



➤ Office of Planning and Sustainable Development's State Sea Level Rise Vulnerability Assessment Tool



Marine and Coastal Zone Advisory Council Meeting
Presented by OPSD and ICF

November 6, 2025

Welcome and Agenda



1. Act 178 Introduction and accomplishments to date
2. Vulnerability assessments as part of a larger planning process
3. **Sea Level Rise Vulnerability Assessment Tool**
 - Tool Methodology
 - Prioritizing Adaptations
 - Next Steps and Implementation
4. Q&A

Background on Act 178, SLH 2021 (HRS§225M-9)

2021:

Creation of Act 178 Action Team; Facilities Inventory & Sea Level Rise (SLR) Exposure Assessment

2022:

Literature review of mechanisms used in other coastal states/municipalities to assess vulnerability to SLR

2023:

Updated exposure analysis to include building footprints; State Budget provided funding for the **development of guidance and a standardized process for conducting vulnerability assessments for state managed facilities**, specifically state-managed buildings and sea level rise.

2024:

Began contract with ICF to develop a standardized vulnerability assessment methodology and tool

2025:

Completion and release of SLR vulnerability assessment tool and related guidance

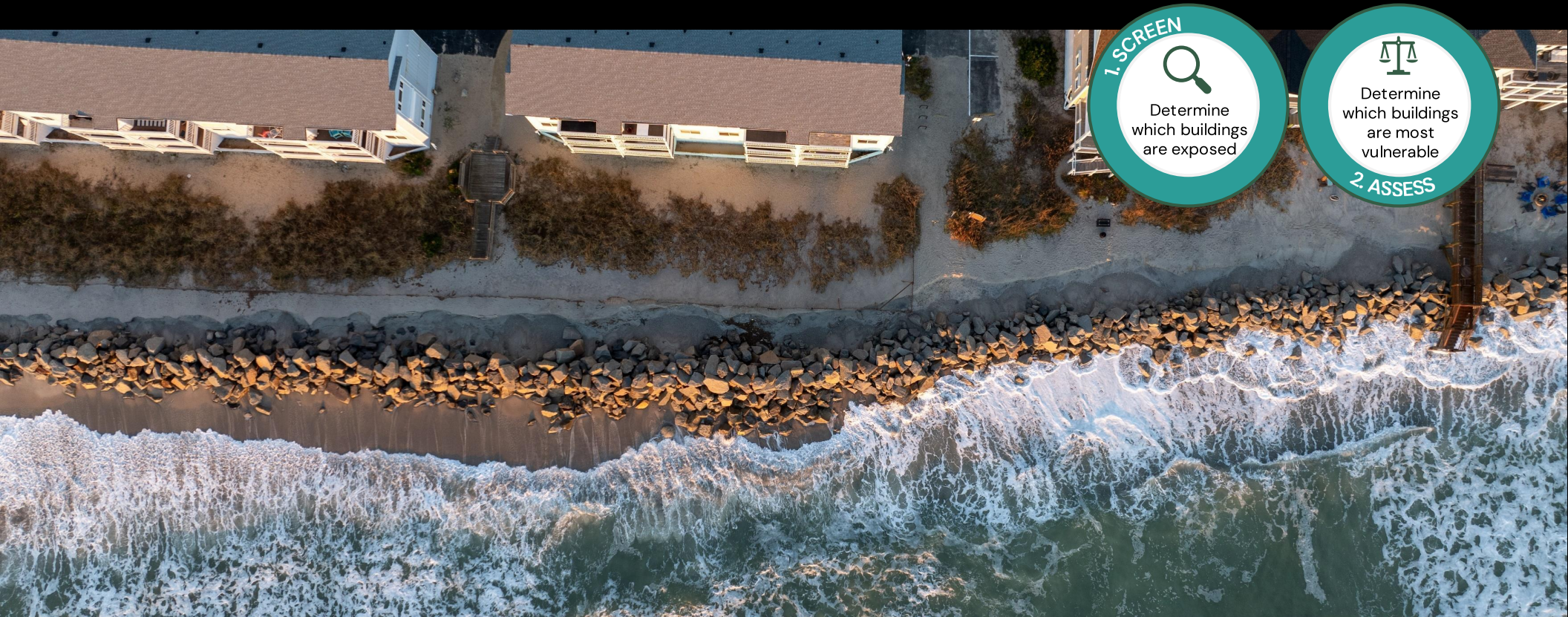
Why a standardized SLR Vulnerability Assessment?

