Profile Sheets

ADAPTING TO RISING TIDES PROGRAM

This guide helps with…

Preparing profile sheets that summarize, for a specific asset, system of assets, sector or service, the findings of a project's assessment of vulnerability and consequences of climate impacts.

Profile Sheet Template

The ART approach to adaptation planning utilizes profile sheets to communicate and share assessment findings with the project working group as well as other stakeholders. Described below are the recommended components of a profile sheet. It is important to note that usually the profile sheet is filled out incrementally as the project team works through the planning process. See the **Hayward Shoreline Resilience Project Profile Sheets** ( ) and **Oakland/Alameda Resilience Study Example Profile Sheets** ( ) for examples of *finalized* profile sheets.

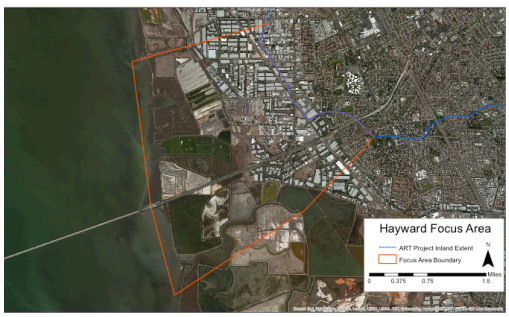
Heading and Date:

The profile sheet heading includes the name of the asset or system of assets, sector or service that is addressed. Profile sheets go through multiple rounds of review and revision, so as a subheading, include a date or version number to help project staff keep track of updates.

Description:

A concise narrative that includes information, such as ownership and management, location, physical characteristics, functions, connections and interdependencies with other assets. Information about existing conditions and issues that are relevant to understanding the vulnerability and risk from climate impacts are also included in this description.

GRAPHIC: A map, picture or diagram. If you preparing multiple profile sheets for the project, it is helpful to use a different graphic, specific to the asset, sector or service, for each such that the profiles sheets can be distinguished at a glance.



or

Issue Statement:

This summary should clearly and succinctly describe the issues associated with the impacts to the asset, system of assets, sector or service, 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 this summary, the project team may find it helpful to think of it as the "story" of the asset's climate impact vulnerability and consequences.

Note that when the working group members and other stakeholders review the initial version(s) of the profile sheets, these will (likely) not have this issue statement, which is much easier to add after the project team has confirmed the vulnerabilities and consequences (see below), and summarized the planning issues with the help of the **ART How-to Guide: Issue Statements** ()

Vulnerabilities:

This section of the profile sheet presents the vulnerability statements organized by the ART vulnerability classifications, including information (INFO), governance (GOV), functional (FUNC) and physical (PHYS). Depending on what is assessed, there may not be vulnerabilities of each type or there may be multiple vulnerabilities of the same type (e.g., INFO1, INFO2, etc.).

Making a statement

This guide should be used along with the **ART How-to Guide: Vulnerability and Consequence Statements** () which describes how to summarize assessment information into clear, outcome-oriented statements.

INFO:

Information vulnerabilities describe challenges in obtaining the data and information necessary to sufficiently understand and/or manage sea level rise vulnerability and risk. Factors to consider include:

- Lack of information: Necessary information such as elevation data or precise locations of hazardous materials has not been collected, compiled, or is outdated and no longer relevant, and no new research or study is either planned or underway.
- Unavailable information: Relevant information exists, but is not available to because, for example, it is held privately, the cost of acquiring it is prohibitive or the information is in the wrong format and difficult to obtain. For example, information about utilities or roadway systems may be located in project files rather than a database or GIS maps.
- Poorly coordinated information sources: Necessary information is collected or held by multiple sources that are poorly coordinated. Inconsistencies in collection methods or reporting norms (e.g., ID tags or naming systems) can make it virtually impossible to compile or cross-reference overlapping data sources.

GOV:

Governance vulnerabilities identify challenging management characteristics that could increase vulnerability. Factors to consider include:

- Inadequate management approaches: The ways in which the agency currently manages its asset(s) may not be adequate to address new challenges that sea level rise and storm events will introduce. Examples include the failure to consider issues outside of the agencies assets (also known as a silo approach where things are managed, funded and considered separately). A silo approach usually makes it difficult to

consider issues like climate impacts and often results in practices that constrain coordinating with partners, designing projects, and guiding investments in ways that improve resilience, particularly across jurisdictions and sectors.

