

The  
**Adapting to Rising Tides**  
Program

**Contra Costa ART Project  
Commission Briefing**

December 15, 2016



San Francisco Bay Conservation  
and Development Commission

# ART Program Projects

Regional

Bay Area Sea Level Rise Analysis and Mapping



Local Hazard Mitigation and Climate Adaptation Plans



Regional Resilience Partnerships



Stronger Housing, Safer Communities



Local

Alameda County ART Project



Contra Costa County ART Project



Hayward Shoreline Resilience Study



Oakland/Alameda Resilience Study



Sector

Bay Area Transportation Climate Resilience



Tidal Creeks and Flood Control Channels



Corte Madera Baylands



East Bay Regional Park District



## Adapting to Rising Tides Planning Process

### SCOPE & ORGANIZE

- Convene Partners & Stakeholders*
- Choose Project Area*
- Identify Sectors, Services, Assets*
- Select Climate Scenarios & Impacts*
- Set Resilience Goals*

Working Group Meeting #1

Society & Equity  
Environment  
Economy  
Governance

### ASSESS

- Review Existing Conditions*
- Assess Vulnerability*
- Consider Risks*

### DEFINE

- Characterize Vulnerabilities & Risks*
- Identify Key Planning Issues*

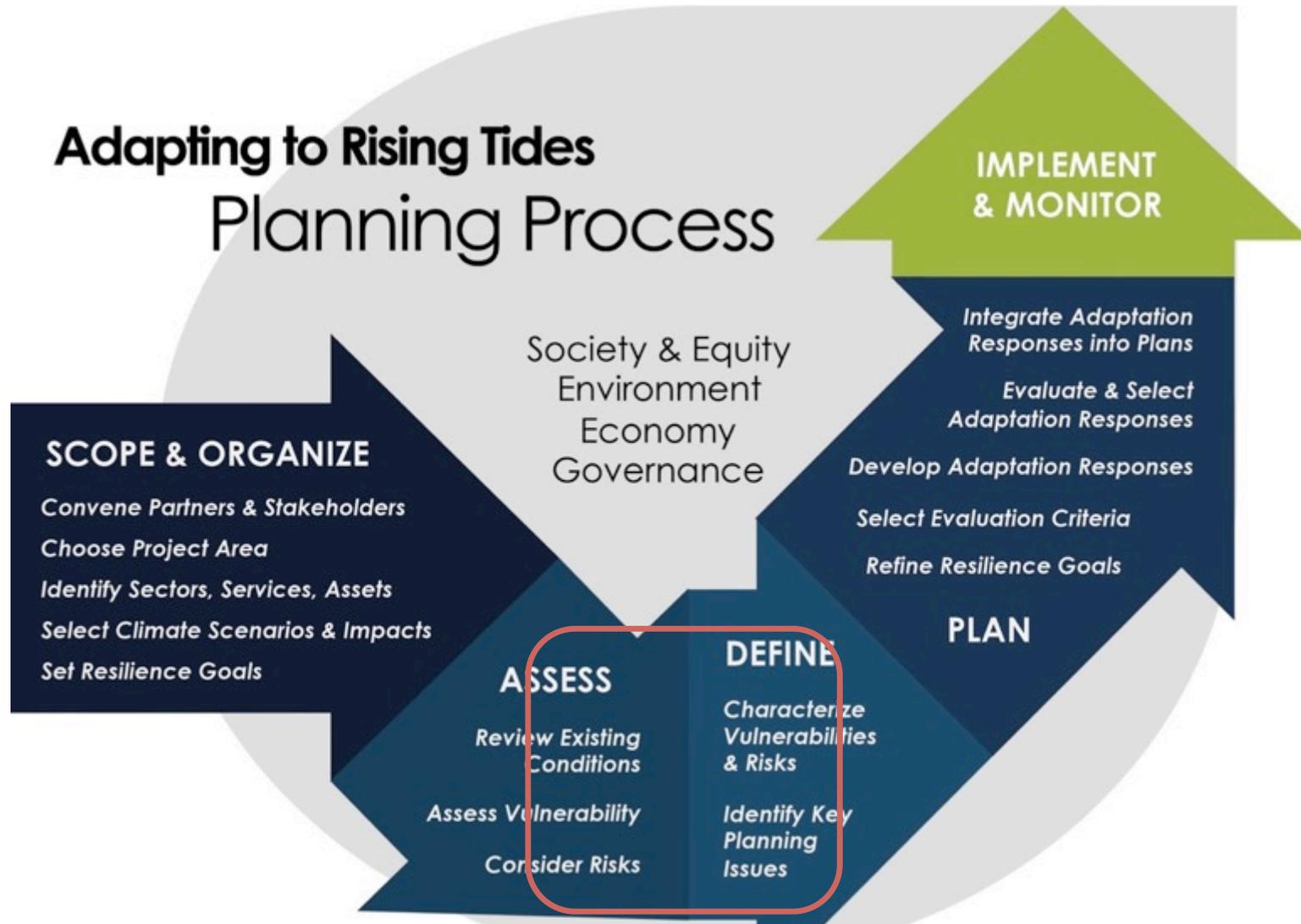
### IMPLEMENT & MONITOR

- Integrate Adaptation Responses into Plans*
- Evaluate & Select Adaptation Responses*
- Develop Adaptation Responses*
- Select Evaluation Criteria*
- Refine Resilience Goals*

