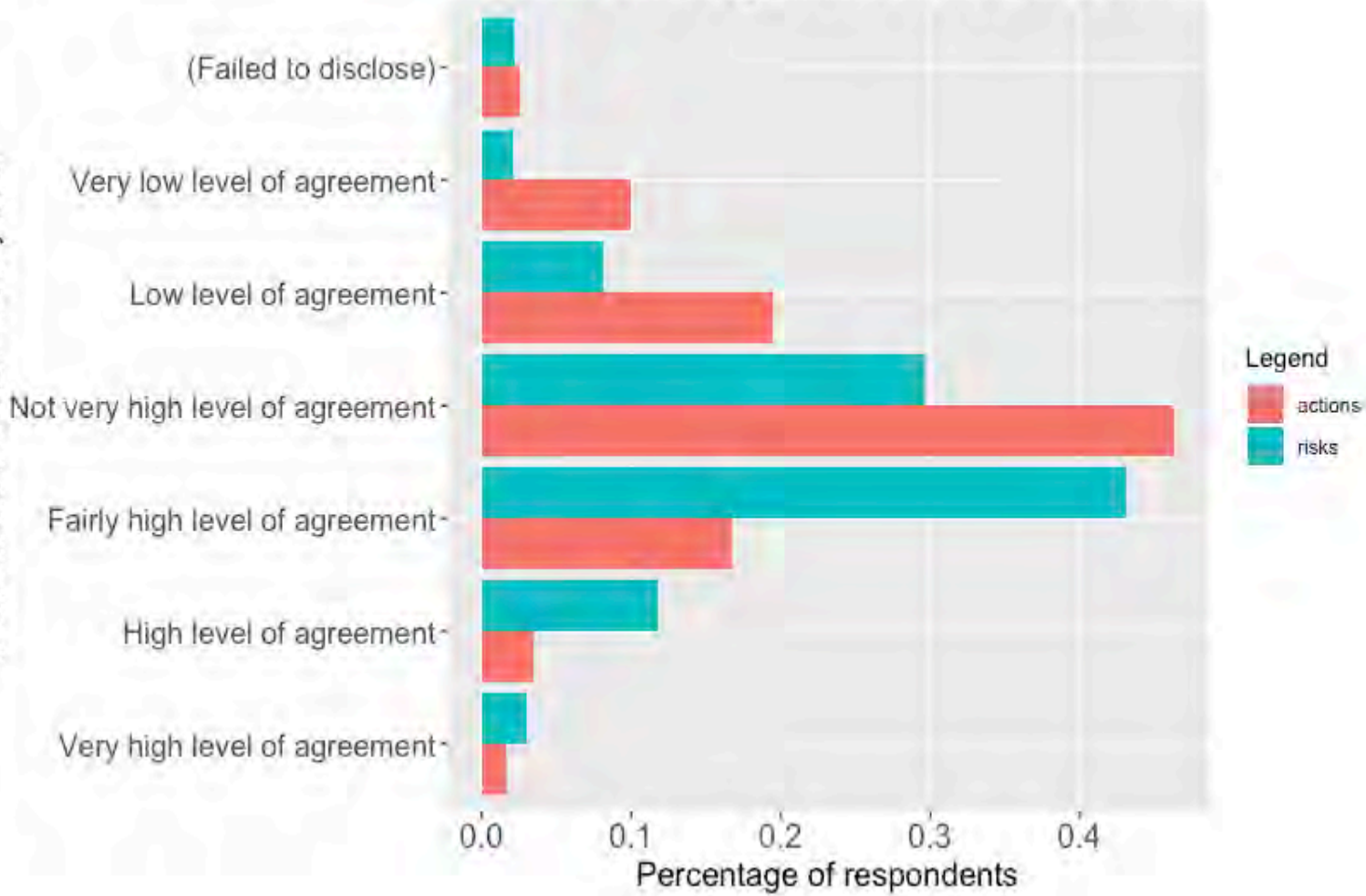
Period 1: 1998-2007

Period 2: 2008-2012

Period 3: 2013-2016

Question: Based on your experience, how would you characterize the level of agreement among stakeholders concerning the risks/actions needed to address sea level rise in the Bay Area?

