



Regional Shoreline Adaptation Plan

An implementing project of **BAY ADAPT**

BCDC Engineering Criteria Review Board

June 26, 2024



Engineering Criteria Review Board Framing Questions

- Are the technical standards for assessing SLR impacts and adaptations appropriate?
- Are there any components of the guidelines that are missing or that are too burdensome?
- Are we asking cities and counties to consider the right questions when identifying adaptation strategies?
- How should cities and counties evaluate strategies to come up with preferred alternatives?
- How detailed should adaptation strategies be in this plan, and what are the key pieces of information municipalities need to identify to get to implementation?

An aerial photograph of a river delta. A large, winding river flows from the top right towards the bottom left. In the center of the river, there is a large, irregularly shaped island covered in dense green vegetation. The surrounding landscape consists of vast, flat fields, some of which are golden-brown, suggesting dry grass or crops. In the far distance, there are low mountains or hills under a clear blue sky with a few wispy clouds. The overall scene is a wide, open landscape with a prominent waterway and a lush island.

A REGION-WIDE CALL TO ACTION..

No matter where you live, shoreline flooding will impact everyone in the Bay Area

What's at risk?
(40-100 years)



5 million daily highway vehicle trips

60,000 daily rail commuters



13,000 existing housing units

104,000 existing jobs

70,000 new, planned housing units

85,000 new, planned jobs



28,000 socially vulnerable residents



20,000 acres of depressional wetlands, lagoon and tidal marsh habitat

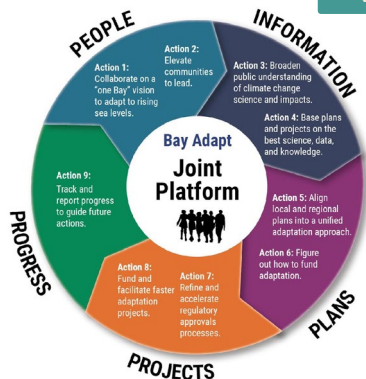


The Regional Shoreline Adaptation Plan (RSAP) is implementing the Joint Platform

BAY ADAPT

REGIONAL STRATEGY FOR A RISING BAY

A regional, **consensus-driven strategy** that lays out the actions necessary to adapt the Bay Area to rising sea level to protect people and the natural and built environment.



An initiative of the San Francisco Bay Conservation and Development Commission.

- *Task 1.1:* Create a long-term regional vision rooted in communities, Bay habitats, and the economy
- *Task 5.1:* Provide incentives for robust, coordinated local adaptation plans.
- *Task 8.1:* Incentivize projects that meet regional guidelines
- *Task 9.1:* Measure regional progress using metrics and share results.

Why do we need a Regional Shoreline Adaptation Plan?

- **Coordinated** adaptation
- Priority resources to **frontline communities**
- Long-term **health of wetlands**
- **Strategic** implementation
- Common **standards and methods**
- Pipeline of **funding**
- Track and **measure progress**

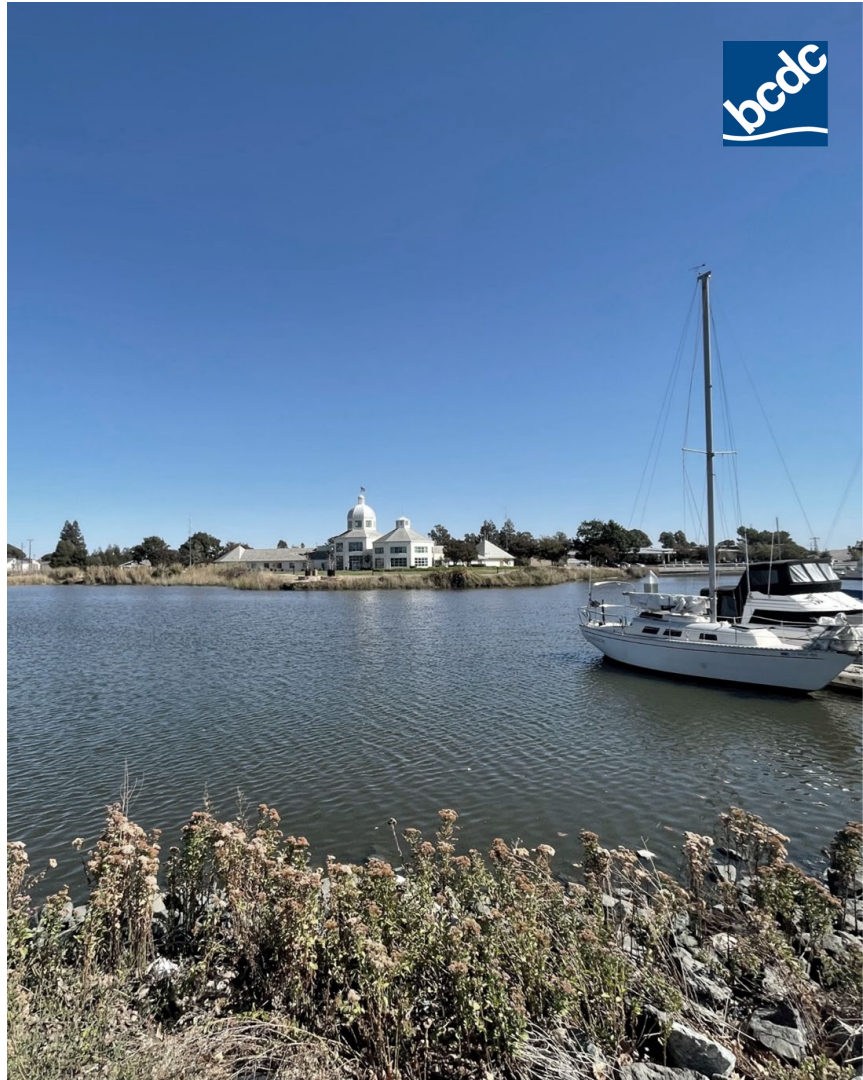


**Regional Shoreline
Adaptation Plan**

An implementing project of **BAY ADAPT**

New legislation to support sea level rise adaptation (SB 272, 2023)

- Mandates local jurisdictions to develop **subregional resiliency plans** and for BCDC to develop guidelines that those plans must follow
- Requires BCDC to review - and **approve or deny** - plans based on consistency with guidelines
- **Prioritizes State funding** to create plans and for projects in approved plan jurisdictions
- Guidelines to be adopted by BCDC by **12/31/2024**





What is the Regional Shoreline Adaptation Plan (RSAP)?