- Many of the elements included in the broader guidance documents already exist for Hawaii – 2017 Hawaii SLR Vulnerability & Adaptation Report (2022 Update), Climate Change Priority Guidelines, etc.
- Standardized template encourages alignment of efforts, and could create a system for prioritizing projects
- State recognized assessments could be used as supporting documentation for CIP funding

StoryMap: [State Facilities & Sea Level Rise Adaptation in Hawai'i](#)



Sea Level Rise Vulnerability → Assessment Tool for State Buildings



Sea Level Rise Vulnerability Assessment Tool

- Questions to be completed for each building in an agency's portfolio
- Designed to assess *building* vulnerability so sea level rise
- 15–20 minutes to complete for each building
- A user guide is available to help users as they fill out the form



Microsoft Word (static)

Hawai'i Sea Level Rise Vulnerability Assessment Tool (SLR-VAT)

October 20, 2025

Purpose: This questionnaire-based Hawaii Sea Level Rise Vulnerability Assessment Tool (VAT) was created to help the user:

- Determine which state-owned buildings in Hawai'i are exposed to sea level rise,
- Assess the vulnerability of buildings which *are* exposed to sea level rise, and
- Help agencies prioritize buildings for adaptation measures based on which are most at risk from sea level rise and coastal erosion impacts.

Users will generate scores for each building assessed that agencies can use, along with additional qualitative information that this tool helps generate, to prioritize buildings for adaptation measures, allocate funding, and/or make other planning, design, or operations and maintenance decisions. Agencies should use this tool to evaluate their buildings every 5 years, or as updates to the SLR-VAT and/or relevant sea level rise data and tools are published.

User Guide: Please reference the accompanying user guidance as needed. It includes technical guidance on accessing necessary maps and data and supplementary information that may help users in selecting their responses.

Process: The SLR-VAT begins with a Rapid Screening (Section 0), which should take 5 minutes to complete. This is a preliminary step to determine whether a building is exposed to sea level rise and whether the user should continue or end the assessment. If you determine that the building in question is exposed to sea level rise in the rapid screening process, you will proceed with the detailed Vulnerability Assessment (comprising Section 1. Exposure, Section 2. Sensitivity, and Section 3. Adaptive Capacity) to determine a building's overall vulnerability to sea level rise. This should take 20–30 minutes to complete. For each building assessed with this tool, users will generate a **Total Vulnerability Score**, ranging between 1 and 30. Lower scores indicate a lower vulnerability rating when compared to higher scores:

- ≥1 and ≤10 = Low vulnerability rating
- >10 and ≤20 = Medium vulnerability rating
- >20 and ≤30 = High vulnerability rating

Microsoft Forms (digital)

Hawai'i Sea Level Rise Vulnerability Assessment Tool (SLR-VAT)

Introduction

Purpose: This questionnaire-based Hawaii Sea Level Rise Vulnerability Assessment Tool (SLR-VAT) was created to help the user:

- Determine which state-owned buildings in Hawai'i are exposed to sea level rise,
- Assess the vulnerability of buildings which are exposed to sea level rise, and
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* Required

Building Details

Building name/number *

Enter your answer

Agencies that reside in the building *

Enter your answer

Building address *

Enter your answer

Latitude *

Enter your answer

Longitude *

Enter your answer

SLR Vulnerability Assessment Tool, Instructions, and Related Guidance

- ✓ **User-Friendly Design** – Clear, easy to use tool
- ✓ **Applicability to Various Building Types** – Ensure that the form is applicable to most building types while ensuring versatility across varying State-managed facilities
- ✓ **Integrated Data Sets and Tools** – Links to relevant datasets, map viewers, and references – [UH's Hawai'i Sea Level Rise Viewer](#)
- ✓ **Future-Proof Design** – Ensure that the tool can be easily updated
- ✓ **Tech-Forward Approach** – Create an easy-to-use digital version of the tool so that results can be quickly processed and analyzed

Additional Guidance and Training:

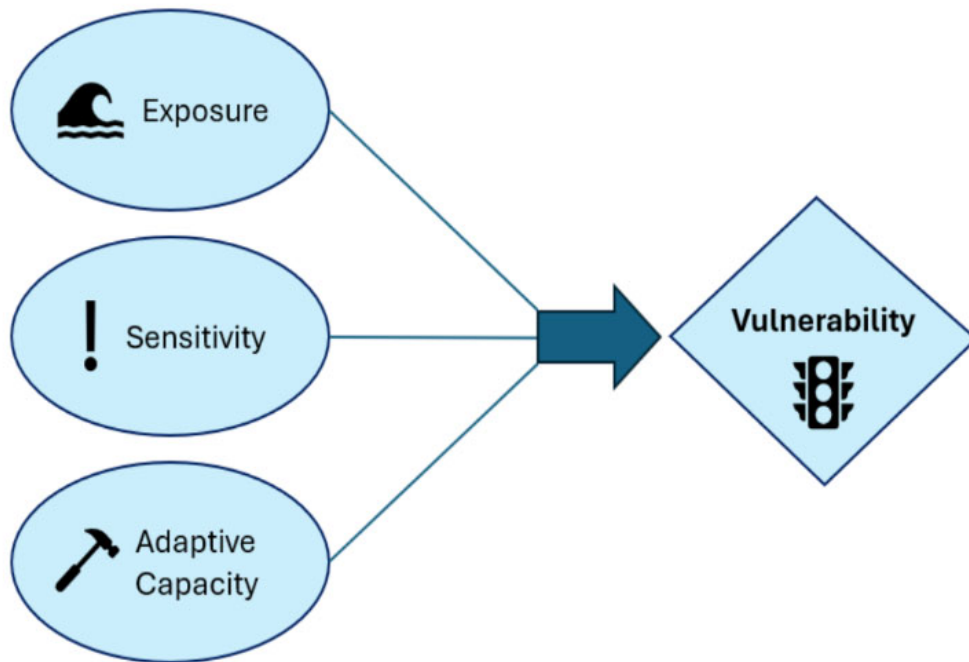
- We have supported State agencies to tailor the tool to their needs.
- There is an accompanying **User Guide** and **recorded training session** that provides instructions and more details about each question, further background/context, and brief tutorials for tools as needed.
- Additional resources are available for agencies to learn about integrating benchmarks and triggers into adaptation planning and a tactical guide to coordination and next steps.



A look under the hood: → Tool Methodology



Defining a Building's Vulnerability:

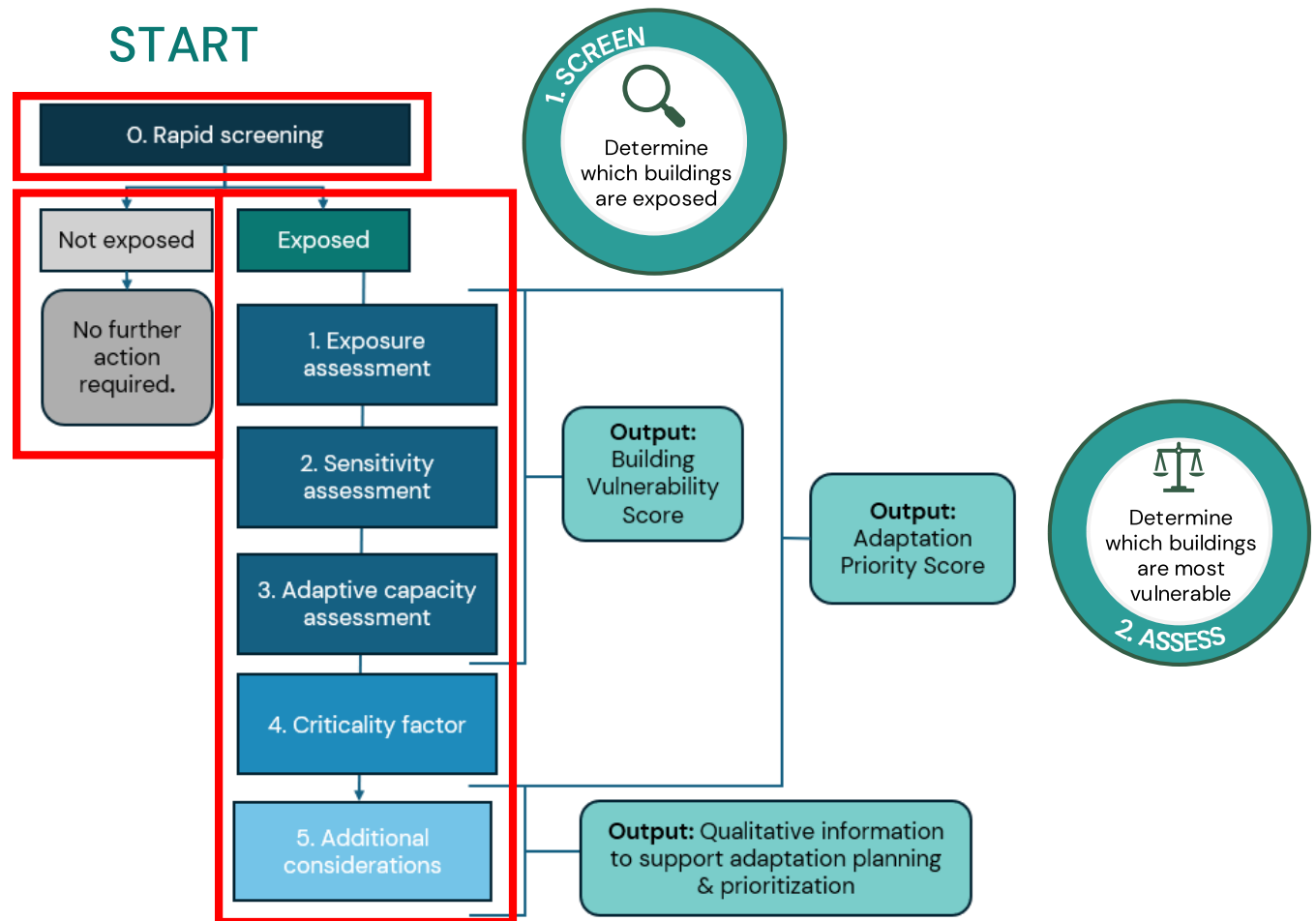


Exposure: The nature and degree to which a building is exposed to sea level rise and coastal flooding.

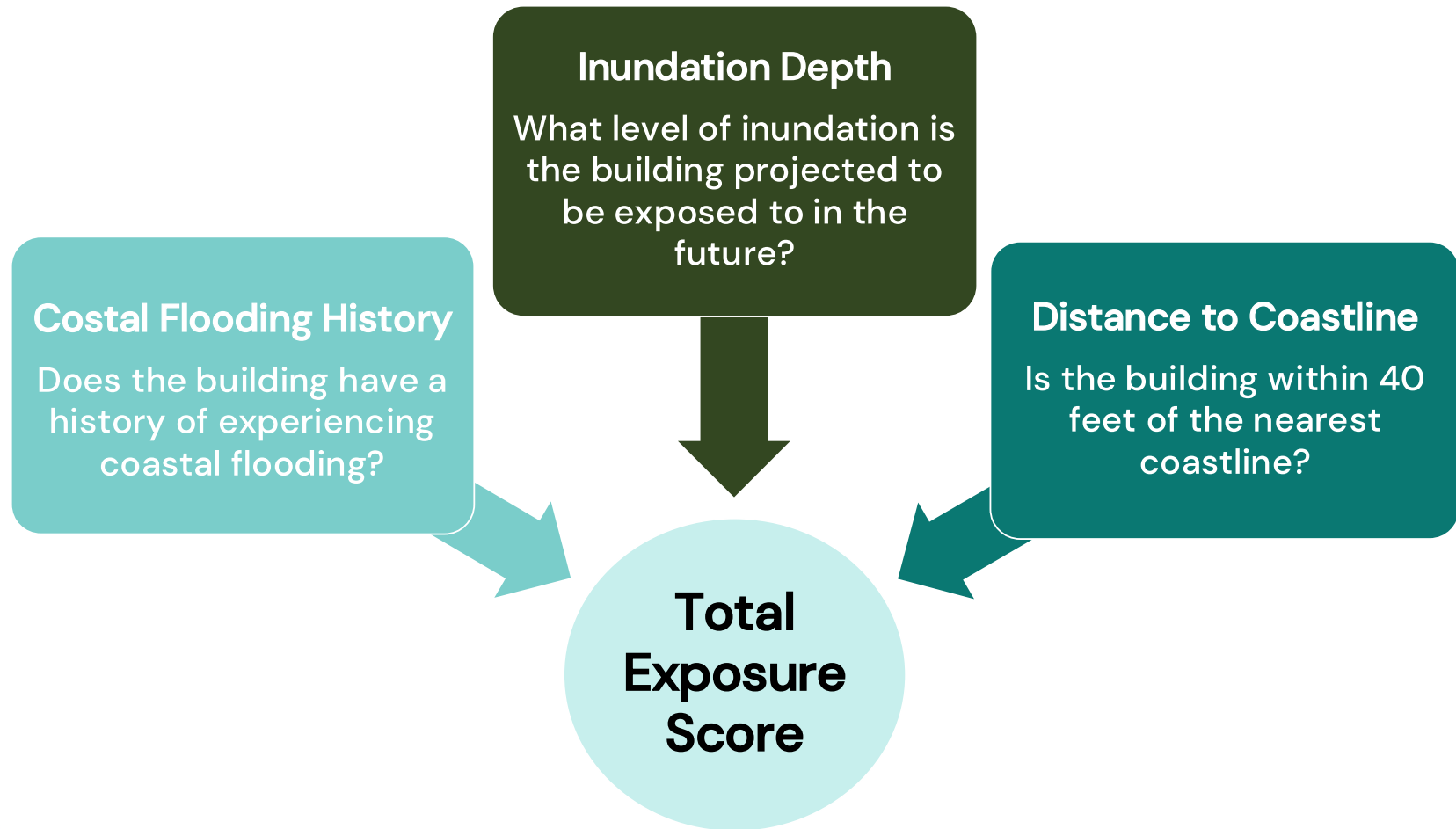
Sensitivity: The degree to which a building is adversely affected by sea level rise and coastal flooding.