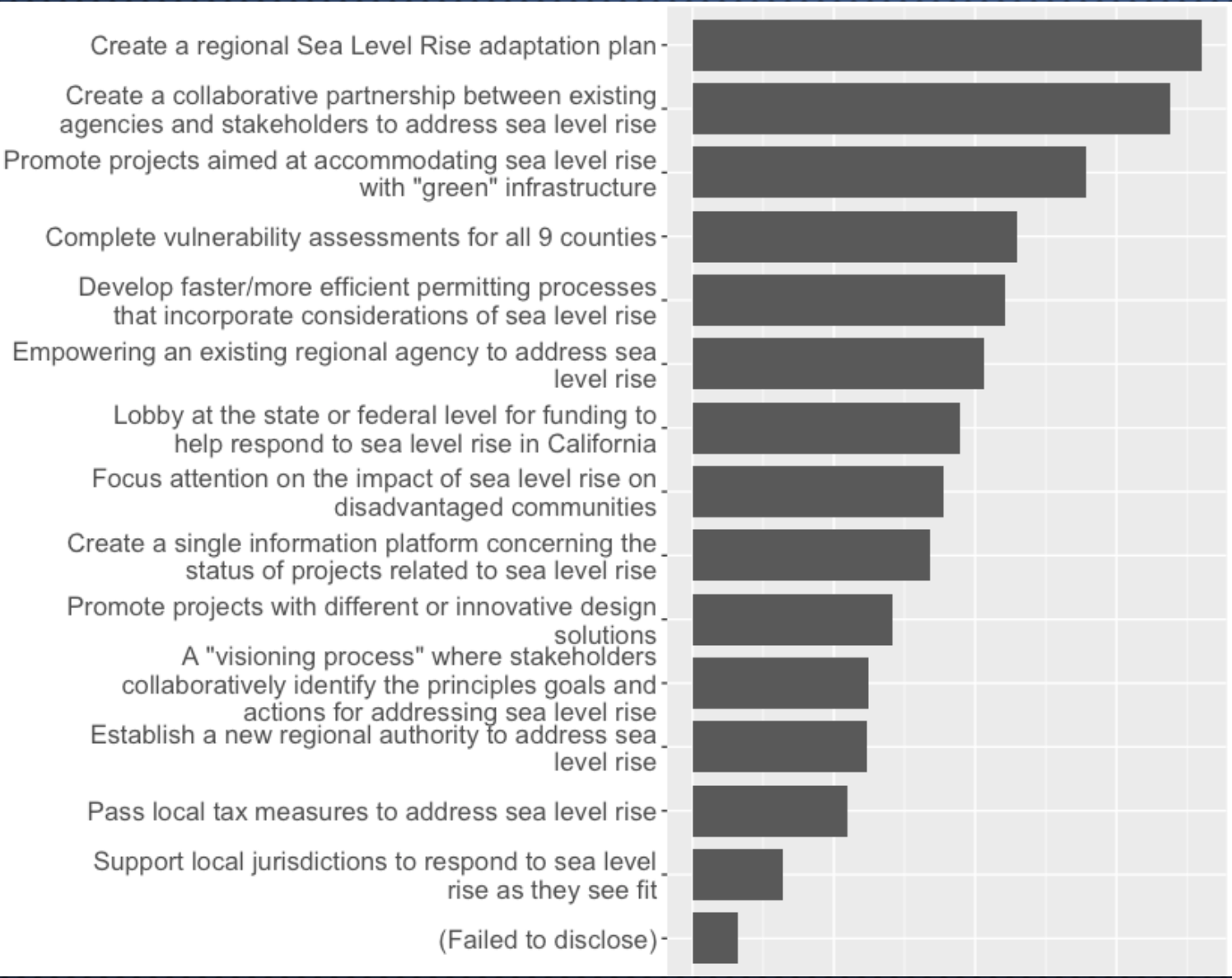
Perceived level of agreement on risks vs actions



KEY 2: PLANNING

MORE AGREEMENT ON EXISTENCE OF PROBLEM, THAN WHAT TO DO ABOUT IT

Question: If you had to decide what sea level rise policies should be prioritized in the Bay Area, which ones would you select from the list below? (please select up to 3)



EVERYBODY WANTS A PLAN ...BUT WHO WILL MAKE IT?

NOBODY WANTS A NEW AUTHORITY!