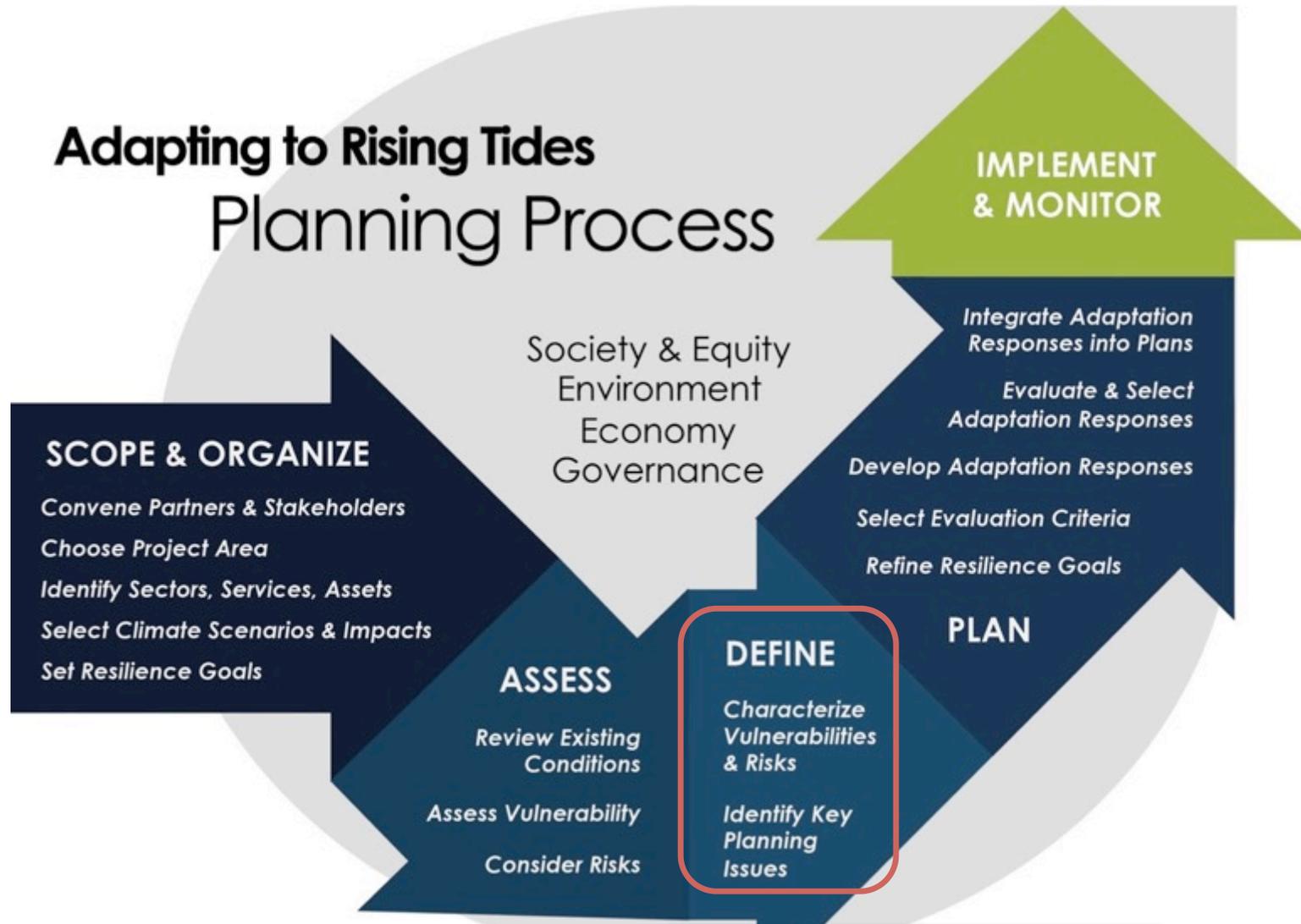
### PLAN

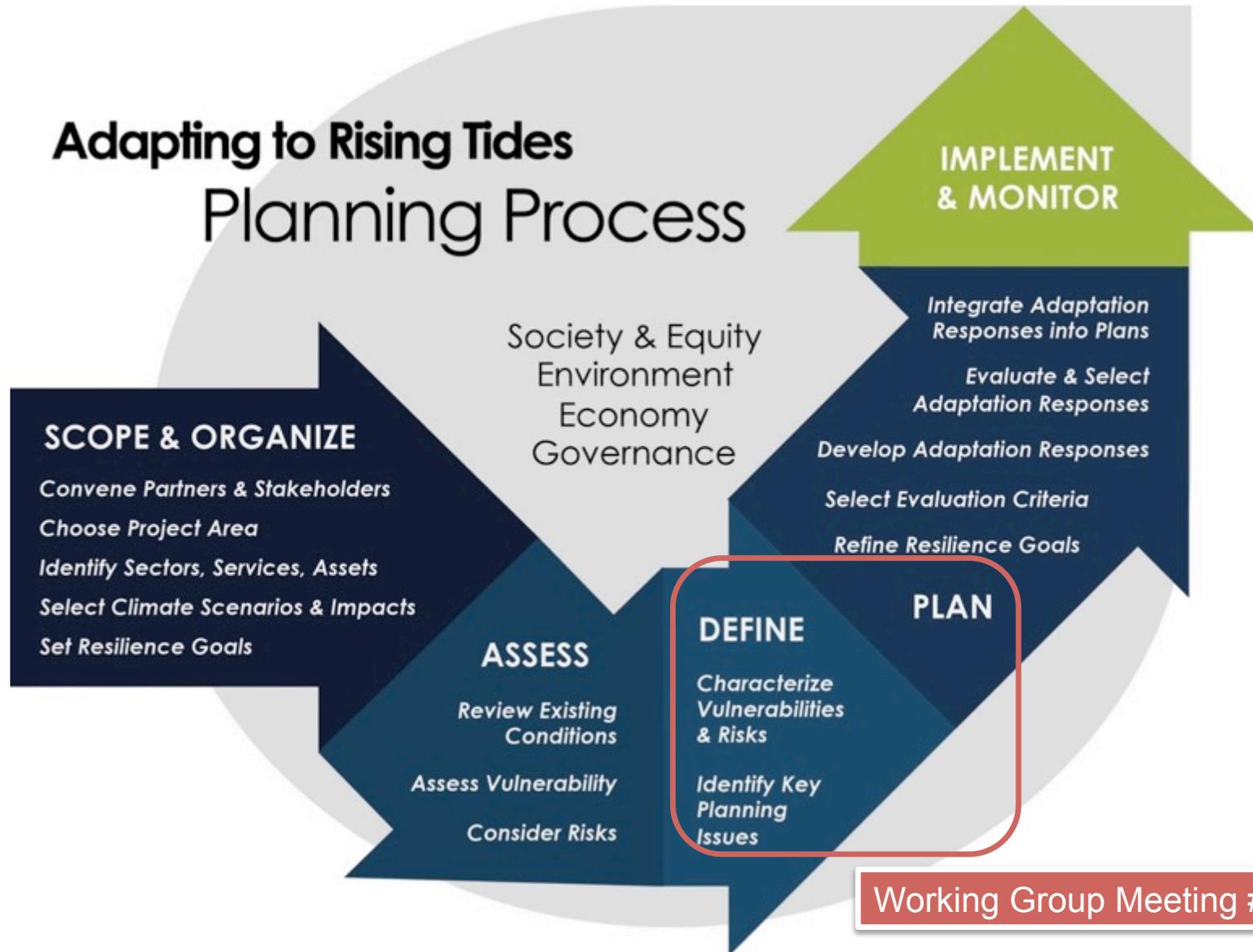
## Adapting to Rising Tides Planning Process





