Adapting to Rising Tides

Working together to increase the resilience of Bay Area communities to current and future flooding

San Francisco Bay Conservation and Development Commission
www.adaptingtorisingtides.org
Outline

- Project Area and Rationale
- Goals and Objectives
- Project Team
  - Roles and Responsibilities
  - Working Group Formation
- Project Timeline
- Project Resilience Goals
The shoreline from Bay Point to Clifton Court including areas potentially exposed to current and future coastal flooding from rising sea levels, and the current 1% annual chance (100-yr) flood
Current and Future Risk

Current FEMA 100 Year Flood Zone

Flooding from 1.41 Meters SLR and 100 year Flood
# Sea Level Rise Projections

## Probabilistic Projections (in feet) (based on Kopp et al. 2014)

<table>
<thead>
<tr>
<th></th>
<th>Low Risk Aversion</th>
<th>Medium - High Risk Aversion</th>
<th>Extreme Risk Aversion</th>
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*H++ scenario (Sweet et al. 2017) *Single scenario
Impacts from Sea Level Rise

- More frequent flooding of existing flood-prone areas
- More extensive, longer-duration flooding
- Shoreline erosion & water overwhelming shoreline protection
- Joint riverine and coastal flooding
- Elevated groundwater & increased salinity intrusion
- Permanent inundation of areas not currently exposed
Expected Outcomes

- Modeling and mapping of current and future flooding
- Assessments of multiple assets at the sector, system, individual asset and component scale
- Consequences of the failure or disruption of the assets and systems assessed
- Adaptation responses that include specific actions, actors, possible funding sources
- Strong collaboration among working group members throughout the area
- Approach to integrate findings into existing and future county and city plans (e.g. LHMPs, Safety Elements, Northern Waterfront Initiative)
- Pathways for implementing adaptation actions
Sectors and Assets

**Community Characteristics**
Individual, household, neighborhood demographics

**Residential Housing**
Single and multi-family, senior, dependent housing

**Community Facilities and Services**
Public health infrastructure
Emergency facilities and services
Community facilities
Waste collection and transfer stations

**Industrial Land Uses**
Industrial land uses (zoning or assessor’s data)
Contaminated Lands
Hazardous Materials Sites
Landfills (closed and open)

**Parks and Recreation Facilities**
Shoreline parks
Bay trail and water trail
Marinas
Fishing piers

**Water Management**
Water supply
Wastewater
Flood management
Levees
Stormwater infrastructure
Delta Intake Structures

**Transportation**
Passenger and freight rail
Local, state and interstate roads
Seaport (Port of Richmond)
Marine oil terminals

**Energy and Fuel Supply**
Pipelines
Power generation
Power distribution (substations)

**Open Space and Natural Areas**
Agricultural Lands
Tidal Marshes
Wildlife Refuges
The core of an ART assessment: sector-specific assessment questions:

- Questions are organized based on the types of vulnerabilities and consequences often observed

- The questions can be answered for all assets at different asset scales, or for representative assets
Assessment Approach

The next step is to enhance and validate the assessment findings:

- Use the soon to be completed modeling to conduct exposure analysis and refine list of assets
- Obtain input (reports, data, maps) from working group members, topical experts, and those with local knowledge
- Ask working group members and others to review preliminary assessment answers and exposure analysis

- Individual meetings
- Small group meetings
- Phone interviews
- Email
- Field visits
Roles & Responsibilities

- **Project Team**: leads and manages the project, engages the working group, completes work products

- **Working Group**: actively participates in the project, attends project meetings, provides local data and knowledge, communicates project to their own stakeholders to bring additional expertise and perspectives to the project

- **Other Stakeholders**: a wide range of organizations and individuals with interests and perspectives that can provide feedback on project components and outcomes
Project Working Group

- **County Agencies**: Conservation and Development, Flood Control, Public Works, Health Services, Mosquito and Vector Control Office of Emergency Services

- **Cities**: Planning and Public Works

- **Special Districts**: Water, Wastewater, Parks, Resource Conservation

- **Regional, State and Federal Agencies**: ABAG, MTC, Delta Agencies, Federal Resource Agencies, Transportation agencies