“VISIONING”
PROCESS AS
UNDERAPPRECIATED
PATH FORWARD

KEY 2: PLANNING



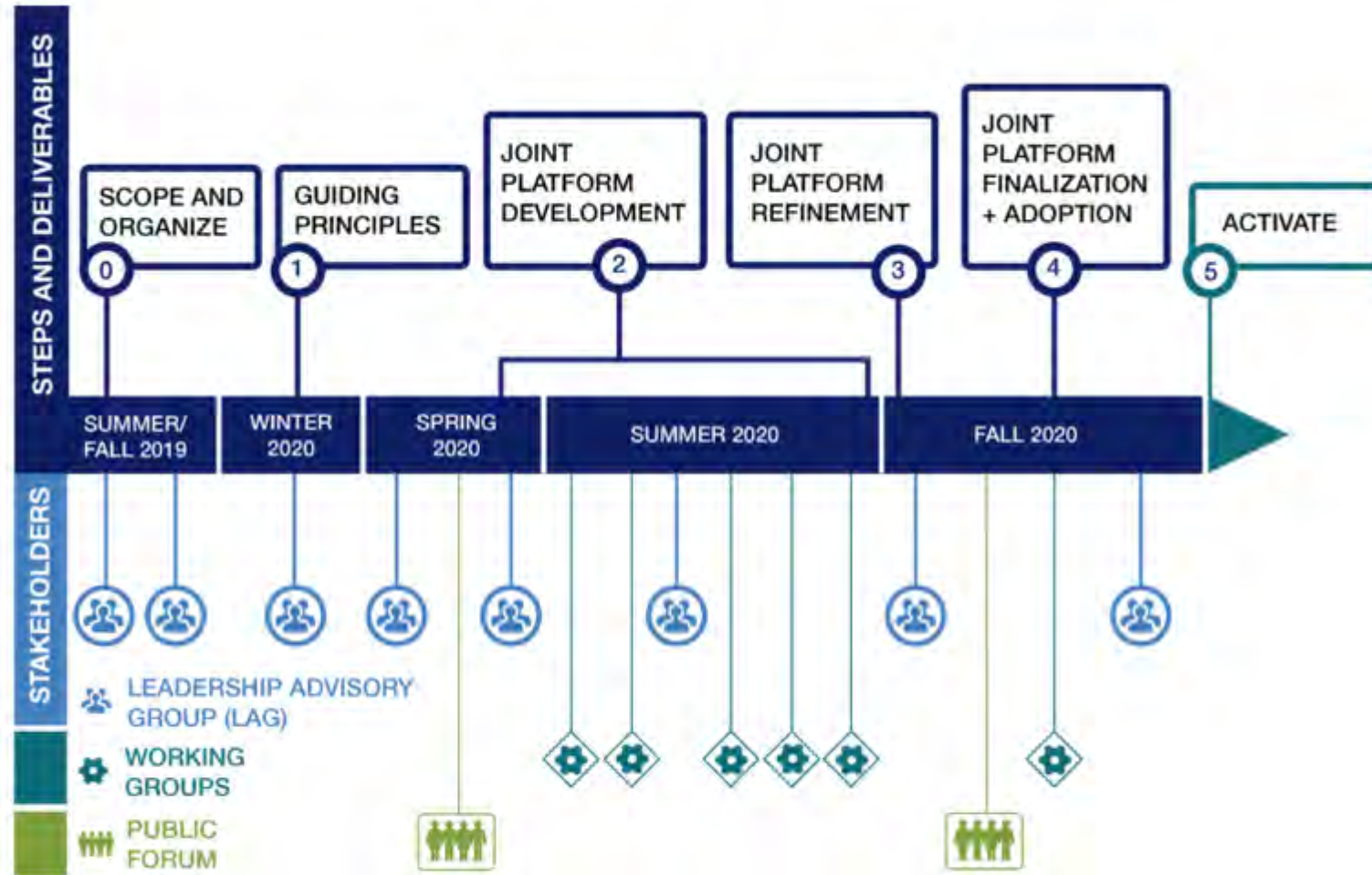
[ABOUT ↓](#)

[BAY ADAPT ↓](#)

[RESOURCES ↓](#)

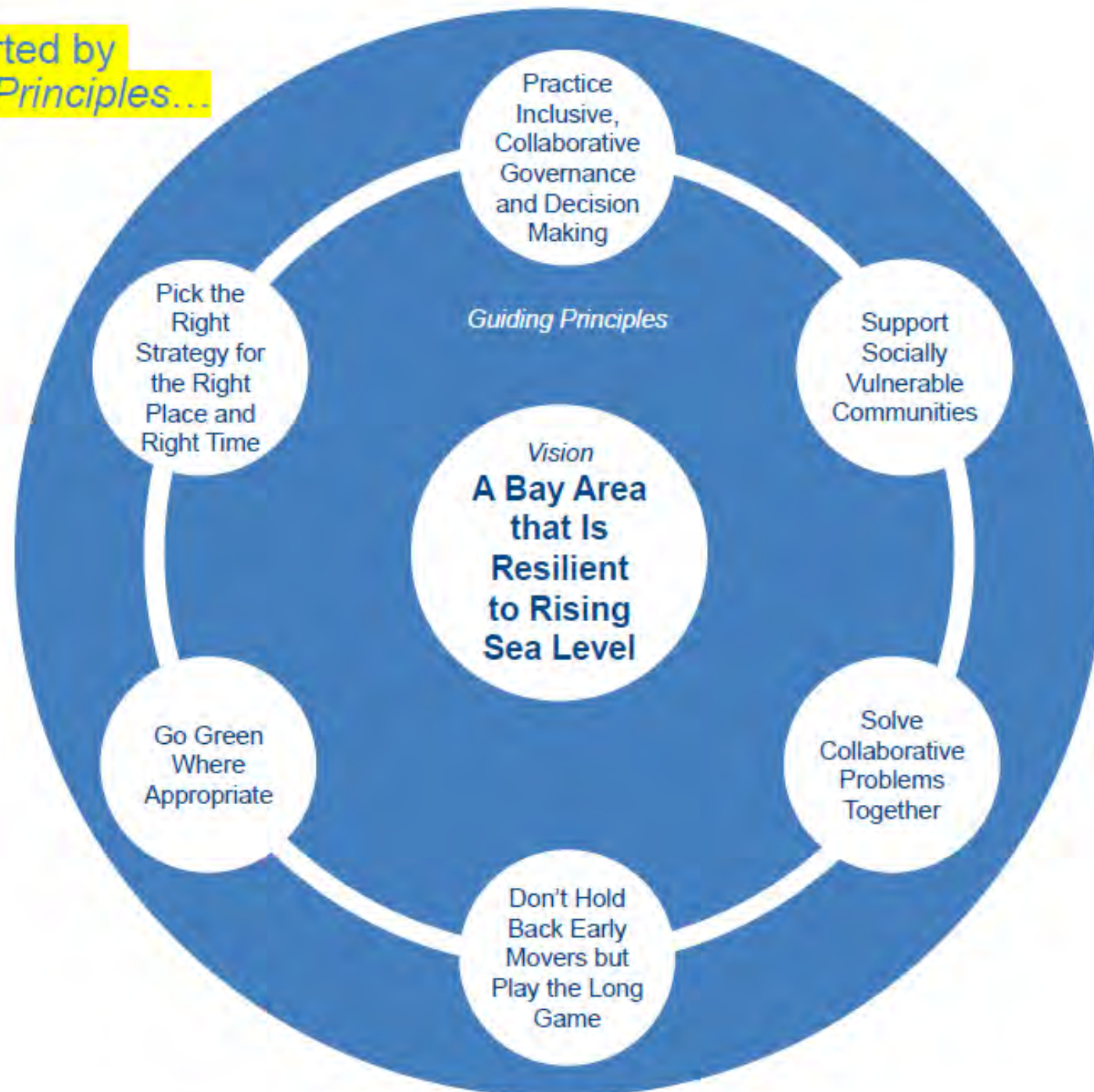
[CONTACT US](#)

