Issue Statements

ADAPTING TO RISING TIDES PROGRAM

This guide helps with…

Synthesizing the existing conditions, vulnerabilities and consequences for each of the project assets into issue statements.

These statements are included on the asset profile sheets, and are helpful in quickly communicating the issues identified for each asset. Additionally, the process of summarizing these asset-specific issues helps the project team begin to identify bigger, key planning issues that, together, the project team and working group will need to address in the Plan stage of the project.

Definitions: Issue Statements

To enable the project team and working group to determine priorities for developing adaptation responses, they need a clear picture of issues – the problems resulting from the climate impacts addressed in the project area. In the ART approach to adaptation planning, these issues derive from the existing conditions, vulnerabilities and consequences for the assets, systems of assets, sectors or services (collectively referred to as assets in the rest of this guide) considered. Asset-specific issue statements summarize the problems that need to be addressed, and help the project team and working group hone in on the project's key

A Challenging Task

There is no getting around that these Define step tasks – identifying and summarizing issues into statements, and identifying the key planning issues for the project – are a challenge. Despite taking multiple projects through the Define step, the ART team continues to struggle to land on a single approach that works across the range of project scales, asset types and stakeholder working group members involved. Yet rather than resort to ranking or scoring vulnerabilities or assets (which would be faster in the short-term) we continue to take projects through the Define step because it is worth the benefit that it ultimately provides to the project stakeholders, including the project team and funders.

Laid out here is an approach that reflects our lessons learned and current best practice, but your project team may find that it needs modification to work for your project. And, if you are struggling with this step, ask for help. Visit the ART Portfolio Help Desk and find an ART team member to contact.

planning issues, the next task in the Define step. (See **How-to Guide: Key Planning Issues** ( ))

Before writing the asset-specific issue statements, the project team should summarize each asset's vulnerabilities and consequences on its profile sheet. Refer to the Design Your Project Step 4 and **How-to Guides: Vulnerability and Consequence Statements** ( ) and **Profile Sheets** ( ).

The issue statement that is added to the profile sheet should clearly and succinctly describe how the climate impacts affect the asset, including the primary reason for the vulnerabilities and what the likely consequences would be. It should synthesize assessment findings as opposed to simply re-stating them. In preparing an issue statement, the project team may find it helpful to think of it as the "story" of the asset's climate impacts vulnerability and consequences. For example issue statements developed for ART Program projects, see: **Hayward Shoreline Resilience Project Profile Sheets** ( ) and **Oakland/Alameda Resilience Study Example Profile Sheets** ( ).

Identifying and Summarizing Issues

Laid out here are steps that the ART Program has found helpful in guiding project staff through identifying planning issues and writing issue statements.

1. Identify asset functions

Based on the asset description (on the draft profile sheet) identify the asset's function(s).

An asset may only have one primary function (e.g., a train station that is a rail commuter stop, or a system of lagoons that are part of a stormwater management system), but most assets will have more than one function (e.g. a school that serves as an educational facility, community meeting space and emergency shelter; a stretch of road that carries commuter traffic and goods movement, provides important access to an airport or seaport, and serves as an emergency evacuation route for residents).

2. Identify how the functions are vulnerable to impacts

Once the primary functions of an asset have been noted, identify how these are vulnerable to sea level rise and storm impacts.

Review the asset profile sheet information – the asset description and existing conditions information, and the vulnerability and consequence statements. Also see the vulnerability themes in Appendix A, and the ART Portfolio: Findings by Issues > **Overarching Vulnerabilities** webpage. These highlight some common themes that the ART Program has found to be relevant for a wide range of asset types, and can be helpful in articulating issues:

- Certain populations, land uses and community services are particularly vulnerable to impacts.
- Networked infrastructure that functions as a continuous corridor, or as a system of linked segments, for which impacts to one part can disrupt the function of other parts
- Assets that rely on other assets, sectors or services to function
- A lack of redundancy, such that no or few alternatives exist that serve the same function(s)
- Multiple public agencies and/or private entities share ownership and management responsibilities for

the asset itself and/or surrounding land uses

- Plans, policies, and practices for the asset do not factor in sea level rise and other climate impacts
- Lack information (or access to information) needed to understand vulnerabilities and consequences sufficiently to develop adaptation responses
- Existing conditions or design aspects of an asset that make it especially sensitive to impacts

3. Write a draft issue statement

Using the identified function(s) and vulnerabilities, write an issue statement of a few sentences for each asset. This statement is essentially a concise "story" of the problem that the asset would face or cause as a result of the climate impacts addressed in the project.