Working Group Meeting #3



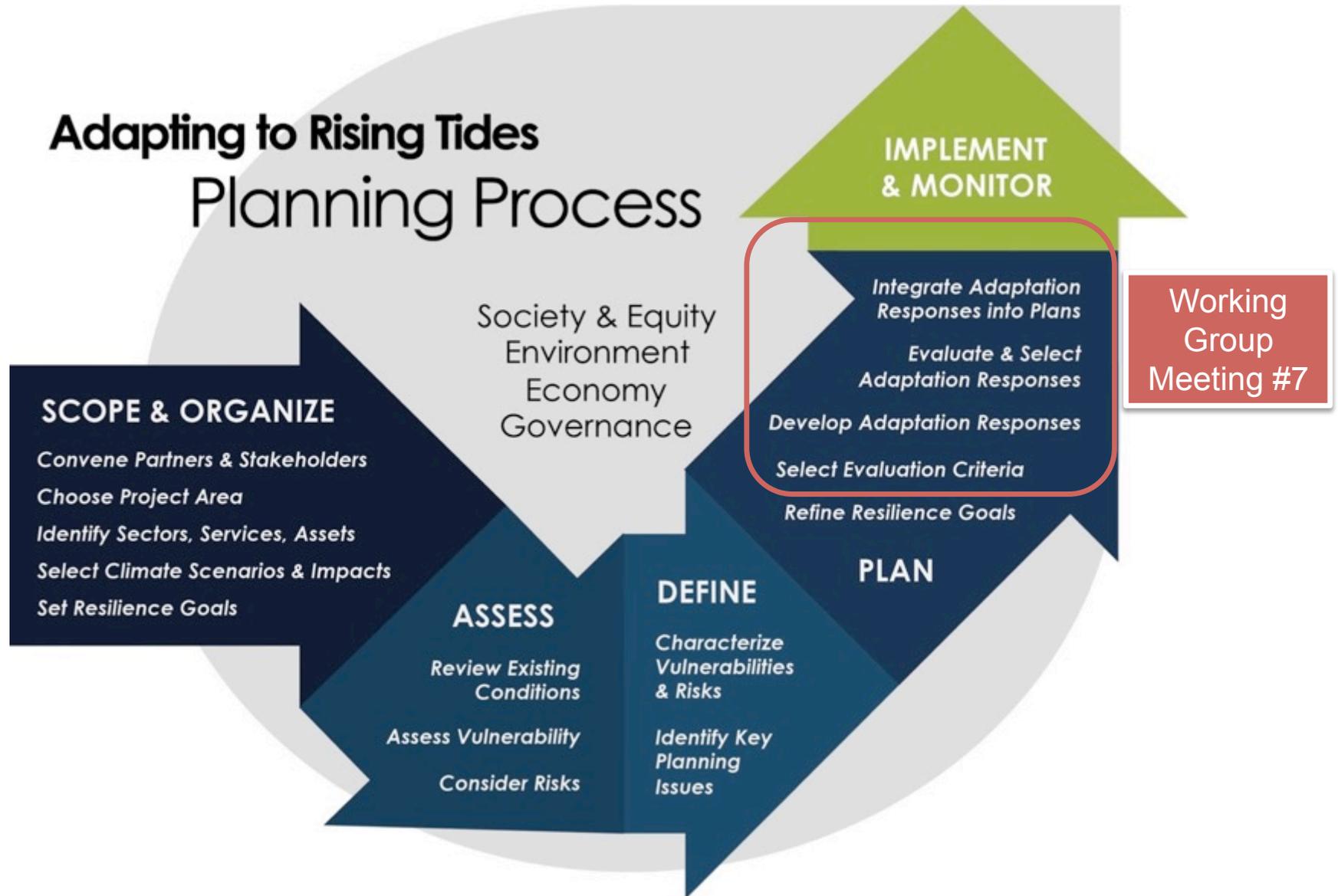


# Project Timeline

ART Contra  
Costa Project



## Adapting to Rising Tides Planning Process

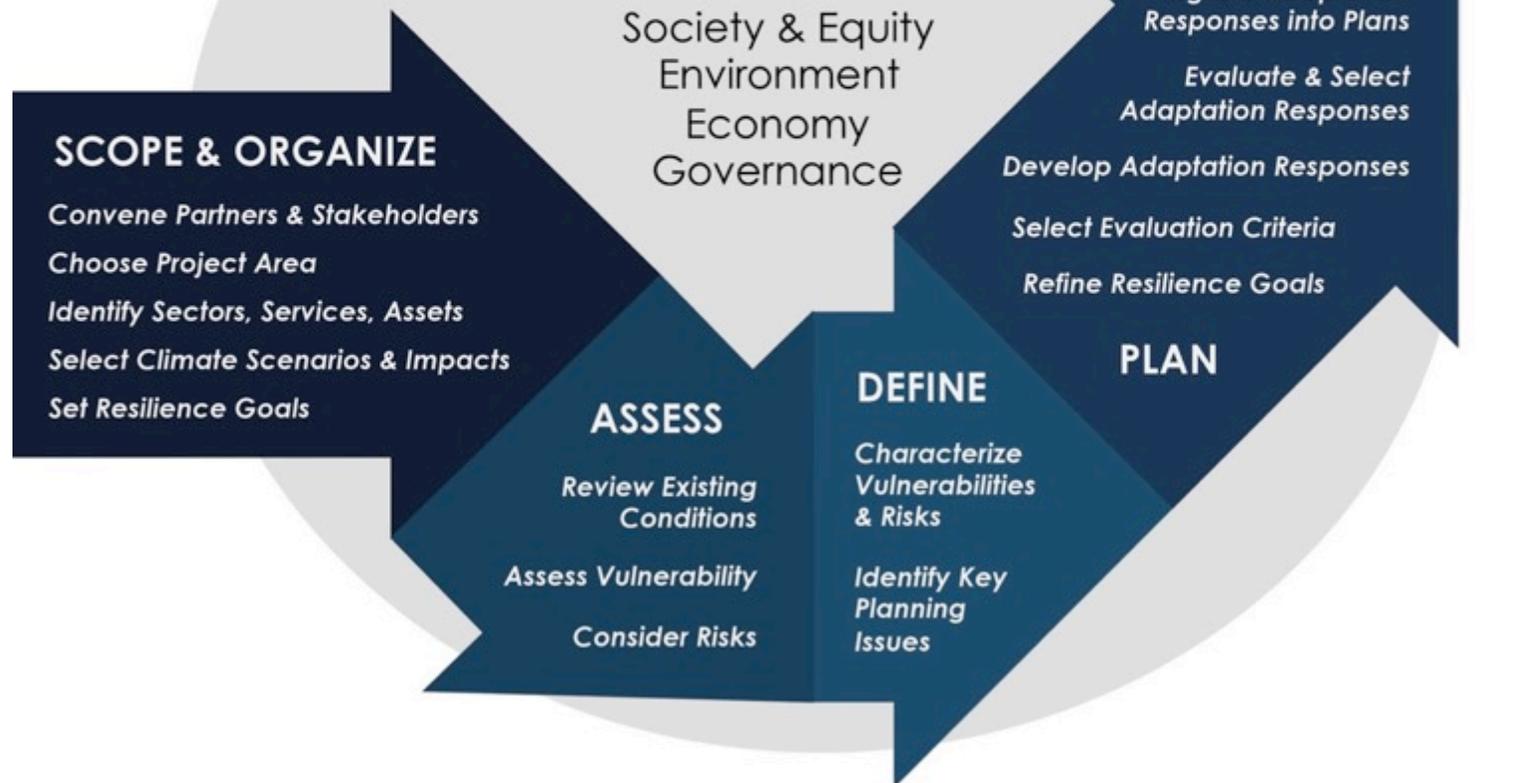


# Project Timeline

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Working  
Group  
Meeting #8

## Adapting to Rising Tides Planning Process



# Project Outcomes

- A diverse and capable stakeholder working group
- Eight project resilience goals that touch on all four frames of sustainability



# Project Outcomes

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## **Governance:**

Prioritize and resource agencies, organizations, private entities, and communities in Contra Costa to work cooperatively to address climate change.