- Inadequate authority or regulatory mechanisms: Existing management authority or regulatory mechanisms may be too limited or inadequate to account for unavoidable changes due sea level rise.
- Sources of financing: While limited budgets are a common problem, sea level rise may introduce novel management challenges for which no funding sources exist. Even when funds are more readily available, their use may be restricted and therefore not used for addressing sea level rise.
- Lack of mechanisms or governance structures to allow for the coordination and partnership necessary to address issues affecting multiple sectors, jurisdictions, communities, private industries and organizations.

FUNC:

Functional vulnerabilities are the functions, roles or relationships that make assets, services or sectors acutely sensitive to flooding, or severely limit their ability to accommodate or adjust to sea level rise and storm impacts. This type of vulnerability is sometimes linked to physical characteristics – for example, a marsh may be erodible (physical), but its function (providing habitat) is made vulnerable due to an impact. In the case of a senior living facility, the building itself is vulnerable to flooding (physical) and, due to its function, as a residence for seniors, it is more vulnerable than an office building both because of the characteristics of those it serves and the dependence of the the facility on outside services. Often an asset would *not* be directly exposed to an impact but relies on an asset that is impaired for necessary lifeline support or access, and therefore because of its relationship to the impaired asset is also vulnerable. Factors to consider include:

- Lack of system redundancy: For some types of assets, such as transportation, there may be a fundamental, system-wide lack of alternatives for serving comparable functions.
- Dependence on vulnerable assets: The functionality of some assets is dependent on other, vulnerable assets or systems.
- Function of the asset: The asset serves a particular role in the community (fire station, police station, animal shelter, emergency response function) or serves a population that has characteristics that make them more vulnerable to flooding or other disruptions (age, transit-dependent, renters, low-income).
- Networked systems: Fixed, linear systems are only as strong as their weakest link. For example, low points in structural shorelines can result in flooding to areas protected by higher structural shorelines.

PHYS:

Physical vulnerabilities identify a subset of existing conditions or design aspects of an asset, service or sector that make it acutely sensitive or severely limit its adaptive capacity to a climate impact. Factors to consider include:

- Low elevation: Infrastructure such as roads, pump stations, trails, or basements built at or below grade are more likely to be susceptible to flooding.
- Water sensitivity: Certain elements of assets, such as electrical or mechanical components of utility systems, are particularly sensitive to water, unlikely to continue functioning, and may need to be repaired or replaced, if they get wet. Rising groundwater also increases the potential for buried pipelines to float.
- Salinity sensitivity: Salt-sensitive assets include grass and other landscape features, as well as standard piping and pumping systems that were not designed to be salt-resistant (which is typically higher cost).
- Highly erodible: Beaches, mudflats, marshes, and levees are highly erodible when subject to wave action,

which will increase as sea level rises.

- Increased liquefaction potential: Higher groundwater and longer-lasting flooding could increase the liquefaction potential of certain areas (permanently or temporarily), leading to a greater risk of damage to infrastructure during an earthquake.
- Wetlands sensitivities: An insufficient supply of sediment and limited space for moving landward affects wetlands ability to rise with sea level rise and avoid drowning.

Consequences

The consequences section of the profile sheet contains summaries of the effects that vulnerabilities could have on people, the economy, and the environment. Consider how damage or disruption of the asset, service or sector, or the loss of service to those that rely on it, would affect shoreline and community function and at which scales (local, regional, statewide, nationally).

PEOPLE:

Describe effects on people where they live, work, recreate, obtain key services and conduct other day-to-day activities. Include considerations of equity (if applicable) by specifically identifying how disproportionate impacts are likely to occur to some community members.

- Example: Access to jobs and services may be lost due to temporary closures of this bridge. This is a low median-income community that serves as a jobs center for the region.

ENVIRONMENT:

Describe effects on natural shorelines (e.g., wetland), including their ability to provide biodiversity, flood protection, water quality, and carbon sequestration.

- Example: Marsh drowning will lead habitat loss for endangered and threatened species.

ECONOMY:

Describe effects on important drivers of economic health including, impacts to goods and people movement, employment centers, and business sectors.

- Example: Commuter and goods movement throughout the region would be damaged by temporary closures to this asset.

Example Adaptation Actions

Example adaptation actions that are either part of, or could be used to build, a comprehensive adaptation response that includes the key vulnerability addressed, one or more actions that could be taken, and the options for implementing those actions including the process, partners, and initiation timeframes. The example actions should be specific and relevant to the identified vulnerabilities, but they do not need to be fully fleshed-out solutions. Example actions may come from responses to past events and disruptions, or be taken from assessments that have been conducted for similar assets or geographies or may be generated by the project working group. The adaptation actions are usually the last item that is added to the profile sheet. The purpose of including example actions in the profile sheet is to support further brainstorming and dialogue about how best to respond to the identified vulnerabilities.