A region-wide plan for the Bay shoreline that guides the creation of coordinated, **locally-planned** sea level rise **adaptation actions** that **work together** to meet **regional goals**.



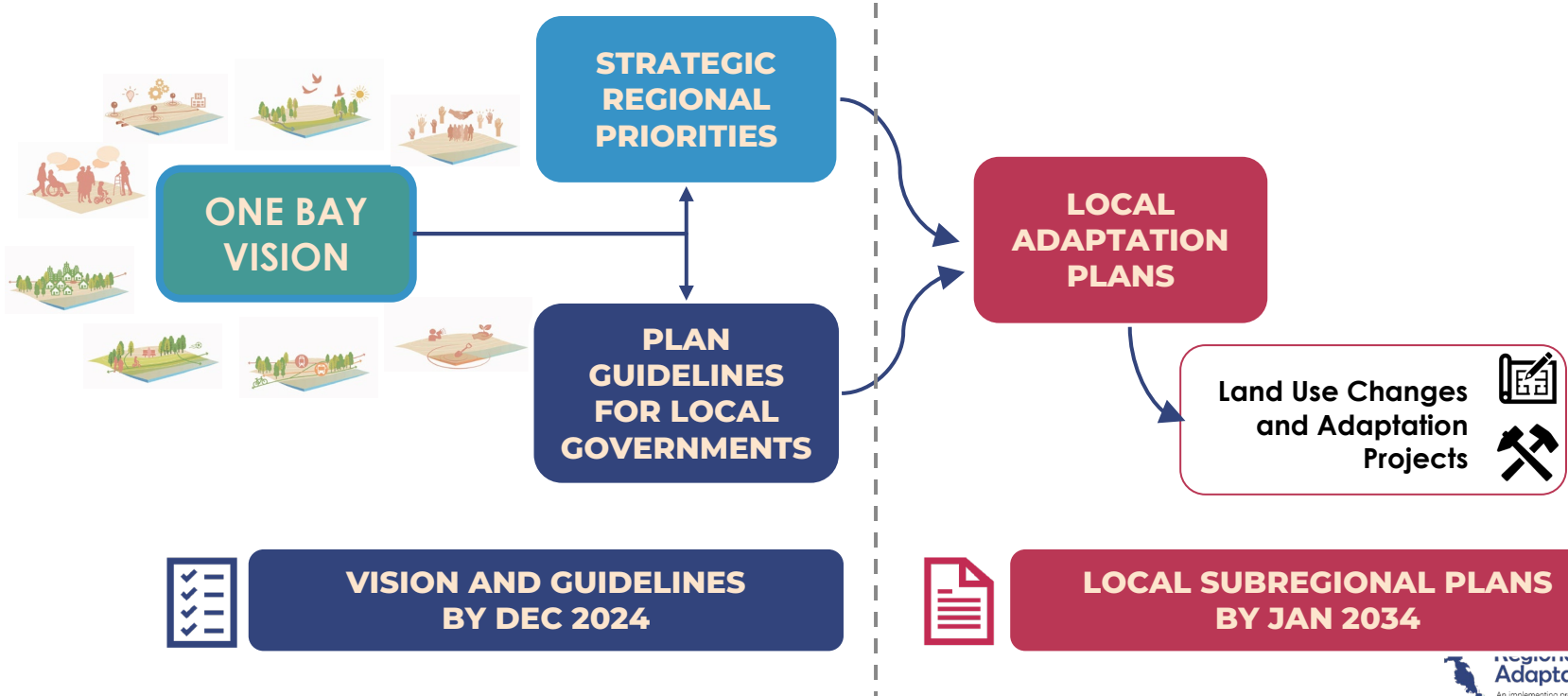
OCEAN
PROTECTION
COUNCIL



What is the Regional Shoreline Adaptation Plan made up of?