BAY ADAPT is an initiative to establish regional agreement on the actions necessary to protect people and the natural and built environment from rising sea levels.



Bay Adapt is facilitated by [BCDC](#), in partnership with a broad range of [Bay Area organizations](#).

...supported by
Guiding Principles...



KEY 3: PERMITTING

- Permits from multiple agencies: local government, the BCDC, the Army Corps of Engineers, the Regional Water Quality Control Board, the California Department of Fish and Wildlife, the US Fish and Wildlife Service, the National Marine Fisheries Service, and others.
- Environmental review under the 1969 National Environmental Policy Act or the 1970 California Environmental Quality Act.
- Adaptation projects “get treated the same as someone putting up a Wal-Mart. We got to jump through the same hoops and it takes years and hundreds and hundreds of thousands of dollars to get permits.”

BRRIT PROCESS

SAN FRANCISCO BAY RESTORATION REGULATORY INTEGRATION TEAM (BRRIT)



COLLABORATION PRE-APPLICATION

The BRRIT was established to improve the permitting process for multi-benefit wetland restoration projects and associated flood management and public access infrastructure in the SF Bay and along the bay shoreline of the nine Bay Area counties, excluding the Delta Primary Zone. Experience indicates that coordinated pre-application meetings are essential for an improved permitting process. During the pre-application phase, the BRRIT will review project materials, conduct site visits and provide project-specific guidance for navigating the regulatory process.

Schedule a pre-application meeting with the BRRIT [<http://sfbayrestore.org/san-francisco-bay-restoration-regulatory-integration-team-brrit>]

APPLICATION

Upon receipt of a complete application package, the BRRIT will continue to communicate with applicants on the progress of permitting the project in a coordinated manner. Applications and information about permitting requirements can be found on each agencies' website.

The processing of project applications will benefit greatly from a robust pre-application phase.

PERMIT ISSUANCE

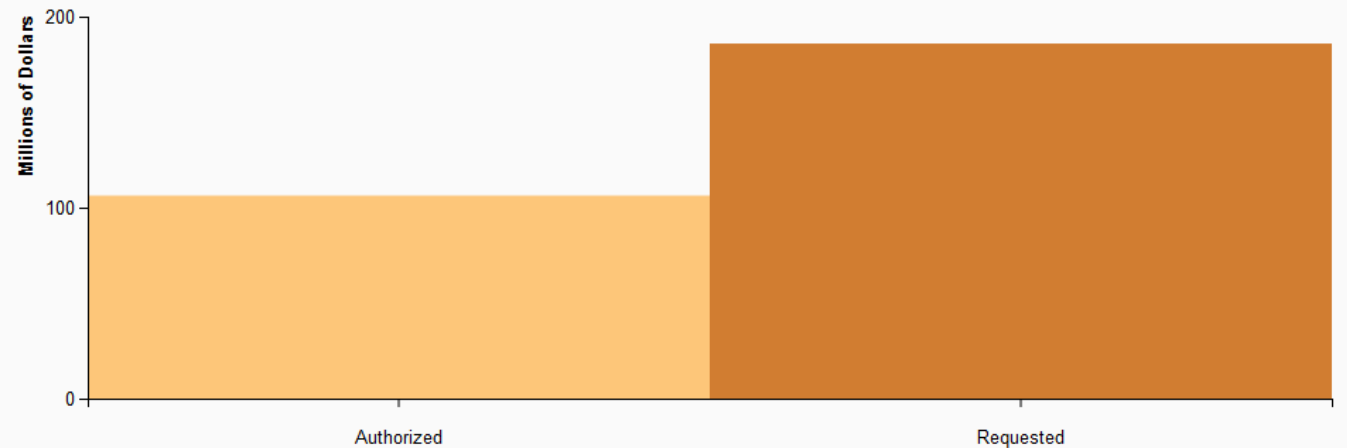
KEY 4: FUNDING

On June 7th, 2016, residents of the nine-county San Francisco Bay Area voted with a 70% majority to pass Measure AA, the San Francisco Bay Clean Water, Pollution Prevention and Habitat Restoration Measure. This measure is a parcel tax of \$12 per year, raising approximately \$25 million annually for twenty years to fund shoreline projects that would protect and restore San Francisco Bay. For more information

CLIMATE ADAPTATION COSTS WILL BE MASSIVE! SOME EXAMPLES

- RESTORING 100,000 ACRES OF WETLANDS IS APPROXIMATELY \$1.43 BILLION OVER 50 YEARS
- \$5 BILLION FOR THE EMBARCADERO SEAWALL PROGRAM
- START ADDING UP ALL THE OTHER NEEDS.....
- MEASURE AA, ADMINISTERED BY SAN FRANCISCO BAY RESTORATION AUTHORITY
- NEWSOME BUDGET, CA LEG BILLS
- BIDEN INFRASTRUCTURE PROPOSALS