Improve coordination among regulatory agencies to reduce programmatic or legislative barriers to addressing current and future flood risks.

## **Society and Equity**

Support communities, and in particular those with characteristics that could make them more vulnerable, in accessing affordable, safe and healthy housing, utilities and services, recreational opportunities, transportation and transit, and information about risk.

Protect the health, safety and welfare of all who live, work and recreate in Contra Costa County.

## **Economy**

Maintain and improve local economic vitality and access to diverse employment opportunities by preserving the function of major employment centers, infrastructure and utilities.

Recognizing Contra Costa County's regional refining and goods movement role, ensure the energy and transportation sectors and the interconnected networks and systems they rely on are resilient.

## **Environment**

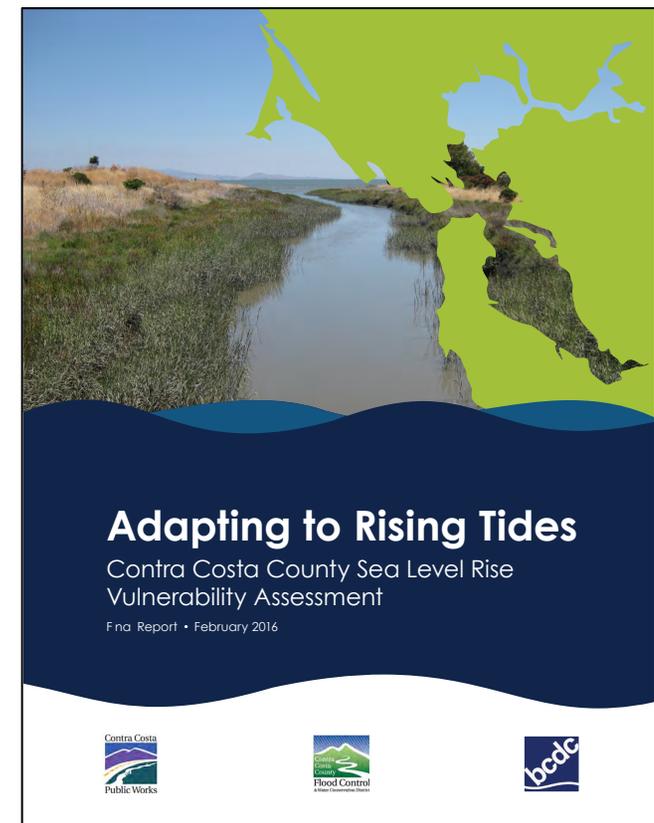
Protect and improve the environment by preserving and restoring habitat, continuing to improve air and water quality, and safely addressing contaminated lands.

Promote the use of natural and nature-based approaches where possible and appropriate to improve community and economic resilience.

# Project Outcomes

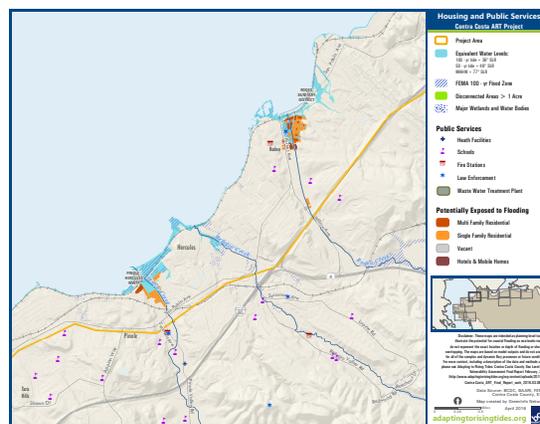
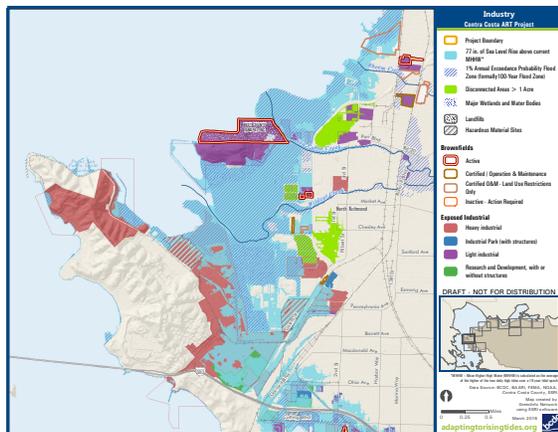
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- Locally refined ART sea level rise maps and shoreline overtopping analysis



# Project Outcomes

- A robust assessment of 30 asset categories across 11 different sectors
- 15 asset-specific profiles
- An understanding of the consequences of flooding on all four frames



DRAFT Assessment Chapter      Contra Costa County Adapting to Rising Tides Project

### People

People are the core of a community. It is critical to understand the unique needs of people, and the risks they may face during a hazard. The health of a community is dependent on the health of its residents. Within their communities, and throughout the region and beyond, people create social networks and culture, support the local economy as customers and employees, and contribute to the tax base.

