

Adapting to Rising Tides project
www.adaptingtorisingtides.org

Announcements

ART Program and Collaboration Updates

- FHWA Mapping/modeling, Hayward Focus Area, East Bay Regional Park District Study, Housing and Community Resilience, ART Portfolio

ART Support

- Southern Marin, Mission Bay (San Francisco), San Mateo

Regional

- Joint Policy Committee-Resilient Shorelines Program and Bay Area Climate and Energy Resilience Project, Bayland Goals

The ART program is leading, collaborating on, or supporting a number of related projects.

Meeting #2 Objectives – January 22, 2014

- Confirm initial resilience goals for project
- Begin Assess step
 - Vulnerability and Risk
 - Data collection
 - Relationships among assets



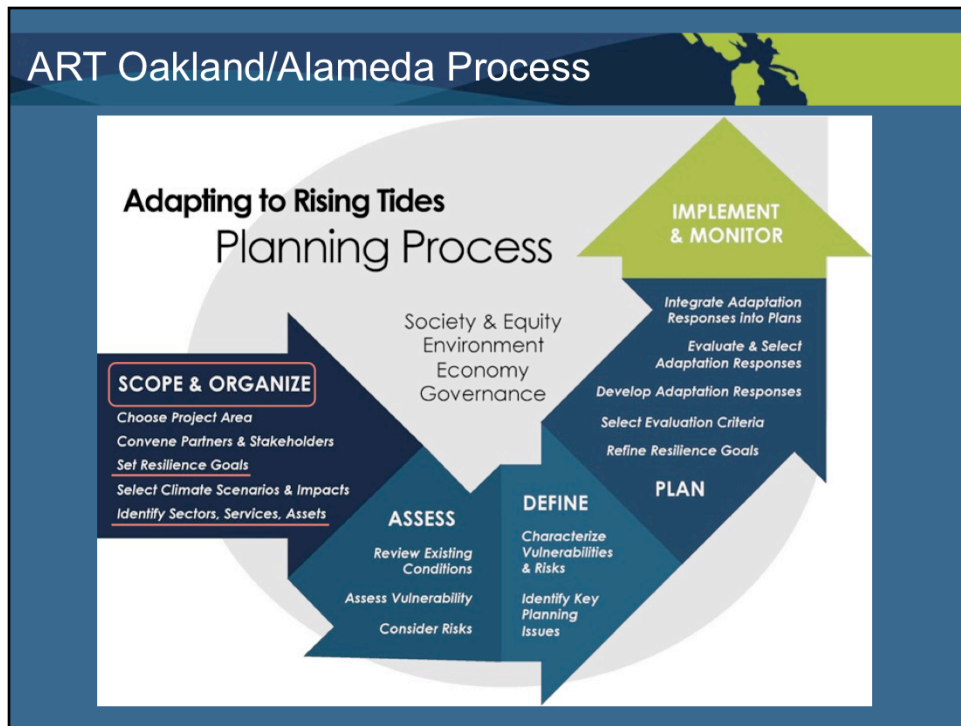
Oakland/Alameda Resilience Study

Meeting #1 Review – November 14, 2013

- Project Background
 - ART Subregional Pilot Project
 - ABAG's Airport and Infrastructure Resilience Project
 - Linking the projects and scaling down
- Process for Project
 - Five steps of adaptation planning

Last meeting was November 14, 2013. In that meeting, we introduced the two projects that form the background of this one, and discussed how those projects would be linked and scaled down to the Oakland / Alameda focus area. We also introduced the adaptation planning process that will be followed for this project.

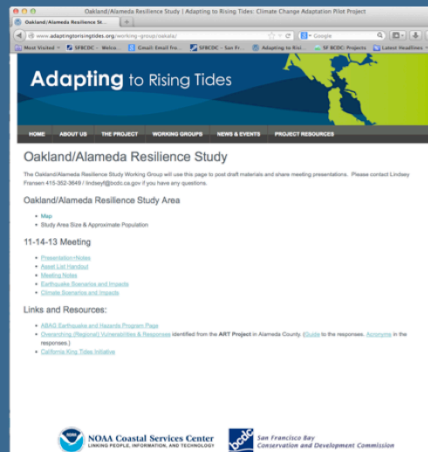
ART Oakland/Alameda Process



In the last meeting, we went through the Scope & Organize step. We have some follow-up on two elements: assets and resilience goals

Updates

- Launched OAK/ALA Focus Area website
- Revised Asset List
- Drafted Resilience Goals
- Began compiling vulnerability and risk information for focus area



First, some updates on what the team has been working on since the November meeting.