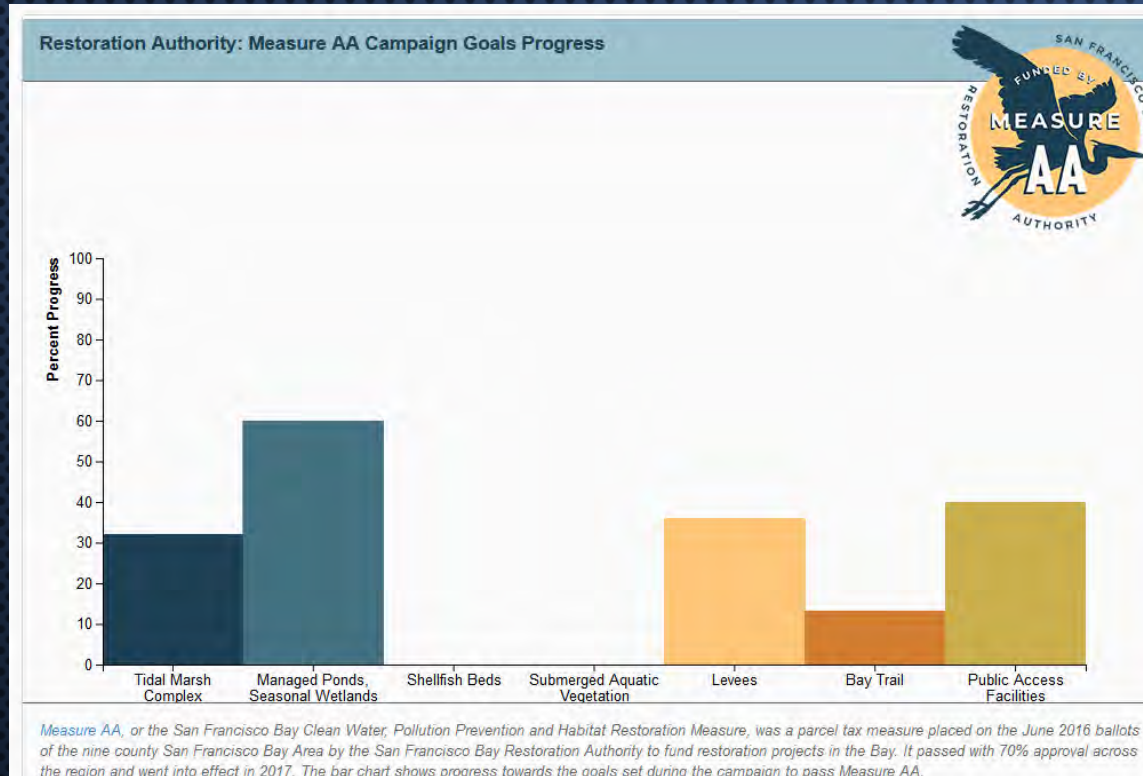
Restoration Authority: Funding Authorized vs Requested



57% of funds requested were authorized.

This performance measure tracks the total cumulative funding authorized by the Authority's Governing Board compared to total funding requested through grant applications.

SOME MEASURE AA EXAMPLES....



Marin City Urban Wetland Community Visioning Project

Shore Up Marin City (fiscal sponsor: Center for Volunteer & Nonprofit Leadership)
Grant Amount: \$100,000