Adaptive Capacity: The ability or capacity of a building to adjust, to moderate potential damages, or to cope with the consequences of sea level rise and coastal flooding.

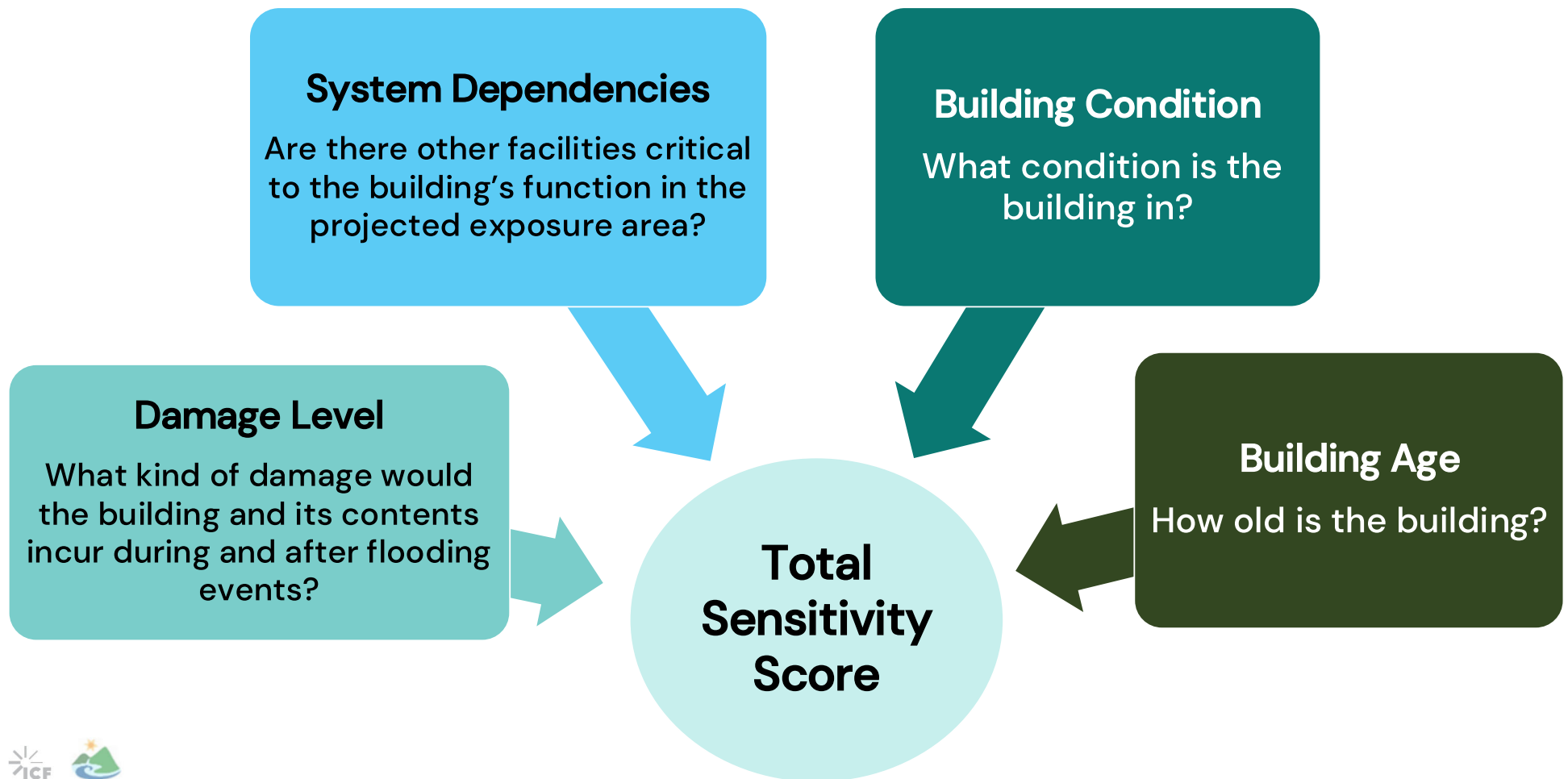
Sea Level Rise Assessment Tool Logic Model