**REGIONAL
ADAPTATION
ONLINE MAP**



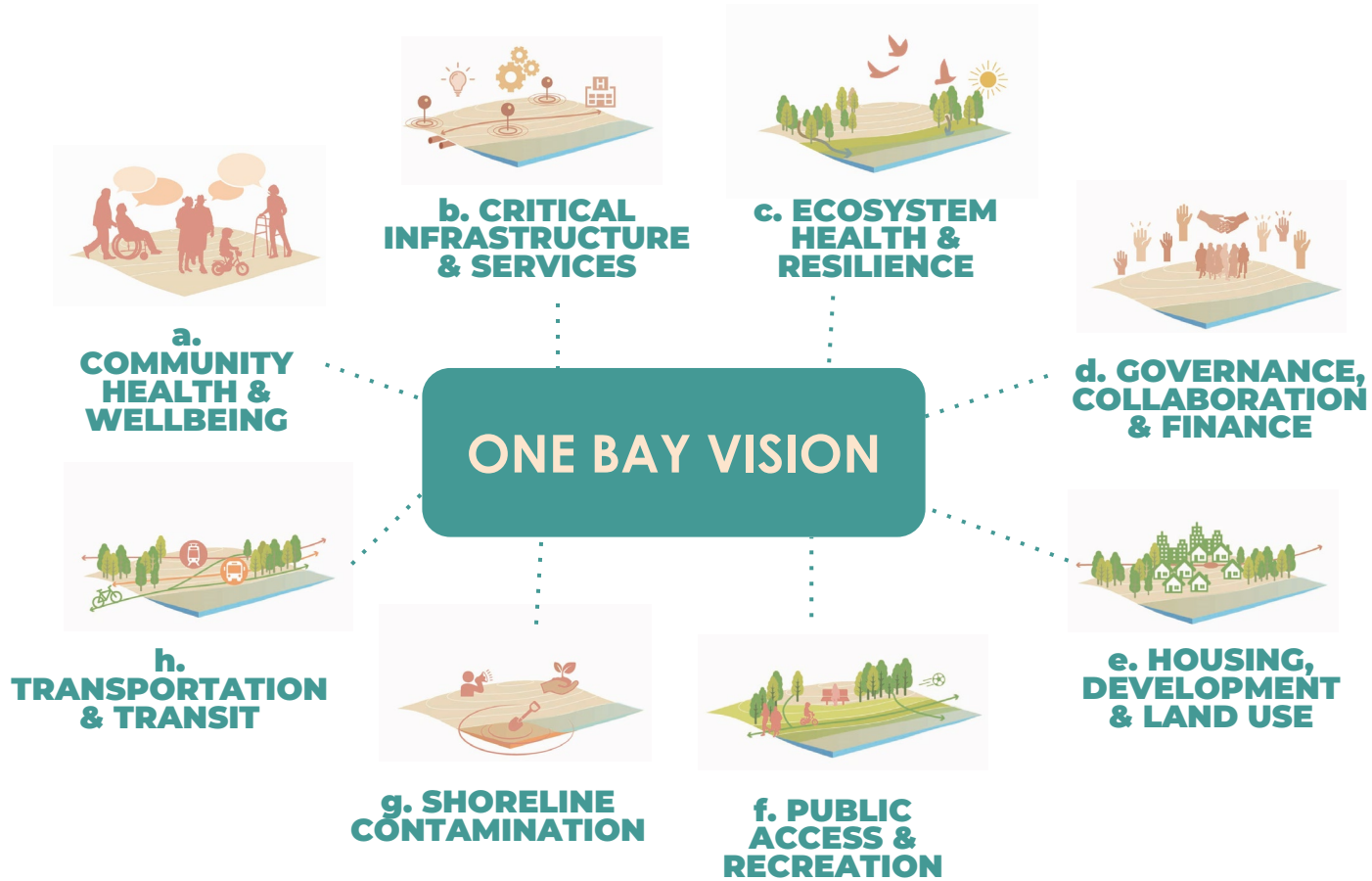
One Bay Vision for A Resilient Future Shoreline

As sea levels rise, the Bay Area's diverse communities come together to transform how we live, work, plan, and adapt along our changing shorelines.

In this future, communities are **healthy, safe**, and have greater **access** to the shoreline where they can feel connected to the Bay's edge and experience the beauty and wonder of thriving **habitats** that we depend upon to sustain our quality of life. Our region remains **connected** so that networks of people and goods can move with ease and get to the **places** they need to go. The **services** we rely upon keep our communities and economies running and are designed for the long-term. Achieving this future will require **governments**, the **private sector**, and **communities** to make a commitment to equity, address past harms, and take on complex, interrelated challenges together. A resilient future for the San Francisco Bay Area starts now and continues for generations to come.

Read the full version online at
www.BayAdapt.org





Subregional Shoreline Resiliency Plans

WHAT IS A SUBREGIONAL PLAN?

What Does The Plan Development Process Look Like?

- Plan scale and responsibility
- Aligning planning processes
- Ongoing responsibilities and updates

What Is In A Subregional Plan?

- SB 272 legal minimums
- BCDC plan guidance
- Leveraging and expanding existing plans

How Is A Plan Submitted, Adopted And Implemented?

- Local approvals and plan integration
- BCDC submission and approval process
- Tracking progress and implementation

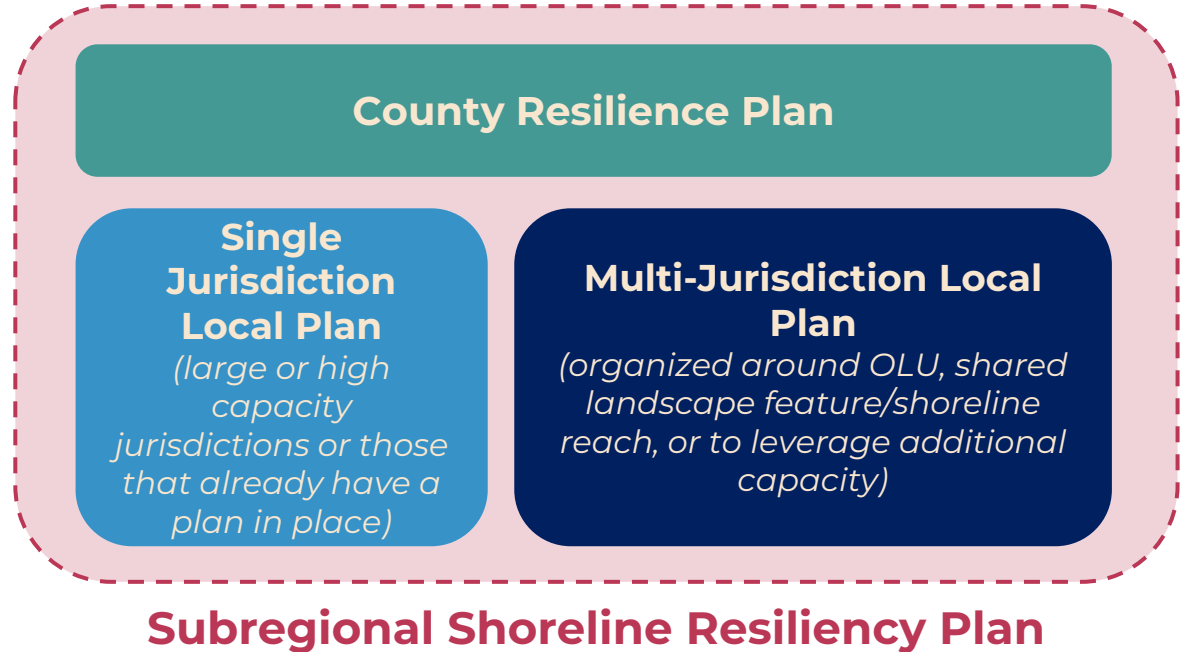
Plan Requirements

County Plan

- Covers unincorporated parts of the county
- Coordinates and organizes local plans