Flooding can impact the health of a community if there are direct impacts on people or their homes, or if important services are disrupted in the days and weeks after the event. As flood hazards become more frequent and more severe as a result of climate change, greater proportions of the population will be impacted. The impact may be more severe for some communities, especially those with people, housing, employment sites and community services within the existing coastal or riverine floodplain, and those communities with underserved, resource limited or vulnerable populations. While in many cases, social cohesion can offset some of the consequences of flooding because impacted people will be more able to help each other meet some of their daily needs, not all have the strong community or social capital needed to be self resilient.

For this project, community vulnerability is described using the approach developed for the Stronger Housing, Safer Communities project completed by the ART Program in partnership with the Association of Bay Area Governments Resilience Program. Stronger Housing, Safer Communities selected ten indicators that represent characteristics of individuals and households that affect their ability to prepare for, respond to, and recover from a disaster. These indicators include financially constrained households, renters, non-English speakers, people of color, educational attainment, transit dependent individuals, the elderly and the very young. Indicators were mapped at a regional scale to identify areas (block groups) that may have a higher concentration of one or more indicators. Together, these indicators begin to present a picture of community vulnerability. Regional Flood Hazard and Community Vulnerability Assessment Report, 2015

### Exposure to Current and Future Flooding

The West County Wastewater District's Water Pollution Control Plant is in the Richmond area. The Contra Costa ART project area includes a portion of the shoreline cities of Richmond, Pinole, Hercules and Martinez, the inland adjacent cities of El Cerrito and San Pablo, and a very small portion of Pittsburg on the eastern boundary of the project area. Also included in the project area are portions of the unincorporated communities of North Richmond, Tara Hills, Bayview, Mountain View, Rodeo, Crocker-Hartman, Clyde, Vine Hill, Concord, Mountain View and Bay Point. There are a total of 156,205 people living in the project area. The West County Wastewater District currently provides wastewater disposal service to 16.9 square miles of Contra Costa County, including unincorporated areas (43% of District), portions of the cities of Richmond (40% of District), San Pablo (15% of District) and Pinole (2% of District). Wastewater from these areas is conveyed through a system of pipes and pumps to the Water Pollution Control Plant (WPCP) for discharge or reuse. Currently, most of WCWD's 8 million gallons per day (MGD) average dry weather flow secondary treated effluent is sent to EBMUD's North Richmond Water Reclamation Plant (NRWRP) and the Richmond Advanced Recycling Expansion (RARE) for reuse by Chevron's Richmond Refinery. Flows in excess of 12.5 MGD and those that does not meet the quality required by EBMUD for recycling and reuse are dewatered and discharged to the Bay through the West County Agency deep water outfall. WCWD serves a population of approximately 92,970 residents, as well as industrial, commercial and public customers. WCWD owns and manages the treatment plant and entered into a joint powers authority, the West County Agency, with the City of Richmond's Municipal Sanitary Sewer District to construct and maintain the outfall and diffuser.

Wastewater treatment plants are permitted to discharge a specific amount of wastewater based on a capacity allowance. The WCWD WPCP has a rated capacity of 12.5 MGD average dry weather flow and a rated peak wet weather capacity of 21 MGD. The West County Agency outfall has a design capacity of 58.94 MGD. The outfall extends approximately 4,700 feet into Central San Francisco Bay, with the last portion being a diffuser section designed to ensure maximum dilution and mixing with deep bay waters. As part of WCWD's Capital Improvement Plan (CIP), the agency has implemented a sewer and lateral

<sup>1</sup> [http://www.adaptingtorisingtides.org/projects/stronger\\_housing\\_safer\\_communities\\_strategy\\_for\\_seismic\\_and\\_flood\\_risk/](http://www.adaptingtorisingtides.org/projects/stronger_housing_safer_communities_strategy_for_seismic_and_flood_risk/)

<sup>2</sup> [http://resilience.aabg.ca.gov/projects/stronger\\_housing\\_safer\\_communities\\_strategy\\_for\\_seismic\\_and\\_flood\\_risk/](http://resilience.aabg.ca.gov/projects/stronger_housing_safer_communities_strategy_for_seismic_and_flood_risk/)

**Asset Description**

West County Wastewater District (WCWD) was formed in 1947 and currently provides wastewater disposal service to 16.9 square miles of Contra Costa County, including unincorporated areas (43% of District), portions of the cities of Richmond (40% of District), San Pablo (15% of District) and Pinole (2% of District). Wastewater from these areas is conveyed through a system of pipes and pumps to the Water Pollution Control Plant (WPCP) for discharge or reuse. Currently, most of WCWD's 8 million gallons per day (MGD) average dry weather flow secondary treated effluent is sent to EBMUD's North Richmond Water Reclamation Plant (NRWRP) and the Richmond Advanced Recycling Expansion (RARE) for reuse by Chevron's Richmond Refinery. Flows in excess of 12.5 MGD and those that does not meet the quality required by EBMUD for recycling and reuse are dewatered and discharged to the Bay through the West County Agency deep water outfall. WCWD serves a population of approximately 92,970 residents, as well as industrial, commercial and public customers. WCWD owns and manages the treatment plant and entered into a joint powers authority, the West County Agency, with the City of Richmond's Municipal Sanitary Sewer District to construct and maintain the outfall and diffuser.