Updates: Asset List

Different level of assessment for different assets

- Neighborhood scale questions
- Tiered / phased approach
 - Complex, locally or regionally significant, networked – more detailed
 - Less complex, not networked – general, representative, or taken up later



We have been revising our asset list since last meeting, based on suggestions from working group members and developing a 'tiered' approach to how we plan to conduct V&R assessment. Seeking to answer neighborhood scale questions; doing more detailed assessments than at the subregional scale, but not necessarily doing full assessments of every single asset in the focus area. Complex, locally or regionally significant, or networked assets will be analyzed in detail, while less complex, non-networked, or very numerous assets (e.g., schools) may be analyzed in less detail – we may do a general analysis, look at a few representative assets, or take assets up later as we learn more about their neighborhood. For the assets in the latter category, our assessments will evolve organically; there isn't a firm cutoff where we won't consider any more in greater detail, and if we learn something while analyzing another asset that indicates we need to take a closer look, we will do so. Some assets may get more attention during the Plan step when we're considering adaptation responses, as we may find that a response would affect an asset that wasn't previously analyzed in detail. We will put up a revised list of assets on the website soon for review, and we'll keep you posted in meetings going forward if there are any major changes to the assets we're examining.

Resilience Goals

For the Oakland/Alameda Resilience Study the resilience goals should:

- Include the four frames: economy, society and equity, environment, and governance
- Reflect a shared vision
- Be used in this study to guide the development of adaptation responses
- Be re-evaluated and possibly revised during the plan step

These are the draft goals for this process - you should be able to see your own agency's mission in the goal but some parts of it/ them may be tangential to your goals. Goals can be specific or broad, near or long term.

Resilience Goals, Part II

Society & Equity	Economy	Environment	Governance
Access to jobs & services	Goods & cargo movement	Endangered species / habitat	Financial resources & staff
Transportation connectivity	Local economy supporting OAK	Lagoon & creek mgmt for species	Unified capacity to respond
Community cohesion	Employment center	Shoreline restoration	Upgrade utilities
Relationships and communications	Supply chain continuity		Assets relocated if necessary
Contingency plans	Entertainment		Maintain operability
Congestion, capacity	Business continuity		Contingency plans
Functioning infrastructure	Transportation continuity		Effective emergency command
Neighborhood	Critical infrastructure		Redundancy/backups
Strong CERT	Commercial transport		Safety
Outdoor recreation			Recover services
Safety			Emergency response
Food & water			

Summary list of concepts that came up in lightning round in last meeting, organized under the 4 frames