Local Plans

- Jurisdictions may submit **either** a single jurisdiction local plan or partner with their neighbors to submit a multi-jurisdiction local plan



Plan Updates

5 year limited update

- New sea level rise guidance and projections
- Changes to major plans at the local level, including changes to the Housing Element, land use/zoning changes, or new specific plans that impact the vulnerability of the jurisdiction or alter adaptation pathways
- New legislation or mandates that alter the process and/or outcomes for adaptation planning
- Any new development patterns that alter the prioritization of adaptation strategies
- Triggers or thresholds that have been crossed, signaling a shift in approach for an adaptation pathway
- Progress on priority projects and new or updated policies
- Funding updates for projects

10 year comprehensive update

- Complete update to all plan elements
- Comply with most recent guidance adopted by BCDC

Regional Shoreline Adaptation Plan Outline

Chapter 1: Purpose and Introduction

- SB 272: Sea Level Rise Planning and Adaptation
- Regional Shoreline Adaptation Plan
- Relationship to BCDC's Regulatory and Planning Program

Chapter 2: One Bay Vision

- Vision for a Resilient Future Shoreline
- Community Health and Wellbeing
- Critical Infrastructure and Services
- Ecosystem Health & Resilience
- Governance, Collaboration and Finance
- Housing, Development and Land Use
- Public Access and Recreation
- Shoreline Contamination
- Transportation and Transit

Chapter 3: Strategic Regional Priorities

- Use in Subregional Shoreline Resiliency Plans

Chapter 4: Subregional Adaptation Plan

- Requirements
- Plan Basics
- Planning Milestones

Chapter 5: Plan Element Guidelines

- Element A: Overview of Planning Process
- Element B: Existing Conditions
- Element C: Vulnerability Assessment
- Element D: Adaptation Strategies and Pathway
- Element E: Project List
- Element F: Land Use Plan
- Element G: Implementation Plan

Chapter 6: Minimum Standards and Recommendations

- Minimum and Recommended Participants
- Equitable Engagement and Participation Standards
- Coastal and Flood Hazard Standards
- Time Horizons and Hazard Scenario Standards
- Minimum Categories and Assets
- Vulnerability Assessment Standards
- Adaptation Evaluation Criteria
- Adaptation Strategy and Pathway Standards

Regional Shoreline Adaptation Plan Outline

Chapter 1: Purpose and Introduction

- SB 272: Sea Level Rise Planning and Adaptation
- Regional Shoreline Adaptation Plan
- Relationship to BCDC's Regulatory and Planning Program

Introduction and Context for the Regional Shoreline Adaptation Plan

Chapter 2: One Bay Vision

- Vision for a Resilient Future Shoreline
- Community Health and Wellbeing
- Critical Infrastructure and Services
- Ecosystem Health & Resilience
- Governance, Collaboration and Finance
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Language from the One Bay Vision supported by BCDC's Commission 2/1/24.

Will be revisited following the completion of the RSAP Guidelines.

Chapter 3: Strategic Regional Priorities

- Use in Subregional Shoreline Resiliency Plans

This sections identifies **key assets and locations in the region where adaptation must be prioritized to support regional goals.**

If a jurisdiction contains one or more, they must be included in subregional plans with additional descriptions for how they are being protected from flooding.

Regional Shoreline Adaptation Plan Outline

This section defines what a subregional plan is, who leads, and the BCDC submission and approval process

Chapter 4: Subregional Adaptation Plan

- Requirements
- Plan Basics
- Planning Milestones

This section defines seven plan elements with Guidelines that provide direction on **what needs to be included and submitted in the plan.**

Chapter 5: Plan Element Guidelines

- Element A: Overview of Planning Process
- Element B: Existing Conditions
- Element C: Vulnerability Assessment
- Element D: Adaptation Strategies and Pathway
- Element E: Project List
- Element F: Land Use Plan
- Element G: Implementation Plan

This section includes detailed standards that set requirements for **how to meet the Guidelines.**

Chapter 6: Minimum Standards and Recommendations

- Minimum and Recommended Participants
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Recommendations are included in certain sections that reflect best industry practices but not required to meet the Guideline.

What are Strategic Regional Priorities?

Chapter 3: Strategic Regional Priorities

Spatially-specific regional priorities.
Only applies to jurisdictions that have a SRP identified in their planning area.

Chapter 5: Plan Element Guidelines

All jurisdictions must follow all guidelines and identify local priorities.



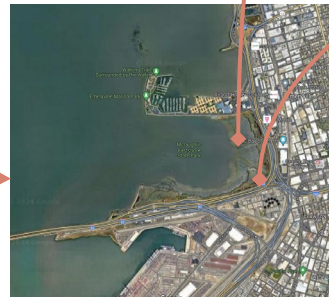
LOCALLY IDENTIFIED PRIORITIES

Plan Element Guidelines

- A1
- A2...

Min Categories and Assets

- Communities
- Facilities
- Ecosystems
- Utilities
- Etc.