There is no magic formula for writing an issue statement, but important elements to include are:

- the asset's primary functions that may be disrupted by impacts, and any context that is needed to understanding why these functions matter
- special circumstances related to the loss of the functions, e.g., no comparable alternatives exist for the asset's function(s).
- description of the key ways in which these function(s) are vulnerable to impacts.

Other tips include: being specific where possible; avoiding putting forth solutions; and keeping consistent with findings of the assessment (i.e., not offering opinions about existing conditions, vulnerability and consequences that are not supported by the findings).

Plagiarism is good.

Whenever possible, copy language from existing issue statements, as well as the vulnerability and consequence statements – particularly if you can find assets with similar issues as those you are evaluating. Using copied text as a starting point can speed up the process of drafting issues statements – which is important for projects that assess numerous assets!

A few examples of issue statements are shown below. Others can be found in the **Hayward Shoreline Resilience Project Profile Sheets** (PDF) and **Oakland/Alameda Resilience Study Example Profile Sheets** (PDF).

Example Issue Statements from Oakland/Alameda Resilience Study:

Asset: Coliseum Amtrak Station

Functions: passenger rail stop

Issue statement: The function of the Coliseum Amtrak Station as a passenger rail stop on the intercity connection between San Jose and Sacramento is vulnerable to sea level rise and seismic impacts if the station (building) and parking lot, supporting utilities infrastructure that is below grade, and vulnerable parts of the rail line elsewhere are damaged or disrupted. A complex arrangement of shared ownership and operations of the station has led to a lack of accessible, detailed and well-coordinated information about the station's components, which in turn presents a challenge to sufficiently understanding vulnerabilities of the

station.

Asset: Bay Farm Island Lagoons

Functions: stormwater discharge

Issue statement: Lagoons on Bay Farm Island that are part of the Island's stormwater management system rely on infrastructure (e.g., pumps, pipes) that are undersized or otherwise not equipped to keep the lagoon system functional with future sea level rise and storm event impacts.

Asset: Highway I-880 between Coliseum Way and 98th Avenue

Functions: commuting, goods movement, linkages to major airport accessways

Issue statement: No comparable alternatives exist for the functions that the section of I-880 between Coliseum Way and 98th Avenue serves: commuting, goods movement, and linkages to all of the Oakland International Airport access roads. Within this section of I-880, the most vulnerable components are bridges that cross flood channels (Damon Slough and Elmhurst), and road surface drainages that are at-grade. To fully understand these vulnerabilities, more detailed information is needed regarding the capacity of these components to accommodate impacts, as well as the impacts of groundwater rise.

Signs of key planning issues

As the project staff summarizes asset-specific issues, certain challenges or problems that are 'signs' of broader, key planning issues will probably become apparent. If the individual staff members who work on the issue statements track these 'signs' along the way, the project team will have an easier time narrowing in on key planning issues. Look for:

- Vulnerabilities that cut across multiple assets, sectors, jurisdictions or geographies will often appear on multiple profile sheets, and stem from the same source or dependency (e.g., one stretch of vulnerable shoreline protection.)
- Problems that individual asset managers cannot or should not try to solve independently. These vulnerabilities tend to require coordinated decision-making or funding.
- Issues or vulnerabilities that have significant and/or near-term consequences on society and equity, environment and/or economy.
- Issues that are clustered in/around a discrete geography.
- Vulnerabilities that require regulatory changes to solve.

For example, in the Oakland/Alameda Resilience Project, all of the assets on Bay Farm Island are highly vulnerable because access routes on and off the island are highly susceptible to flooding.

4. Share the updated profile sheets

Share the profile sheets that now have the issue statements with relevant asset managers and owners and other experts, and encourage them to provide comments. Admittedly it is difficult to get input on another iteration of the profile sheets, but it is still important to keep stakeholders up to speed on the direction that the project is headed with respect to their assets and/or interests. If they do review and provide comments on the updated profile sheets, try to incorporate this feedback prior the next meeting in which the project team will be discussing draft key planning issues (the next task in the Define step).