Hayward Marsh Restoration Project

East Bay Regional Park District
Grant Amount: \$500,000



Long Beach Restoration Design Project

City of San Leandro
Grant Amount: \$514,500



Invasive Spartina Removal and Tidal Marsh Restoration Project

California Invasive Plant Council (Cal-IPC)
Grant Amount: \$4,000,000



Oakland Shoreline Leadership Academy Project

West Oakland Environmental Indicators Project
Grant Amount: \$180,000

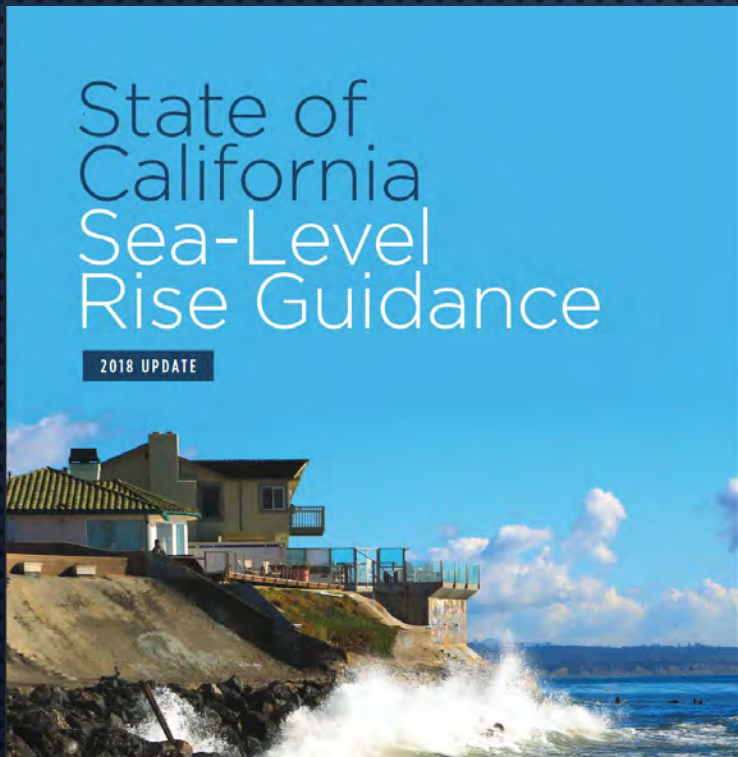


Heron's Head Park Shoreline Resilience Project: Phase 1

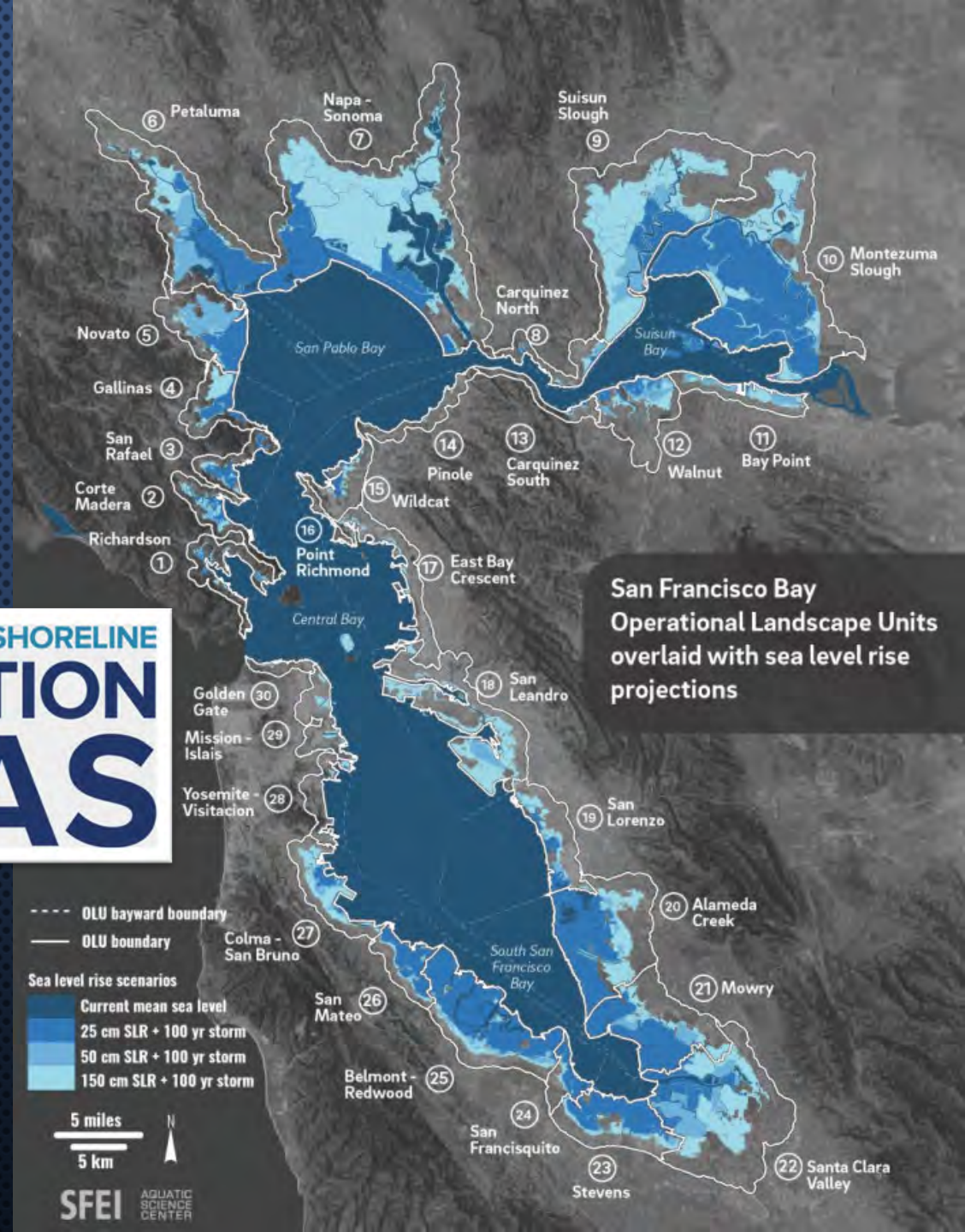
Port of San Francisco
Grant Amount: \$297,000

KEY 5: SCIENCE ENTERPRISE

- IDENTIFY BEST AVAILABLE SCIENCE
- TRANSLATIONAL CAPACITY
- LINKING KNOWLEDGE TO ACTION



SAN FRANCISCO BAY SHORELINE ADAPTATION ATLAS



KEY 6: POLITICAL LEADERSHIP

- LEGISLATIVE MEMBER ORGANIZATIONS
- EXECUTIVE ACTIONS AND AGENDA SETTING
- LOCAL ELECTED OFFICIALS
- ADVOCACY NETWORKS

AB 897: This bill would require the office to provide technical assistance to regions seeking to establish a regional climate network and to regional climate networks in developing regional climate adaptation action plans.