Ex: Planning Area



Subregional
Shoreline
Resiliency Plan

Draft Strategic Regional Priorities

One Bay Vision	Strategic Regional Priority
 <p>Critical services are reliable.</p>	<p>Identify and protect regionally-significant critical infrastructure that's vital to the region's public health and economy</p>
 <p>Healthy Baylands ecosystems thrive.</p>	<p>Enhance and accelerate wetland restoration and habitat connectivity.</p>
 <p>Regional collaboration drives efficient and effective adaptation.</p>	<p>Identify key locations where local decisions lead to cross-jurisdictional impacts.</p>
 <p>Places are designed for a changing shoreline.</p>	<p>Use development areas exposed to sea level rise as opportunity zones to make long-term land use decisions.</p>
 <p>Communities are healthy and vibrant.</p>	<p>Prioritize minimizing housing displacement in vulnerable communities due to housing loss and other displacement factors.</p>
 <p>The Bay shoreline is accessible to all.</p>	<p>Prioritize the protection of public access along the shoreline.</p>
 <p>People and ecosystems are safe from contamination risks.</p>	<p>Prioritize contaminated sites that are in or near vulnerable communities.</p>
 <p>Safe and reliable transportation connects the region.</p>	<p>Protect key regional transit assets and nodes.</p>

Draft Plan Guidelines



The Guidelines describe what needs to be included and submitted in the plan

Element A: Overview of Planning Process

Element B: Existing Conditions

Element C: Vulnerability Assessment

Element D: Adaptation Strategies and Pathways

Element E: Project List

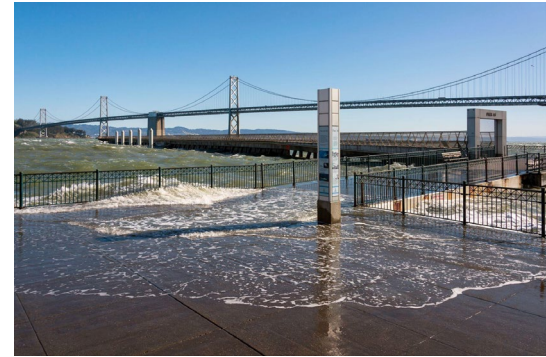
Element F: Land Use Plan and Policies

Element G: Implementation and Finance Plan

Draft Minimum Standards

- Minimum and Recommended Participants
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*The Minimum Standards set requirements
for how to meet the Guidelines*



Guideline Structure

Guideline

Sub-components

	A4. Include a robust equitable participation and engagement plan and summarize engagement efforts that occurred throughout the project. R	Required (R)
A4-a.	Assess and define environmental justice communities and socially vulnerable communities within the planning area using the Online Mapping Platform. R	Reference to Online Mapping Platform
A4-b.	Review and describe how the participation and engagement plan meets the RSAP Equitable Engagement and Participation Standards. R	Reference to Minimum Standards that must be met for this Guideline
A4-c.	Include community partnership agreement(s), if applicable, that align with the RSAP Minimum Compensation Guidance. <ul style="list-style-type: none">Reference Resources Section XX for a sample community partnership agreement.	

Additional resources that can be used, if needed.

Element A: Overview of Planning Process **R**

Element A

- A1. List **local and county plan partners**, including jurisdictions, planning project team members, and affected parties.
- A2. Include **map of subregional adaptation planning area** (“planning area”).
- A3. Describe **multi-jurisdictional coordination** process.
- A4. Include a robust equitable **participation and engagement plan** and summarize engagement efforts that occurred throughout the project.

Draft Plan Guidelines

Element B: Existing Conditions **R**

Element B

B1. List and describe **existing Plans** and their update schedules, studies, regulatory codes, and/or other information that may be relevant to addressing and responding to coastal flooding hazards.

B2. Quantify and describe **physical and ecological conditions** of the landscape within the planning area.

B3. Quantify and describe **existing populations, assets, sectors, services, and land uses** within the planning area.

B4. Describe **existing capacity of entities involved** with the project team within the planning area.

Element C: Vulnerability Assessment **R**

Element C

C1. Identify and describe the **exposure of assets** to relevant coastal hazards along the required time horizons.

C2 . Conduct a **Shoreline Vulnerability Assessment** and summarize vulnerability.

C3. Confirm **priority action areas** based on vulnerability.

Question for the ECRB:

1. Are the technical standards for assessing SLR impacts and adaptations appropriate?

Element D: Adaptation Strategies & Pathways **R**

D1. Include a **local vision and goals** for the planning area that incorporates and localizes the One Bay Vision.

D2. Identify **criteria for evaluating adaptation strategies** that align with the local vision.

D3. Identify and describe **shoreline reaches** that cover the entirety of the planning area, based on findings from existing conditions and vulnerability assessment.

D4. Identify **adaptation strategy options/alternatives** for each shoreline reach and the planning area as a whole.

D5. **Evaluate adaptation alternatives** to identify preferred adaptation strategies for shoreline reach(es).

D6. Provide conceptual plan(s) and descriptions of **preferred adaptation strategies and adaptation pathways** for shoreline reach(es), including structural and non-structural strategies.

Questions for the ECRB:

1. Are we asking cities and counties to consider the right questions when identifying adaptation strategies?
2. How should cities and counties evaluate strategies to come up with preferred alternatives?
3. How detailed should adaptation strategies be in this plan, and what are the key pieces of information municipalities need to identify to get to implementation?

Draft Plan Guidelines

Element E: Project List **R**

E1. Include a **priority project list** that summarizes priority adaptation projects for the short and medium term.

Element E

Draft Plan Guidelines

Element F: Land Use Plan **R**

F1. Describe **land use changes** in the short, medium, and long-term necessary to enact the adaptation strategies and pathways identified in Element D.