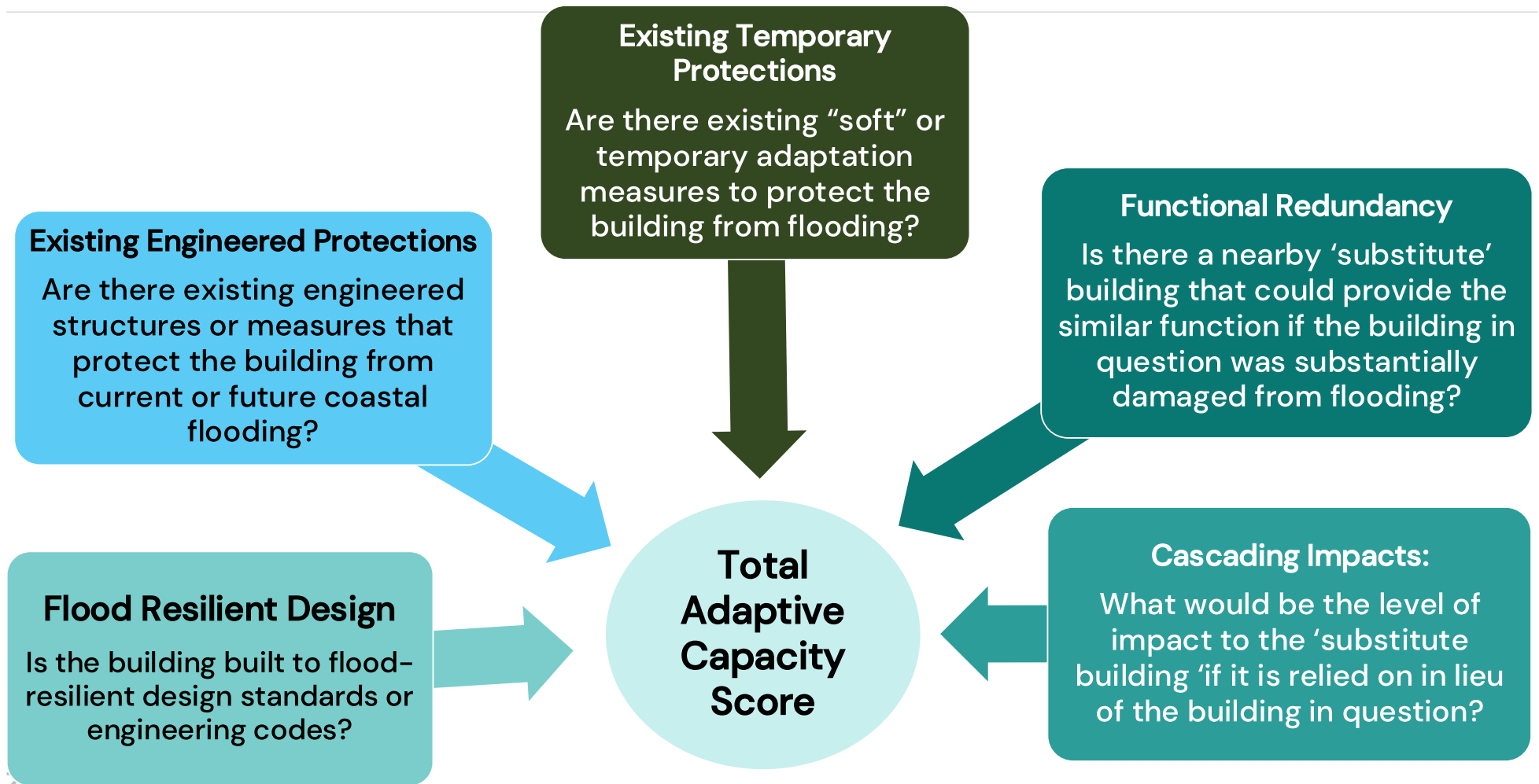
Exposure Assessment



Sensitivity Assessment



Adaptive Capacity Assessment



Criticality Factor

To establish **whether the building is critical** (i.e., functionally important to the community)

- *Is the building critical?*
 - *Determined based on a pre-determined list/definition or selection based on a list of categories*
 - *If yes, the total vulnerability score will be multiplied by a factor of 1.25 to produce an adaptation priority score*

Section 4. Criticality Factor

By answering the question in this section, you will determine whether your building is critical or not critical. Criticality encompasses a building's functional importance and the potential impact that its failure can have on the reliability and safety of services it provides to the community. A building that is deemed critical has a higher criticality factor, elevating the importance of this building in an agency's prioritization. For more information on criticality, refer to Section 4 of the User Guide.