Resilience Goals, Part II

Discussion Questions

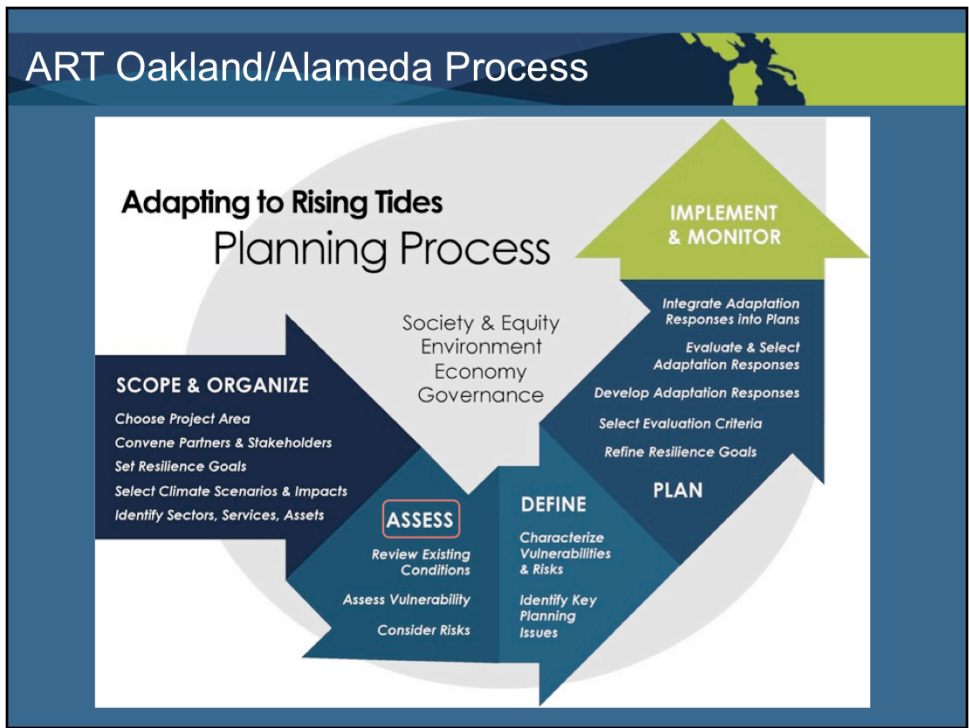
- Do you see your agency reflected in one or more of these goals?
- Do the goals adequately address the four frames (society & equity; environment; economy; governance)?



Resilience Goals, Part II

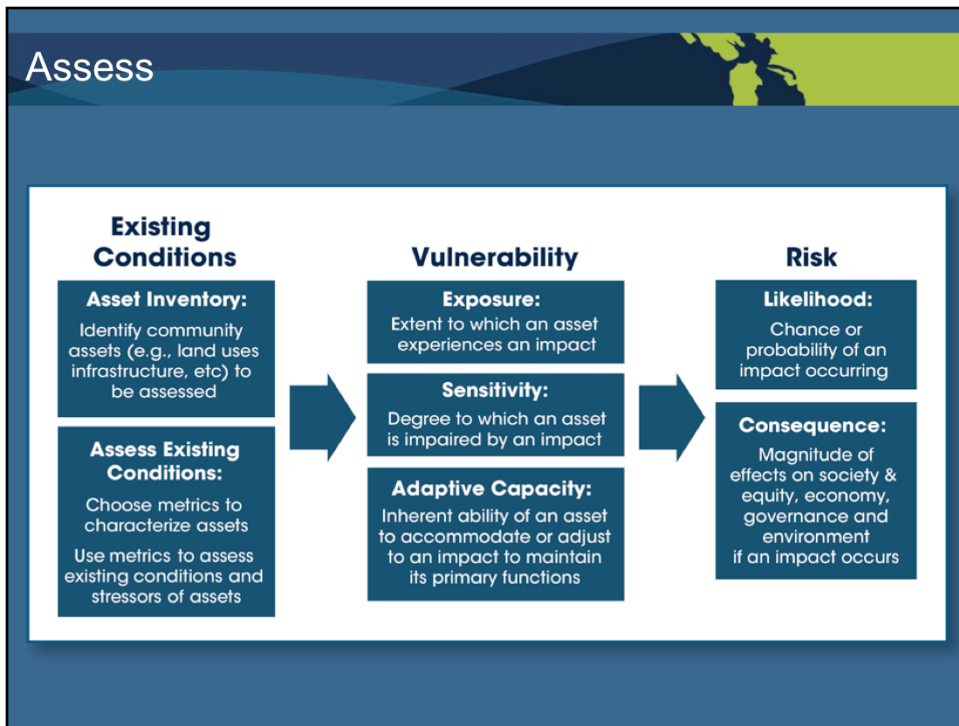
- Maintain neighborhood function by preserving access to roads and transit, goods and services, safe and affordable housing, and outdoor recreational opportunities.
- Maintain the function of the airport as a regionally significant passenger, cargo, and employment hub.
- Build resilience in all phases of the disaster lifecycle - from mitigation and preparedness to response and recovery - by protecting critical community facilities, supporting community awareness, ensuring assistance through mutual aid agreements, and building capacity for an effective recovery.
- Preserve environmental quality by protecting endangered species, ensuring good water quality, and providing appropriate wildlife habitat.
- Protect local and regional economy by preserving major employment centers, airport services, regionally significant transportation, and local infrastructure investments.