Element F

Draft Plan Guidelines

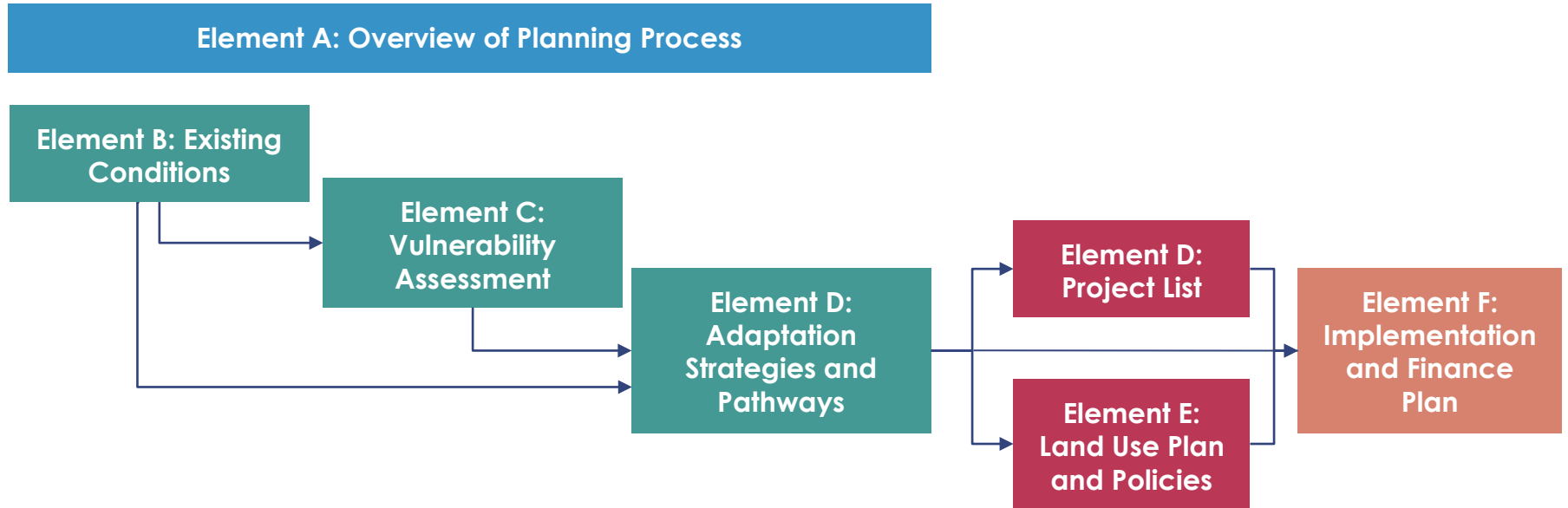
Element G: Implementation Plan **R**

G1. Include an **Implementation and Finance Plan** that identifies funding and responsible entities for implementing the adaptation strategies and pathways.

G2. Include a **monitoring program** that describes how adaptation strategies and triggers are being assessed to ensure adaptation pathways can be effectively implemented.

G3. Include a **strategy for plan updates** according to the Plan Requirements.

Subregional Plan Element Diagram

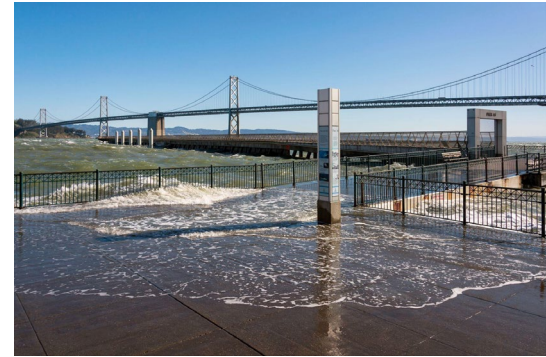


Draft Minimum Standards

Draft Minimum Standards

- Minimum and Recommended Participants
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*The Minimum Standards set requirements
for how to meet the Guidelines*



Draft Standards

Coastal and Flood Hazard Standards

Required:

- Sea Level Rise/Tidal Inundation **R**
- 100-year Extreme Tides/Storm Surge **R**
- Shallow Groundwater **R**

Recommended:

- 10-year Storm
- Compound Tidal/Fluvial Flooding
- Wave Runup
- Nearshore Wave Height
- Land Subsidence
- Shoreline Erosion
- Marsh Stability
- Liquefaction/Lateral Spread
- Saltwater Intrusion
- Tsunami
- Levee/Floodwall Failure
- FEMA 100-year and 500-year flood hazard zones*

Draft Standards

Time Horizon and Hazard Scenario Standards

Time Horizons & Hazard Projection Requirement Details (Vulnerability Assessment (VA) and Adaptation)						
Time Horizon	Hazard Scenarios	Sea Level Rise and Shallow Groundwater	Storm Surge (+3.5ft)	VA	Adaptation Pathways	Additional details
2050	INT	1ft	4.5	R	R	Near-Term: While the range of the OPC intermediate to high scenarios runs from .8 ft to 1.3ft, the RSAP guidelines only require 1 foot of SLR in the near-term scenario. This is because there is less uncertainty about sea level rise in the near term and regional data is not granular at a level of that differences of 0.2-0.5ft warrant three distinct scenarios.
2100	INT	3.1ft	6.6ft	R	R	Mid-Term: All hazard scenarios are required. OPC recommends conducting a Vulnerability Assessment on all three of the 2100 scenarios.
	INT-HIGH	4.8ft	8.3ft	R		
	HIGH	6.5ft	10ft	R		
2150	INT	6ft	9.5ft		R*	Long-Term: Formal quantitative risk analysis for long-term scenarios is optional but encouraged.
	INT-HIGH	8.1ft	11.6ft			
	HIGH	11.7ft	15.2ft			

Draft Standards

Vulnerability Assessment Standards R

Sensitivity

- Is the asset part of a networked system such that damage to other parts of the system would affect the assets' ability to function?
- What water or salt sensitive components of the asset are at-grade or below-grade, e.g., mechanical or electrical equipment, pumps, utilities, building heat, ventilation, power systems, or finished basements?
- Does the asset have openings that are at-grade or below-grade that are entry points for flooding, e.g., entryways, tubes, tunnels, ventilation grates? If yes, are their barriers (temporary or permanent) that can protect these openings from allowing floodwaters to enter? Are there pumps or other systems in place to remove floodwaters if they do enter?