Select Committee On Sea Level Rise & the California Economy

Search



Imperial Beach

Photo credit to the Center for Climate Change Impacts and Adaptation at Scripps Institution of Oceanography

Last updated: Monday, May 3rd at 9:05 PM PT

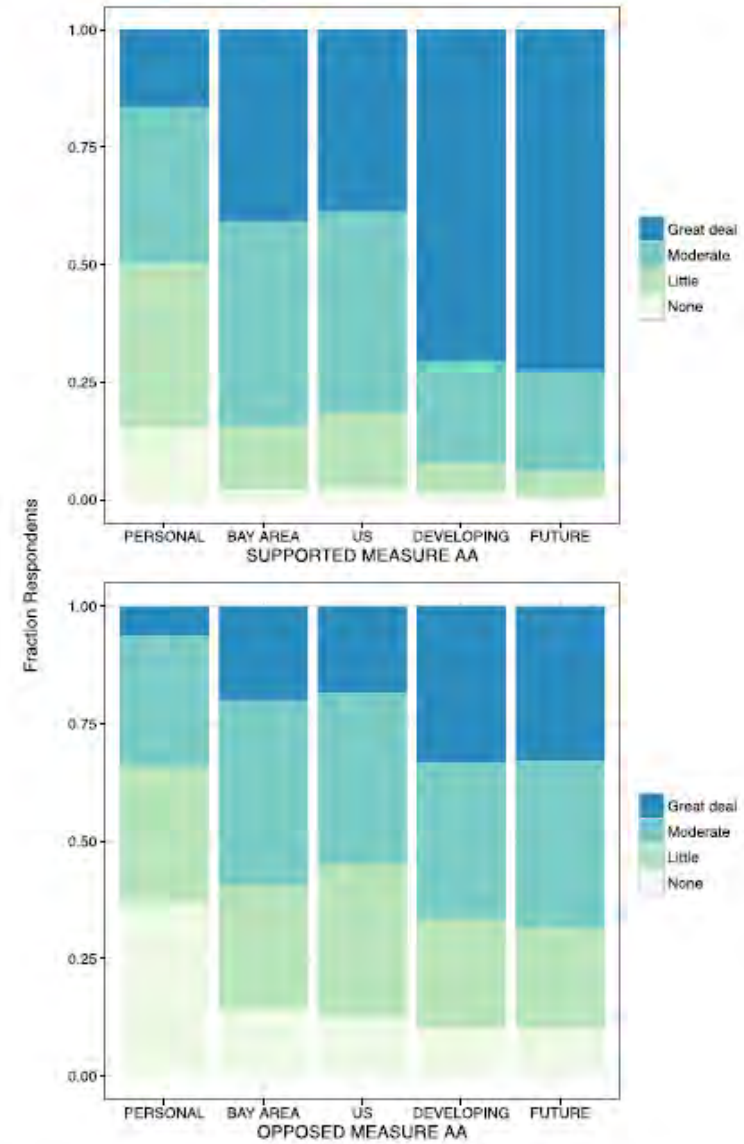


Jump to bill: [AB-9](#) • [AB-66](#) • [AB-67](#) • [AB-118](#) • [AB-125](#) • [AB-252](#) • [AB-284](#) • [AB-297](#) • [AB-350](#) • [AB-352](#) • [AB-433](#) • [AB-585](#) • [AB-642](#) • [AB-648](#) • [AB-880](#) • [AB-897](#) • [AB-976](#) • [AB-1087](#) • [AB-1384](#) • [AB-1445](#) • [AB-1500](#) • [SB-1](#) • [SB-12](#) • [SB-17](#) • [SB-45](#) • [SB-55](#) • [SB-63](#) • [SB-83](#) • [SB-99](#) • [SB-347](#) • [SB-359](#) • [SB-440](#) • [SB-449](#) • [SB-456](#) • [SB-552](#)

KEY 8: COMMUNITY ENGAGEMENT

- SEA LEVEL RISE IS PSYCHOLOGICALLY DISTANT, “SLOW-MOVING NATURAL DISASTER”
- ENVIRONMENTAL JUSTICE: FRONT-LINE, DISADVANTAGED COMMUNITIES ARE MORE VULNERABLE AND LACK ADAPTIVE CAPACITY
- COMMUNITY SUPPORT CRUCIAL FOR ELECTED OFFICIALS

Figure 2: Perceptions of Sea Level Rise Risks by Measure AA Support



Question wording: PERSONAL= “...you personally”; BAY AREA= “...people in the Bay Area”, US= “...people in the United States”, DEVELOPING= “...people in developing countries”, FUTURE= “...future generations”