Determining Vulnerability



Total Exposure Score

Total Sensitivity Score

Total Adaptive Capacity Score

Vulnerability Score



Criticality Factor

Total Adaptation Priority Score

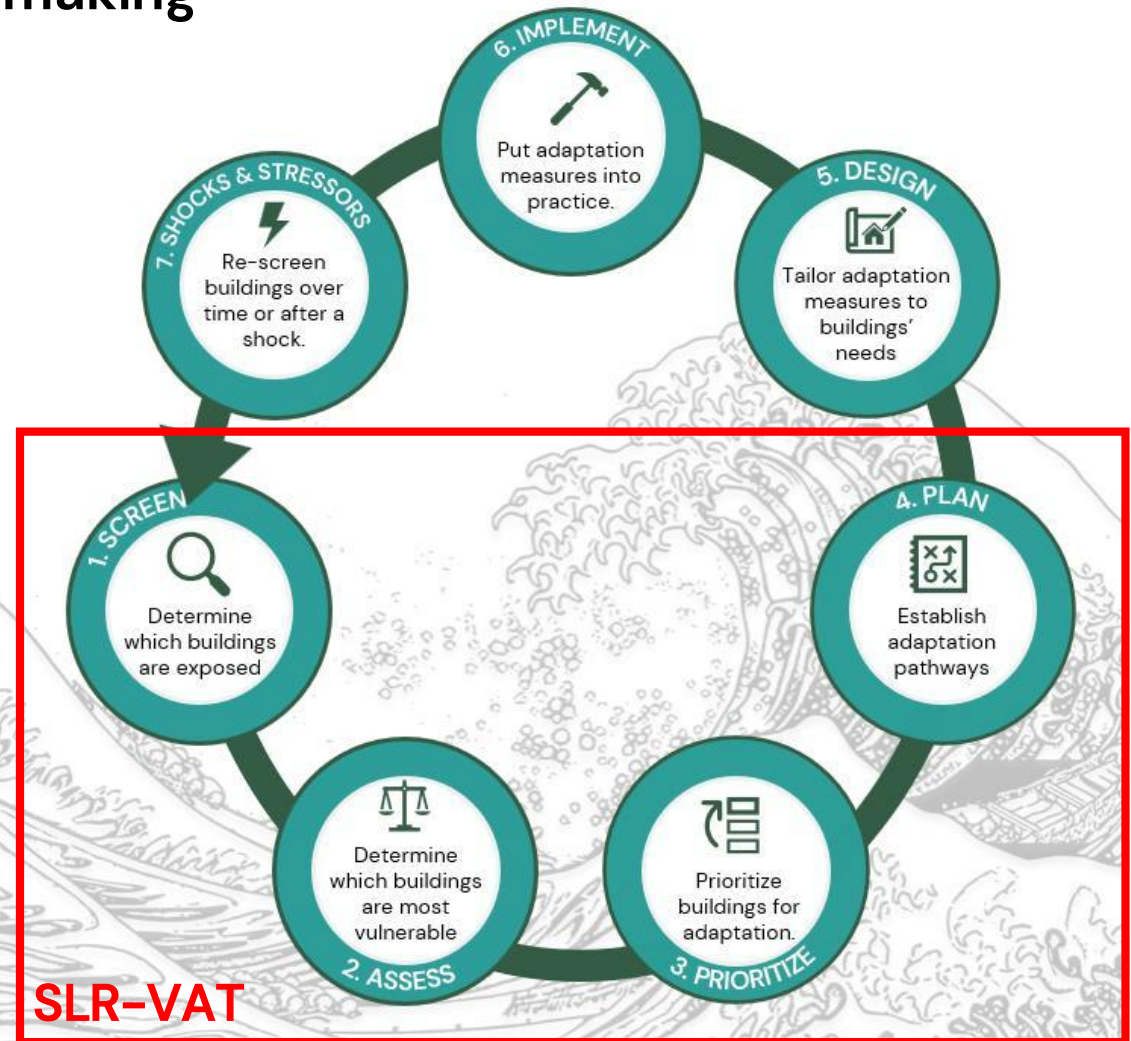
Additional Considerations (Qualitative)

- Equity and social vulnerability
- Funding access
- Compounding hazards
- Other adaptation needs

The results can improve decision making

The SLR-VAT results can be used to prioritize buildings for adaptation.

The results can identify 'hot spots' across agencies so the state can tackle the most vulnerable areas with multiple interests.



Prioritizing the most Vulnerable Buildings



- The SLR-VAT output prioritizes buildings and can help drive action toward appropriate solutions.
- Different scores for exposure, sensitivity, and adaptive capacity can give us some insight into what to do to protect these buildings in the future.