- **Private Entities and Non-Governmental Organizations**: Power, rail, industrial alliances and councils, community based organizations
Project Timeline

Project Initiation – Winter 2018

Project Scoping – Spring 2018

Conduct Assessment – Spring/Summer 2018

Determine Assessment Outcomes – Fall 2018

Transition to Adaptation – Fall 2018

Develop Adaptation Responses – Winter 2018/19

Evaluate and Select Adaptation Responses + Opportunities for Implementation – Spring 2019

Working Group Meeting

Individual or small group meetings
Project Resilience Goals

Project resilience goals help guide the project

- Resilience goals help clearly define the desired project outcomes and lay a foundation for future decisions.

- Setting resilience goals early ensures transparency, and that all understand desired outcomes at the outset.

- A strong set of resilience goals reflect all four frames of sustainability:
  - **SOCIETY & EQUITY**: Effects on communities and services on which they rely, with specific attention to disproportionate impacts due to existing inequalities.
  - **ECONOMY**: Economic values that may be affected such as costs of physical/infrastructure damages or lost revenues during periods of recovery.
  - **ENVIRONMENT**: Environmental values that may be affected, including ecosystem functions and services, and species biodiversity.
  - **GOVERNANCE**: Factors such as organizational structure, ownership, management responsibilities, jurisdiction, mandates, and mechanisms of participation that affect vulnerability and risk.

The ART resilience goal, developed with input from the Subregional Working Group, is to:

*Increase the preparedness and resilience of Bay Area communities to sea level rise and storm events while protecting critical ecosystem and community services.*
Goal: identify the functions and values within the project area that are important to consider when assessing current and future flooding.
Previous ART Project Outcomes

- **Issue papers**
- **Reports** on existing conditions, vulnerability and risk, and adaptation responses
- Sector-specific **communication materials**, e.g., profile sheets
- **Adaptation responses** for all vulnerabilities identified
- **Capacity building** at local, regional, state and federal levels
- Website with tools and reports
- Mapping and online **flood explorer tool**
Mandates and Funding

- Executive Order B-30-15
- State Sea Level Rise Guidance
- AB 2800
- SB379
- SB264
- Plan Bay Area
- Proposition 68
- Prop 1
- Others?
Existing Plans and Efforts

- Local Hazard Mitigation Plan
- General Plans
- Northern Waterfront Economic Development Initiative
- Eastern Contra Costa Integrated Water Resource Plan
- Storm Water Resource Plans
- Others?
Engagement Exercise
Identifying Applicable Products

Goals:

1. Identify the plans, tools, and resources you currently use
2. Understand the formats (factsheets, reports, tools, websites) that are best for integrating new information and requirements into your work
3. Discuss the information and products that would help integrate sea level rise into future efforts
4. Identify who needs to be involved in the process and explore opportunities to work collaboratively
5. Identify current challenges to address current and future flooding including potential data gaps
Please take the next 10 minutes to read through the following questions and answer them to the best of your ability on the additional worksheet provided. This information will be used by the ART team to better understand the types of materials you are currently using and to guide how this project’s outcomes can be most suited to your needs.

• What plans or products do you currently use? (Please include names, dates, etc.)
• What form of information is easiest and most applicable for you to use? (e.g. factsheets, reports, websites, other)
• How do you work across sectors? Who do you work with?
• Who would you like to work with (especially on climate adaptation issues) but currently don’t? Why not?
• What challenges do you face in addressing current and future flooding? Is there data you are missing or need?
Bringing together the Engagement Activity on “Functions and Values” and the “Individual Written Responses”, we are now going to review a map of the Eastern Contra Costa area and identify a few key areas that contain many of the uses and values that were identified earlier today. Please find a table that contains the “cluster” you’d like to further discuss:

- What information is needed to understand the vulnerability of the “cluster” of uses and values in this area?
- Who needs to be involved to address potential vulnerabilities?
- What plans exist that relate to this area?
- What products from this project would help you address these potential issues?
• Are we missing key partners in this area?

• What products or forms of information did you identify as essential?
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