Draft resilience goals developed by BCDC and ABAG – any suggested revisions?



The rest of this meeting will focus on the Assess Step.

Assess



The Assess step includes assessing existing conditions, identifying vulnerabilities (which can be thought of as exposure, sensitivity, and adaptive capacity), and determining risks (in the case of the ART project, risk focused on the consequences of an impact occurring for the economy, environment, society, and governance structures.)

Assess

Metrics: Questions to ask yourselves, your agency, and your neighbors to assess vulnerability and risk and to inform adaptation responses

Existing Conditions

Vulnerabilities

- Information
- Governance
- Physical Qualities
- Functional Qualities

Consequences

- Society & Equity
- Environment
- Economy



This project will use a set of questions – or metrics – to identify vulnerabilities and risks for the various assets. These questions address existing conditions; four types (‘classifications’) of vulnerabilities, identified during the subregional project, and consequences for society and equity, environment, and economy.

Assess

Existing Conditions metrics describe the asset and highlight any current conditions or stressors that could affect its vulnerability to hazards. They could also help inform selection of adaptation responses.

Examples

Where is the asset located?

Who owns and who manages the asset?

How old is the asset and what is its remaining service life?



Assess

Information metrics help determine whether there are any ways in which an asset or asset category is vulnerable due to lacking, incomplete, or poorly coordinated information.

Examples

What types of information sources necessary to conduct a vulnerability and risk assessment are publicly available?

What types of mechanisms exist to share information between owners of connected or interdependent shoreline segments?



Assess

Governance metrics help determine whether an asset or asset category is vulnerable due to challenges with management, authority, regulation, or funding.

Examples

Is the asset protected from flooding by land or assets owned by other entities, or vice versa?

Are there existing funding sources that could be used to implement adaptation actions?



Assess

Physical characteristics metrics help determine whether an asset or asset category has vulnerabilities due to how or where an asset is designed or built.

Examples

Is the asset in an area of fill, loose or sandy soils, or a high water table that is at risk for liquefaction in an earthquake?

Are any components of the asset at-grade or below-grade? If so, are they sensitive to water or saltwater? Are they waterproof, corrosion-resistant, or otherwise protected?



Assess

Functional characteristics metrics help determine whether an asset or asset category is vulnerable due to its functions and relationships with other assets and asset categories.

Examples

Does the use of a property or facility make it particularly difficult to protect or evacuate, such as an elder care facility?

Is the system interconnected such that disruption of one can segment can affect the function of the entire system?



Assess

Consequences metrics help understand the potential consequences of a climate change impact for society, the economy, and the environment.

Examples

Does the asset serve vulnerable communities or critical facilities?

Are there any hazardous materials at the asset site that could pose a risk to the environment?

What is the value of the asset to the local economy?



Data Collection Tool: Metrics

Physical characteristics vulnerability metrics help determine whether an asset or asset category has vulnerabilities due to how an asset is designed or built.		
Questions	Responses	Data Source(s)
1. Is asset in current 100-year floodplain?		
2. Does the asset cross tidal creeks or the Bay?		
3. Is the asset co-located with other assets that require coordination for access or repairs? <i>For example, pipes located under roadways and co-located with buried transmission lines or data cables</i>		
4. Are electrical or mechanical components located at or below grade? If so, are they waterproof, corrosion-resistant, or otherwise protected from water and saltwater?		
5. Are components of asset that are sensitive to wave action (e.g., easily eroded) at or below grade?		
6. Are there linear components of the asset, such as pipelines, which are buried in liquefaction areas, areas that cross faults, or landslide areas?		
7. Does the asset include or rely on equipment with delicate components that could be easily damaged through impact or that are not properly secured or tied down?		
8. How accessible are asset components for monitoring, maintenance, mitigation, or replacement? <i>For example, are components buried underground or require the disruption of other assets to access?</i>		
9. Is the asset or a component of the asset in an area of fill, loose or sandy soils, or a high water table that is at risk for liquefaction in an earthquake?		
10. Is the asset or a component of the asset		

BCDC and ABAG staff have begun gathering vulnerability and risk information for assets in the OAK/ALA focus area. They are using information found in the subregional study and ABAG's Airport and Infrastructure Resilience Project, and other publicly available information. Will need help from the working group to fill in gaps! The metrics tool looks like this.