Appendix A. Vulnerability Themes

The ART Program has identified common vulnerability themes found for a wide range of asset types. These are listed below with example vulnerabilities from the ART Subregional Project and the Hayward Shoreline Resilience Study Project that highlight these themes. (Note that even though each vulnerability is listed only once, many exemplify multiple themes.)

EXAMPLE VULNERABILITIES	SOURCE	VULN. TYPE
Networked infrastructure that functions as a continuous corridor, or as a system of linked segments, for which impacts to one part can disrupt the function of other parts		
Some assets along the Bay shoreline function as a continuous corridor, or as a series of linked segments, and impacts to one segment of the Bay shoreline can compromise the function of the other segments. This is especially true of the system of natural and structural shorelines along the Bay edge; energy, gas, and pipelines infrastructure; and for long, linear ground transportation assets such as the Bay Trail and the regional rail network.	ART Subregional Project	FUNC
Certain populations, land uses and community services are particularly vulnerable to impacts		
Residences, elder care facilities, hospitals, childcare facilities, schools, and animal shelters are particularly difficult to protect, evacuate, and rebuild due to the critical functions they serve.	ART Subregional Project	FUNC
Certain populations, including young children, the elderly, people with mobility or medical needs, people without automobiles, renters, people without insurance, the linguistically isolated, people at or below poverty level and caretakers of young children and the elderly, are highly susceptible to flooding impacts.	ART Subregional Project	FUNC
Assets that rely on other assets, sectors or services to function		
Vulnerable assets are often protected from flooding impacts by shorelines (structural and natural) that the assets' landowners, agencies and facility managers often do not own, have control over, and, may not realize is protecting their assets.	ART Subregional Project	GOV
Proper functioning of utilities, which themselves are vulnerable to sea level rise and storm events, is essential for communities to effectively respond during a disaster, and for communities, businesses, the airport, seaport, parks and recreation areas, and natural shorelines to function on a day-to-day basis.	ART Subregional Project	FUNC
Businesses and community land uses rely on power, water, access roads and other utilities to function. If these are disrupted due to sea level rise, these land uses will also be affected.	Hayward Focus Area	FUNC
A lack of redundancy for the asset, such that no or few alternatives exist that serve the same function(s)		
Alternative routes have limited additional capacity to accommodate re-routed commuter traffic (e.g., buses or carpools) or goods movement. If significant roadways or nodes are disrupted, re-routing would result in heavy congestion that could overwhelm the region's roadways and interstates as well as non-motorized transportation corridors (bike and pedestrian).	ART Subregional Project	FUNC
The temporary disruption or permanent loss of public transportation assets due to sea level rise and storm events, and the lack of sufficient alternatives, could leave residents in some communities unable to travel on a day-to-day basis, compounding evacuation challenges during an emergency.	ART Subregional Project	FUNC
The rail system lacks redundancy, and fixed stations and maintenance yards serve long, linear lengths of track. The interconnected nature of rail and the lack of redundancy mean that damage at any point in the system can disrupt commuter and goods movement system-wide, causing significant economic effects in the region, particularly if there is a loss of service to the seaport or airport. Repair or relocation of rail infrastructure may require significant investment to ensure public safety and security.	ART Subregional Project	FUNC