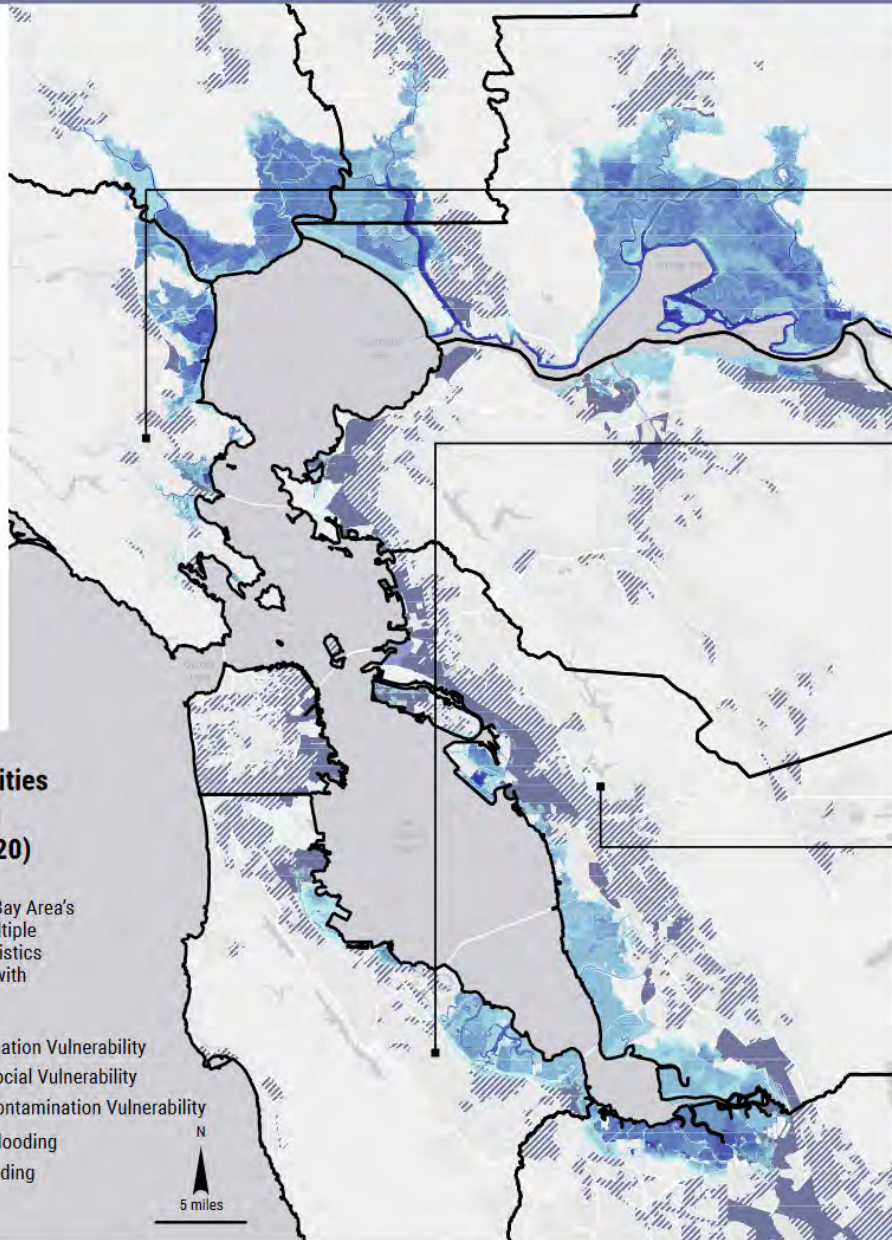
Vulnerable Communities

Snapshot of Highest Consequences

48"
TWL

Some **Bay Area communities** experience social and economic conditions that make it more difficult to prepare for, respond to, and recover from flooding.

Residents in these communities face stressors such as housing displacement pressures or job instability that make them more vulnerable to the instabilities further introduced by rising sea level. (Figure 7).



MARIN COUNTY



37% of socially vulnerable block groups exposed

5,050 existing residential units in socially vulnerable block groups



36% of block groups with contamination vulnerability exposed

2,000 existing residential units in block groups with contamination vulnerability



Adapting to Rising Tides BAY AREA

SHORT REPORT

Summary of Regional Sea Level Rise Vulnerability and Adaptation Study

MARCH 2020



5-Year Report Card....Moving Forward....But Fast Enough?

Governance Keys	5-year Progress Grade	Evidence
Network Governance	B+	BCDC taking lead agency role
Planning	A-	Bay Adapt completed. Implementation? Alignment?
Permitting	B+	San Francisco Bay Restoration Regulatory Integration Team (BRRIT)...but not a magic bullet
Funding	B+	Measure AA and other local, pending state and fed
Science Enterprise	B	State guidance, Adaptation Atlas
Behavioral Keys		
Political Leadership	B	Newsom seems to care, legislative attention
Community Engagement	B-	Involved in some planning with specific leadership, but no integrated strategy. EJ groups still feel excluded

CONCLUSIONS

- CLIMATE ADAPTATION REQUIRES COOPERATION: SHARED EXPERIENCE, VULNERABILITY INTERDEPENDENCE, ADAPTATION INTERDEPENDENCE, POLICY INTERDEPENDENCE
- SEVEN KEYS TO COOPERATION RELATED TO GOVERNANCE INSTITUTIONS AND HUMAN BEHAVIOR
- ONGOING ACTIVITIES ACROSS SF BAY ARE HEADED IN RIGHT DIRECTION....BUT FAST ENOUGH? EQUITABLE ENOUGH?
- COLLECTIVE ACTION PROBLEMS AND GOVERNANCE CHALLENGES ARE PROBABLY SIMILAR FOR OTHER CLIMATE ADAPTATION ISSUES
- WE NEED A LOT MORE COMPARATIVE AND LONGITUDINAL RESEARCH