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14/2015

DECEMBER 2015

# Project Outcomes

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## Six key planning issues

- Water-dependent Industries
- Employment Sites
- Creek-side Communities
- Access to Services
- Ad-hoc Flood Protection
- Parks and Open Spaces



# Water-dependent Industries

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The County's seaport, marine oil terminals, and shoreline refineries rely on transportation and utility networks that are vulnerable to sea level rise and storm events.

Flooding of critical roads, rail lines, or pipelines both within the county and beyond could hinder critical goods export and import, negatively impacting the local and regional economy.



# Employment Sites

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Workers living within and outside the County commute by car, and flooding of the local and regional transportation system will impact their ability to reach employment sites.

Flooding of the transportation system will also disrupt critical supply chains that employment sites rely on, resulting in lost employee wages and reduced output and profit.



# Creek-side Communities

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Shoreline communities located near tidal creeks or channels are likely to experience flooding as sea levels rise, but have limited control over the maintenance and management of the creeks and channels they rely on.



Community members that are linguistically or socially isolated, elderly, very young, disabled or mobility-challenged can face difficulties evacuating and finding temporary shelter during a flood event as they depend on others for mobility, personal care and support, rely on universally accessible transportation and shelter-in-place facilities, and may require special care or equipment.

# Access to Services

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A lack of redundant transportation options and the limited number of public facilities may result in shoreline communities becoming isolated from emergency services, public and private healthcare providers, jobs, schools, and other critical services during flood events.

This could have significant consequences on public health and safety, local economies, and community function, and will be a particular challenge for communities with characteristics that place them at greater risk of flooding.



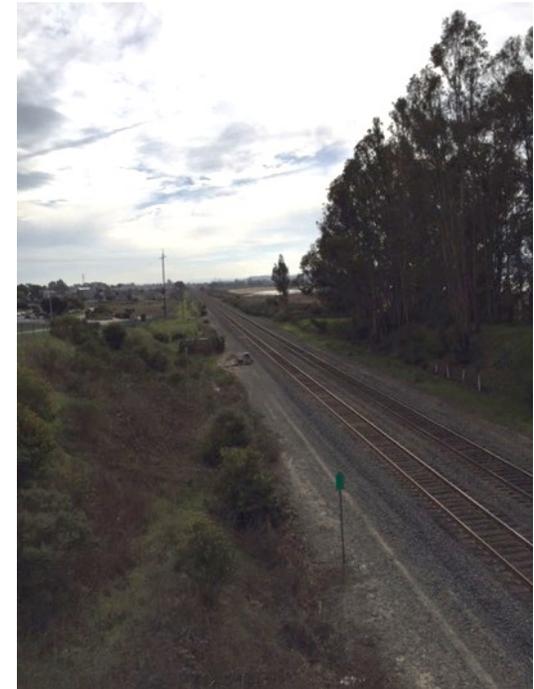
# Ad-hoc Flood Protection

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Some communities are protected from coastal flooding by rail lines, shoreline parks, and tidal wetlands.

While these built and natural areas reduce the flood risks they are not specifically designed or maintained for this function and therefore provide only “ad-hoc” flood protection.

Sea level rise will impact the ability of these systems to continue providing the current level of flood protection benefit.



# Parks and Open Space

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Shoreline parks and open spaces are often the first line of defense against inland flooding, are themselves vulnerable to the early impacts of sea level rise, and provide an opportunity for early adaptation.

Damage or loss of shoreline parks and open spaces in the project area would have significant consequences on community access to public recreation and could negatively impact public health.



# Project Outcomes

- Adaptation Responses for all 30 asset categories and the 6 key planning issues
- Actions to address all vulnerabilities identified in the assessment