Adaptive Capacity

- Is space available to provide for the natural migration of aquatic habitats inland?
- Is space available to move parkland, public access, or other water dependent uses inland?
- Do the existing conditions of the shoreline or asset provide the capacity for increasing elevation? For example, does current shoreline provide the foundation, width, sediment, soil condition, and or other features to allow for an increase in elevation within the available area?
- Are there uses that could be relocated inland or elevated outside of the current or future flood zone?
- Are there uses that could be dry or wet floodproofed to reduce damage, accommodate intermittent flooding and limit the risk of loss?
- Can uses be removed from the current or future flood zone?
- Is the asset currently being used or functioning at capacity, or does it have additional capacity to meet future conditions, e.g., projected increases in demand, level of service, higher Bay water levels, or elevated groundwater?

Draft Standards

Vulnerability Assessment Standards R

Consequences

- What degree and scale of economic disruption would occur if the asset was damaged, disrupted, or failed? Consider impacts to jobs and direct revenue generation.
- What would the water quality impacts be if the asset was damaged, disrupted, or failed, e.g., release of hazardous materials stored on site or pollutants leaching into groundwater as the water table rises?
- What habitat or species benefits would be lost if the asset was damaged or lost? What would the effect of this loss have on local and regional biodiversity and ecosystem health?
- If the asset was damaged, disrupted, or failed, would there be a loss of flood protection or wave attenuation benefits? If yes, what would the affect of this loss be on adjacent assets or communities?
- If the asset was damaged, disrupted or failed, would there be a loss of public access to the shoreline? Of recreational, educational or interpretation opportunities?
- What critical emergency services would be affected if the asset was damaged, disrupted or failed? .
- How would the community, particularly at-risk members, be affected by damage, disruption, or loss of asset function? Consider public health and safety, access to goods and services, community or social networks, and impacts to housing.

Draft Standards

Adaptation Evaluation Standards **R**

Assessing Adaptation Strategy and Pathways Alternatives				
One Bay Vision	Evaluation Criteria: Do the adaptation strategies and pathways...	Short-term	Mid-term	Long-term
Communities are healthy and vibrant	1. Reduce flood risk of populations, including those identified as vulnerable and/or Environmental Justice communities? R			
	2. Incorporate community health and wellbeing benefits such as: increased public access, improved mobility options, or other amenities? R			
Critical services are reliable	3. Reduce flood risk of critical infrastructure networks and ensure continuity of services? R			
	4. Incorporate continuity of emergency management operations, such as protection of facilities, evacuation routes, or others? R			
Healthy Baylands ecosystems thrive	5. Maintain or increase habitat types, extents, functions, and services, including designations for ecosystem migration? R			
	6. Include suitable nature-based adaptation, and if deemed infeasible, include hybrid green elements? R			
	7. Increase habitat connectivity and sustainable sediment supply?			
Regional collaboration drives efficient and effective adaptation	8. Address cross-jurisdictional vulnerabilities? R			
	9. Minimize risks of flooding on neighboring jurisdictions? R			
	10. Improve and/or formalize multi-jurisdictional governance to respond to adaptation pathways monitoring and adjustment? R			
	11. Allow for feasible permitting? R			

Draft Standards

Adaptation Evaluation Standards **R**

Assessing Adaptation Strategy and Pathways Alternatives				
One Bay Vision	Evaluation Criteria: Do the adaptation strategies and pathways...	Short-term	Mid-term	Long-term
Places are designed for a changing shoreline	12. Reduce flood risk to existing development, and avoid or minimize flood risks to the economy and future development? R			
	13. Reduce Bay fill intended solely for shoreline protection without providing habitat benefits? R			
	14. Support housing and/or affordable housing growth in areas outside of high current and future flood risk zones? R			
The Bay shoreline is accessible to all.	15. Maintain or improve public access to the shoreline, including trails, parks, open spaces, and water-oriented uses? R			
	16. Increase connections to the shoreline for vulnerable and/or Environmental Justice Communities with limited to no existing public access? R			
People and ecosystems are safe from contamination risks	17. Include remediation of contaminated shoreline sites, including prioritizing remediation of sites identified within or adjacent to Environmental Justice communities? R			
	18. Incorporate the impacts of shallow groundwater rise on mobilization and vaporization of contaminated areas? R			
Safe and reliable transportation connects the region.	19. Maintain functionality of significant transportation routes, assets, and corridors? R			
	20. Increase low-emissions mobility options? R			
	21. Incorporate multiple benefits into significant infrastructure changes, such as improving ecological health, increasing public access, and/or supporting low-emissions transit options? R			

Draft Standards

Adaptation Strategy and Pathways Standards

- A - Adaptation Strategies and Pathways **R**
- S - Strategic Regional Priorities **R**
- D - Adaptation Design Standards

Draft Standards

Adaptation Strategy and Pathways Standards **R**

A-1. First identify opportunities to avoid future harm to people and ecosystems **and reduce the need for new adaptation protections.**

A-2. Identify and incorporate **nature-based adaptation suitable to the landscape** to greatest extent feasible *before* using new gray or traditional hardscape approaches.

A-3. **Maintain or increase the spatial extent of Baylands habitats** through protecting, restoring, and/or enhancing existing habitats and designating migration space for habitat transition areas over time.

A-4. Identify opportunities to **connect Baylands habitats** to one another and to sustainable sources of water and sediment supply that will support natural adaptation processes.

A-5. **Provide flood risk reduction** for assets and services identified as vulnerable along the shoreline **through their end-of-life cycle.**

A-6. Utilize approaches that avoid, minimize, and **reduce Bay fill** for new gray or traditional hardscape shoreline protection.

A-7. Identify opportunities to **increase zoning density in areas outside of coastal and flood hazard risk** zones, while reducing density in areas with severe flooding risks.

Draft Standards

Adaptation Strategy and Pathways Standards R

A-8. Consider incorporating **phased zoning and land use changes** to allow for intentional and gradual transitions of assets and development out of areas at high future flood risk.

A-9. **Protect and maintain existing open spaces** for shoreline resilience.