	<i>Exposure</i>	<i>Sensitivity</i>	<i>Adaptive Capacity</i>	<i>Total</i>
Red Building	10	5	6	27
Blue Building	9	7	4	25
Green Building	8	7	4	23
Yellow Building	3	9	1	15

*** Hypothetical buildings, not based on real results ***

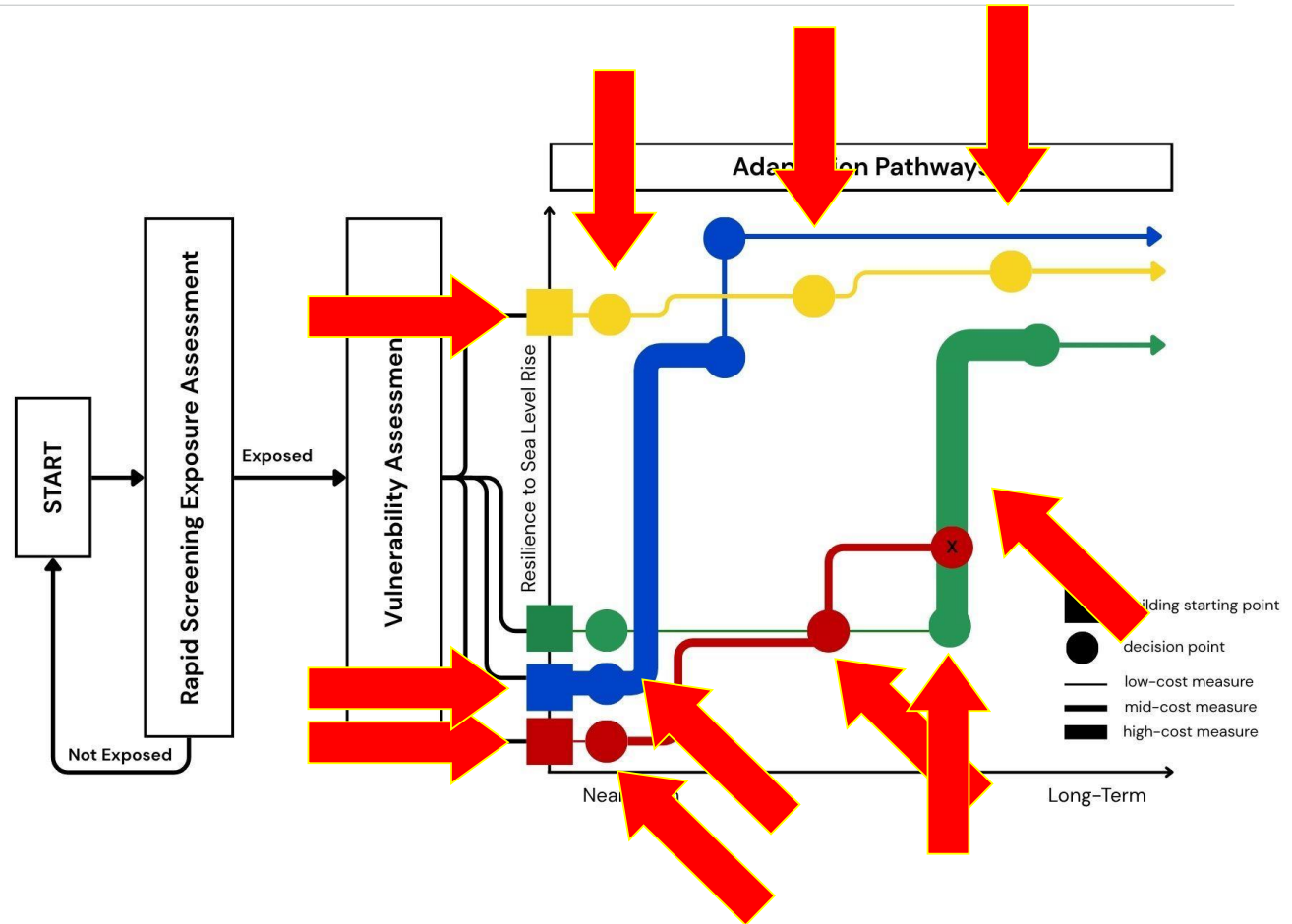
In this hypothetical portfolio:

Red building is the most vulnerable in this agency's portfolio.

Yellow building is the least vulnerable in the portfolio.

Planning for the Future – Adaptation Pathways

- Agencies can evaluate their portfolio of buildings and determine how to best prioritize adaptations
- **Adaptation pathways** is a method of adapting over time.
- This project will create guidance to help guide agencies to take an adaptation pathways approach.



→ Questions?





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Thank You

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