Key Planning Issue #6: Parks and Open Space						
Shoreline parks and open spaces are not only the first line of defense against inland flooding, they are also themselves vulnerable to the early impacts of sea level rise and therefore are key early adaptation opportunity sites. Damage or loss of these parks and open spaces would have significant impacts on recreational users and health of the communities in the project area, many of which could not be replaced. Reduction in access to parks and open spaces would affect some individuals and communities more adversely than others, depending on their unique needs and capacity.						
Action Timing	Number	Description	Related Actions	Implementation (Leads)	Support	Is this action a priority for further evaluation and potential implementation?
Near-term	E.1	Identify, monitor and repair (as feasible) natural and recreational areas within parks that are experiencing erosion, bluff collapse, increased flooding and salinity intrusion.	RP2.1	EBRPD	EBRPD, County, Cities, SCC, SFEP, CA DFW, Bay Trail, BCDC, RWQCB, USACE	
	E.2	Develop guidance for regional shoreline park planning and project development activities that consider sea level rise to ensure impacts are factored into tidal wetland restoration and park management activities.	RP4.4	EBRPD	EBRPD, County, Cities, SCC, SFEP, CA DFW, Bay Trail, BCDC, RWQCB, USACE	
	E.3	Educate the public about the early risk to parks from sea level rise, the multiple benefits parks provide (flood protection, wildlife, educational and recreational values), and the opportunities for adaptation to protect these functions.	RP1.2	EBRPD	EBRPD, County, Cities, SCC, SFEP, CA DFW, Bay Trail, BCDC, Nonprofit and Community-based Organizations	
Mid-term	E.4	Form or expand existing partnerships among park districts, park and recreation departments, private entities, community-based organizations and community members to develop a shared vision for protecting the function of parks and open space in the project area.	RP1.1	EBRPD, County, Cities	EBRPD, County, Cities, SCC, SFEP, Bay Trail, BCDC, Nonprofit and Community-based Organizations	
	E.5	Develop a county-wide park enhancement and protection plan that identified opportunities for increasing the resilience of parks that are vulnerable to sea level rise and the capacity of park that are not at risk.	RP7.1 RP7.2 CP5.1	County	EBRPD, County, Cities, SCC, SFEP, Bay Trail, BCDC, Nonprofit and Community-based Organizations	
	E.6	Develop and implement a decision-making and funding framework to guide shoreline landowners in addressing Bay Trail vulnerabilities in a manner that protects connectivity and maintains the trail as a regional connector.	BT1.1 BT4.3	Bay Trail	EBRPD, County, Cities, SCC, SFEP, Bay Trail, BCDC, Nonprofit and Community-based Organizations	
Long-term	E.7	Develop a multi-agency permit review and authorization program to expedite the ongoing maintenance, minor repair, or upgrade of shorelines that are already experiencing erosion, for example within existing parks and along the Bay Trail.	BT3.3 pp. 2.3	BCDC	EBRPD, County, Cities, SCC, SFEP, CA DFW, Bay Trail, BCDC, RWQCB, USACE, NOAA, BAFFA, WTRMP	
	E.8	Establish a new authority, or expand an existing authority, to plan, fund, manage and maintain shoreline solutions to protect existing parks, open space, and the Bay Trail.		EBRPD, Bay Trail	EBRPD, County, Cities, SCC, SFEP, Bay Trail, BCDC, Nonprofit and Community-based Organizations	



Vulnerability	Action	Action Type	Process	Possible Actors
GOV1: In Contra Costa, the CalARP and ISO sites have a high level of compliance with hazardous material inventories and contingency planning requirements, while the diverse and numerous other hazardous material sites that use, generate or transport smaller quantities of hazardous materials have differing levels of compliance with operational and regulatory requirements.	Develop and implement a self-assessment process for hazardous materials sites to gather critical information needed to assess site vulnerability and risk from sea level rise, storm events, and elevated groundwater	Evaluation	New Initiative	DTSC, RWQCB, USEPA, CCHS, Cities, County, private entities
	Require consideration of sea level rise impacts including flooding, increased groundwater levels, salinity intrusion, and increased liquefaction susceptibility risk in all hazardous materials operational and regulatory programs	Program/operation	Operations	DTSC, RWQCB, USEPA, CCHS
	Educate businesses that use, generate or transport smaller quantities hazardous materials about sea level rise impacts and the options for reducing the consequences of a flood event, i.e., elevating stored materials and limiting amount of materials stored	Education/outreach	Emergency and Hazard Planning	DTSC, RWQCB, USEPA, CCHS, Cities, County, private entities

# Project Outcomes

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A clear and compelling case for taking action, and implementation pathways for four overarching themes

- A resilient transportation system
- Integrated shoreline management
- Targeted education and outreach
- Improved emergency and hazard mitigation plans



- ✓ A diverse and capable working group
- ✓ Broad resilience goals
- ✓ Locally refined sea level rise maps and shoreline analyses
- ✓ A robust vulnerability assessment
- ✓ An understanding of how flooding may impact the four sustainability frames
- ✓ Detailed adaptation responses
- ✓ A clear and compelling case for taking action both together and individually
- ✓ A path forward toward resilience

# Questions?

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**Adapting to Rising Tides**

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## Contra Costa County Adapting to Rising Tides Project

The ART Program is convening and staffing an adaptation planning project in west and central Contra Costa County, from Richmond to Bay Point. Using the ART approach, staff and stakeholders will work together to understand how current and future coastal and riverine flooding will affect shoreline communities and infrastructure. The project will investigate how flooding may impact transportation and utility networks, industrial facilities and employment sites, residential neighborhoods and community facilities, and shoreline park and recreation facilities. The consequences of that flooding will have, both within and beyond the project area, will be considered, and in particular the potential for disproportionate impact on certain community members. [\[Project overview handout.\]](#)

Currently, ART staff is working with asset managers and other stakeholders to gather the information needed to conduct a high-level assessment for the entire project area. The findings of the assessment will be validated by the working group and any specific issues, assets or geographies that need additional refined assessment will be identified. Adaptation responses will then be developed for the issues the working group collectively determines are high priority for action. Responses ranging from further information gathering, to infrastructure changes, to resource management and policy solutions, will be considered. In addition, recommendations will be developed for evaluating the trade-offs, benefits, and feasibility of potential adaptation responses.

For more information on this project, please contact: Wendy Goodfriend [wendy.goodfriend@ccdc.ca.gov](mailto:wendy.goodfriend@ccdc.ca.gov) 415-352-3646

**Project web page:**

[www.adaptingtorisingtides.org/project/contra-costa-county-adapting-to-rising-tides-project](http://www.adaptingtorisingtides.org/project/contra-costa-county-adapting-to-rising-tides-project)