A-10. **Integrate multiple benefits** through adaptation projects whenever possible.

A-11. Include policies that describe **how infrastructure will be removed** at its end-of-life cycle from areas designated to become future habitat and/or open space.

A-12. **Maintain, increase, and/or enhance public access** and connectivity to the shoreline.

A-13. **Minimize any increases in the release of greenhouse gas emissions**, which exacerbate and worsen future sea level rise impacts.

A-14. Establish standards and codes for **climate-responsive design** and implementation of strategies.

A-15. Evaluate, consider, and minimize the **consequences of failure of flood protection structures**.

Draft Standards

Strategic Regional Priority Standards R

- S-1. *Regionally significant infrastructure*: **Include protection of existing critical infrastructure and demonstrate how future changes to infrastructure will reduce and minimize future flood risk.**
- S-2. *Priority wetland enhancement area*: **Include land use policies that designate current and future land use areas necessary for the long-term survival of habitats.**
- S-3. *High-hydrologically connected area*: **Include actions for addressing multi-jurisdictional flooding risks.**
- S-4. *At-risk Transit Oriented Community (TOC)*: **Include land use policies that reduce density in areas at risk and/or demonstrate protection of TOC areas as sea levels rise.**
- S-5. *At-risk urban displacement area*: **Include actions that mitigate displacement risk.**
- S-6. *Regionally significant park and trails* : **Incorporate changes to trails and park areas that maintain existing access while increasing connectivity to other trails.**
- S-7. *Contaminated sites within or adjacent to Environmental Justice Communities*: **Include remediation of sites and actions that reduce risks of toxic materials mobilization and vaporization to communities.**
- S-8. *Regionally significant transportation infrastructure*: **Include protection of transportation routes and/or demonstrate how functionality of future infrastructure will support the region.**

Draft Standards

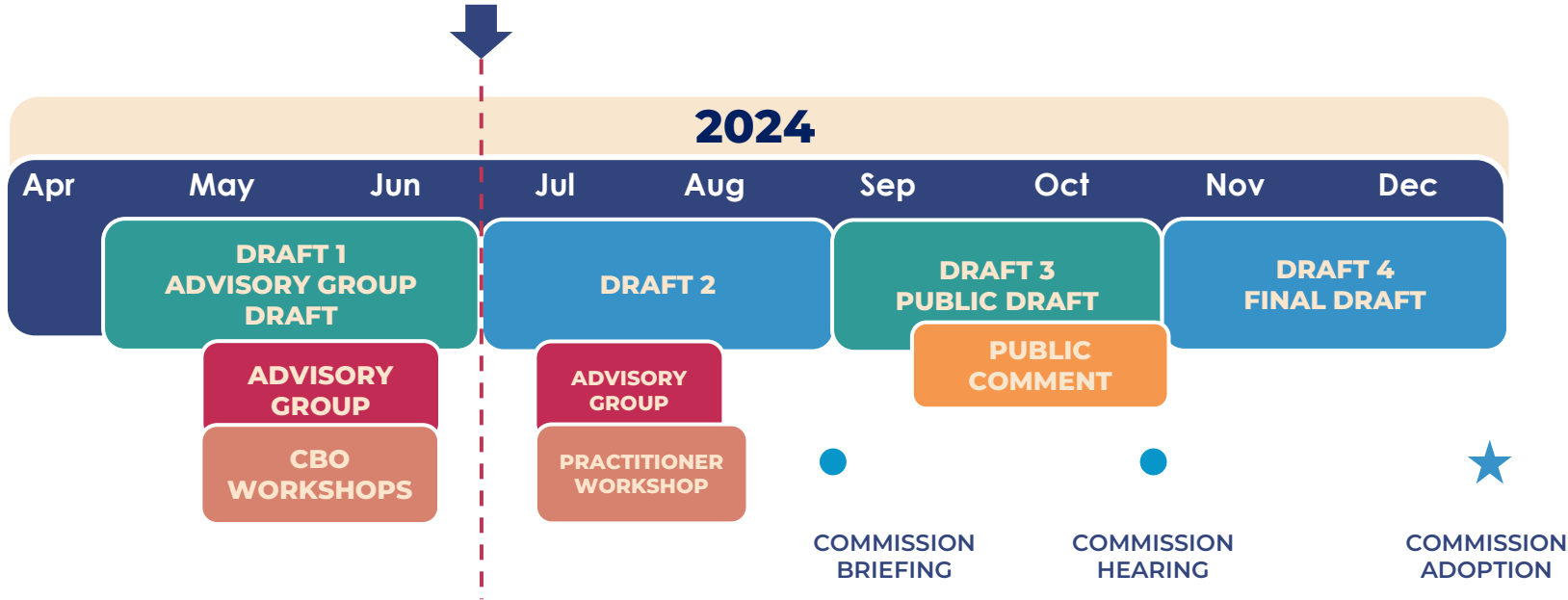
Adaptation Design Standards

- D-1. Integrate 4 feet of freeboard above FEMA Base Flood Elevation.** New or re-development, if sited in areas at risk of future coastal flood hazards, should incorporate additional height to freeboard elevation to accommodate future coastal hazards.
- D-2. Consider a setback from the shoreline.** New or re-development, if sited in areas at risk of future coastal flood hazards, should consider appropriate development setbacks that allow space for adaptation.
- D-3. Consider integrating features into new, retrofit, or rebuilt infrastructure that allows for adaptations to the structure when conditions require.** For example, when designing flood protection structures such as levees, consider widening the base to accommodate raising levees to address future flood risk.
- D-4. Incorporate current and future shallow groundwater rise risks on new or re-development.** This includes limiting below ground and ground floor uses, elevating or floodproofing water and salt sensitive components and equipment (e.g. heating and cooling units, generators, electrical controls), including temporary deployable flood management measures or improving urban drainage and stormwater management.

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RSAP Timeline



SUBREGIONAL RESILIENCY PLAN DEVELOPMENT