South Field Tank Farm	
Asset Location Oakland/Ala	Existing Conditions Metrics
Asset Description The Tank Farm is located along the southeastern edge of the Oakland International Airport (OAK) next to the San Francisco Bay. It includes storage tanks and pipelines that are used to store and transport jet A fuel to aircraft using OAK. The Port of Oakland owns the land where the Tank Farm is located. Various companies own and operate facilities within the Tank Farm, including Swissair, Shell, and Morgan Energy. Some of the facilities at the Tank Farm were built in the 1970s; some have been improved or rebuilt in the last decade.	<p>Information Vulnerability Metrics</p> <p>Information Information Governance</p> <p>Governance Vulnerability Metrics</p> <p>Physical Vulnerability Metrics</p> <p>Physical Tanks and pipelines are susceptible to corrosion. Structures may be susceptible to particularly salt water, which can cause underground infrastructure such as pipelines to fail in the event of a seismic event.</p> <p>Functional Vulnerability Metrics</p> <p>Functional There does not appear to be any other infrastructure serving the same function that could provide service in the event that any of the components of the Tank Farm are put out of service due to a climate impact.</p>
Key Issue Statement The South Field Tank Farm includes facilities at and below grade and is very close to the Bay. The Tank Farm is protected by a levee that may itself be vulnerable to sea level rise and storms. Projections indicate that it will be exposed to MHHW with 36" of sea level rise. If exposed to flooding, sensitive equipment may be damaged, resulting in a disruption of services and possible leaking of substances. Underground infrastructure such as pipelines is sensitive to liquefaction in a seismic event. Temporary measures, such as sandbags and pumping, could protect infrastructure from temporary and limited flooding. If disrupted, there is limited alternative or backup infrastructure in place that can serve the same purpose. Consequences could include damage to the environment, risks to human health, and disruption to the functioning of the airport, with associated impacts for society and the economy.	<p>Synthesis of Vulnerability and Consequences Metrics</p> <p>Society & Equity Consequences Metrics</p> <p>Society & Equity Disruptions to service of the Tank Farm could delay or cancel air service out of Oakland International Airport, which could have a negative impact on the transportation of cargo and passengers, with potential cascading effects on the surrounding economy.</p> <p>Environment Consequences Metrics</p> <p>Environment If the Tank Farm experiences a climate impact that causes tanks or pipes to leak or spill, it could have a negative impact on the environment – sensitive receptors, including wetlands and the Bay, are in the vicinity.</p> <p>Economy Consequences Metrics</p> <p>Economy Disruptions to service of the Tank Farm due to a climate impact could delay or cancel air service out of Oakland International Airport, which could have a negative impact on the transportation of cargo and passengers, with potential cascading effects on the surrounding economy.</p>

Once the metrics are filled in for each asset, we will create a profile sheet, which summarizes the findings from the metrics. The profile sheet forms the base for developing adaptation responses and also serves as a communication tool. The 2nd page is most helpful in developing responses – by identifying types of vulnerabilities, it makes it easier to figure out what kinds of solutions would best address those vulnerabilities. The 1st page is more useful as a communication tool – it introduces the asset and synthesizes the vulnerabilities and risks so the reader can tell, at a glance, what the major issues are.

Breakout Session: Asset Connections



Map for breakout session – see handout.

Breakout session debrief

- What kinds of connections did you find among assets within the focus area?
- What kinds of connections did you find between assets in the focus area and assets outside of the focus area?
- Did connections make assets more or less vulnerable to sea level rise, storms, and earthquakes?
- What other factors make assets vulnerable (physical, functional, information, governance)?

Next Steps

Over the next few months we will:

- Use publicly available information to add detail to the metrics where possible
- Call or visit you to refine information in our metrics sheets
- Translate metrics into profile sheets
- When finalized, these sheets will become the common knowledge base for the plan step