Certain communities or facilities are linked by only one or two access-ways (e.g., road, rail, or transit) and could become isolated during disasters. For example, the majority of access roads to the Port of Oakland's seaport and Oakland International Airport are vulnerable, and if they flood they could isolate these regionally significant facilities.	ART Subregional Project	FUNC
There are no nearby, comparable alternative routes for SR-92 and the Bay Trail in the focus area. Sea level rise impacts anywhere along these networks can affect the entire system's function.	Hayward Focus Area	FUNC
Multiple public agencies and/or private entities share ownership and management responsibilities for the asset itself and/or surrounding land uses		
The number and relationships of public agencies and private entities that own and operate transportation assets complicates planning and implementing improvements or use changes. Due to the function and physical characteristics of these assets, numerous agencies and organizations will be affected by the temporary disruption and permanent loss, or adaptation responses for, transportation assets.	ART Subregional Project	GOV
Public agencies and private entities that own or manage transportation assets do not have control over the surrounding land, road, or transit that provide access to their facilities or services, or in some cases provide protection against flooding. Ensuring that access to these facilities remains viable and that current levels of flood protection are maintained will require cooperation that goes beyond the agencies operating the transportation infrastructure. This is of particular importance to regionally and nationally significant infrastructure such as the Oakland International Airport, the Port of Oakland seaport, the interstate system, and lifeline facilities.	ART Subregional Project	GOV
Plans, policies, and practices for the asset do not factor in sea level rise and other climate impacts		
Capital investment planning, design, and funding for new infrastructure or for substantial repairs and improvements to existing infrastructure do not consider sea level rise impacts. Infrastructure designed to remain in place for longer spans of time and that is not built or rebuilt to be resilient to flooding and salt-water exposure will need to be protected or retrofitted long before the end of the expected life of the infrastructure. Resources to maintain or improve existing infrastructure are limited, and investments needed in the future to address sea level rise will affect financial resources, economic opportunities, and communities.	ART Subregional Project	GOV
Many of the plans, policies, and practices that guide community development, land use planning, emergency planning, and capital investments do not consider sea level rise or the adaptation responses that will be necessary to reduce the vulnerabilities and risks associated with sea level rise.	ART Subregional Project	GOV
The capacity to plan for sea level rise and storm event impacts on transportation infrastructure in a timely manner is limited due to the current lack of financing and regulatory mechanisms.	ART Subregional Project	GOV
Existing regulations make maintenance, restoration, and adaptation near and within tidal marshes and managed ponds difficult to implement, particularly because some adaptation actions remain untested.	Hayward Focus Area	GOV
Assets without maintenance programs are more vulnerable to sea level rise impacts because managers already have limited ability to complete repairs and sea level rise will increase damage related to erosion and overtopping.	Hayward Focus Area	GOV
Emergency response planning, funding, policies, approaches, and current public and private standards and operations do not consider sea level rise which could significantly change flooding impacts and, in turn, response needs.	Hayward Focus Area	GOV
Lack information (or access to information) needed to understand vulnerabilities and consequences sufficiently to develop adaptation responses		
Information about the effects of sea level rise on groundwater levels and salinity intrusion is insufficient for assessing vulnerability and risk, supporting identification of priority issues, and developing adaptation responses.	ART Subregional Project	INFO
There is limited availability of and access to regionally relevant, current and historic weather data needed to understand flood risk.	ART Subregional Project	INFO

There is a limited understanding of how dynamic baylands habitats such as tidal marshes, intertidal mudflats, and subtidal areas will respond to accelerating sea level rise, or how these habitats will be affected by shoreline adaptation responses (e.g., structural solutions such as levees) that may change tide, wave or sediment conditions.	ART Subregional Project	INFO
There is a lack of detailed, easily accessible and well coordinated transportation infrastructure information which is necessary for vulnerability and risk assessments.	ART Subregional Project	INFO
There is a lack of centrally coordinated information systems for contaminated lands and hazardous material sites which is needed for effective emergency and adaptation planning, and for setting remediation, monitoring and enforcement priorities to reduce risks	ART Subregional Project	INFO
Existing conditions or design aspects of an asset that make it especially sensitive to impacts		
Many high-cost and critical elements of transportation infrastructure are highly vulnerable to flooding because they are located at or below grade (tubes, tunnels, ventilation), in low-lying areas (airport runways, storage and maintenance facilities), or on top of levees (rail alignments).	ART Subregional Project	PHYS
Water- and salt-sensitive electronic and mechanical components and power supplies critical to the continued function of transportation infrastructure are often at or below grade and therefore are vulnerable to sea level rise, storm events, and elevated groundwater levels.	ART Subregional Project	PHYS
Certain assets such as bridges across tidal streams or in the Bay, and infrastructure located under the wharves at the Port of Oakland seaport, may be increasingly vulnerable to high water levels and wave erosion during storm events, which can disrupt asset function, cause scour, require additional maintenance, and potentially shorten asset life span.	ART Subregional Project	PHYS
Tidal marshes will not keep up with sea level rise solely through vertical accretion, especially in light of the Bay's declining suspended sediment supply and the lack of space to shift landward.	ART Subregional Project	PHYS
Stormwater and flood control infrastructure is vulnerable to higher Bay water levels and rising groundwater levels that will reduce the capacity of these systems to collect, convey, and discharge flows.	ART Subregional Project	PHYS
Shoreline recreation areas with activities that depend on grass (sports fields, golf) are highly sensitive to saltwater flooding and salinity intrusion.	ART Subregional Project	PHYS