CBP Climate Resiliency Workgroup

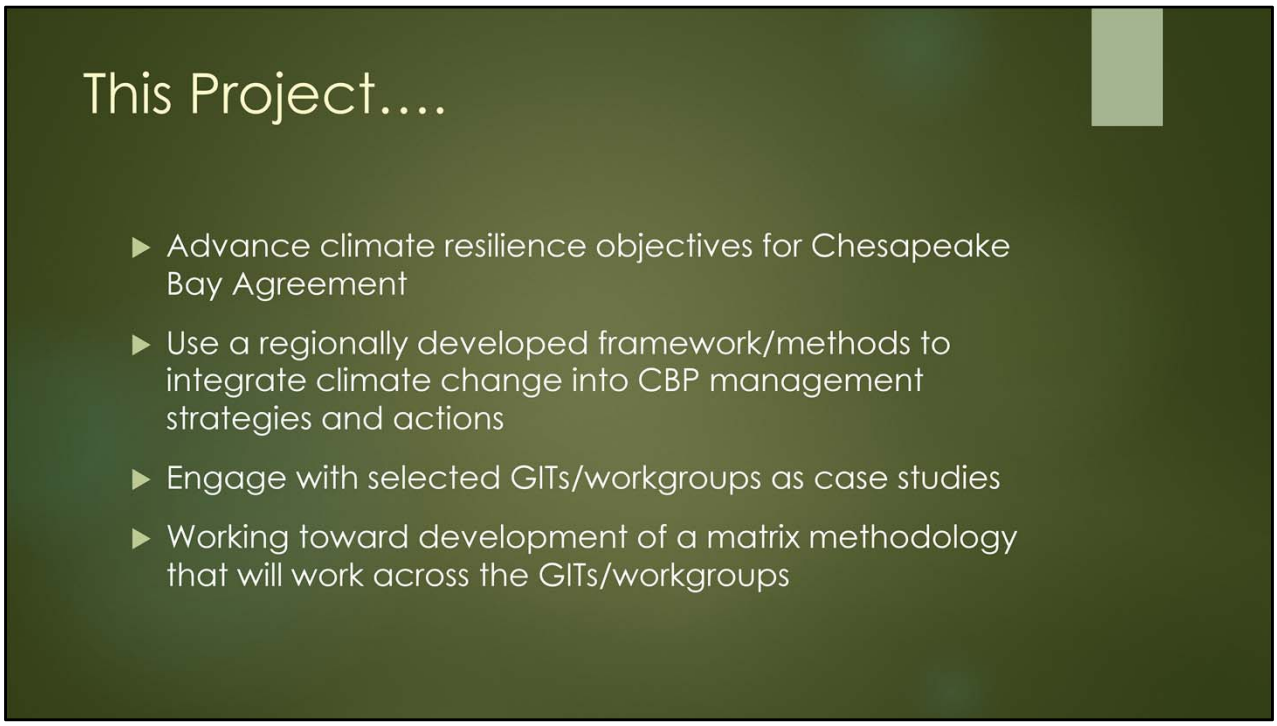
CLIMATE SMART HABITAT RESTORATION WORKSHOP
PRE-WORKSHOP CALL

November 1, 2016

Objectives of this Call

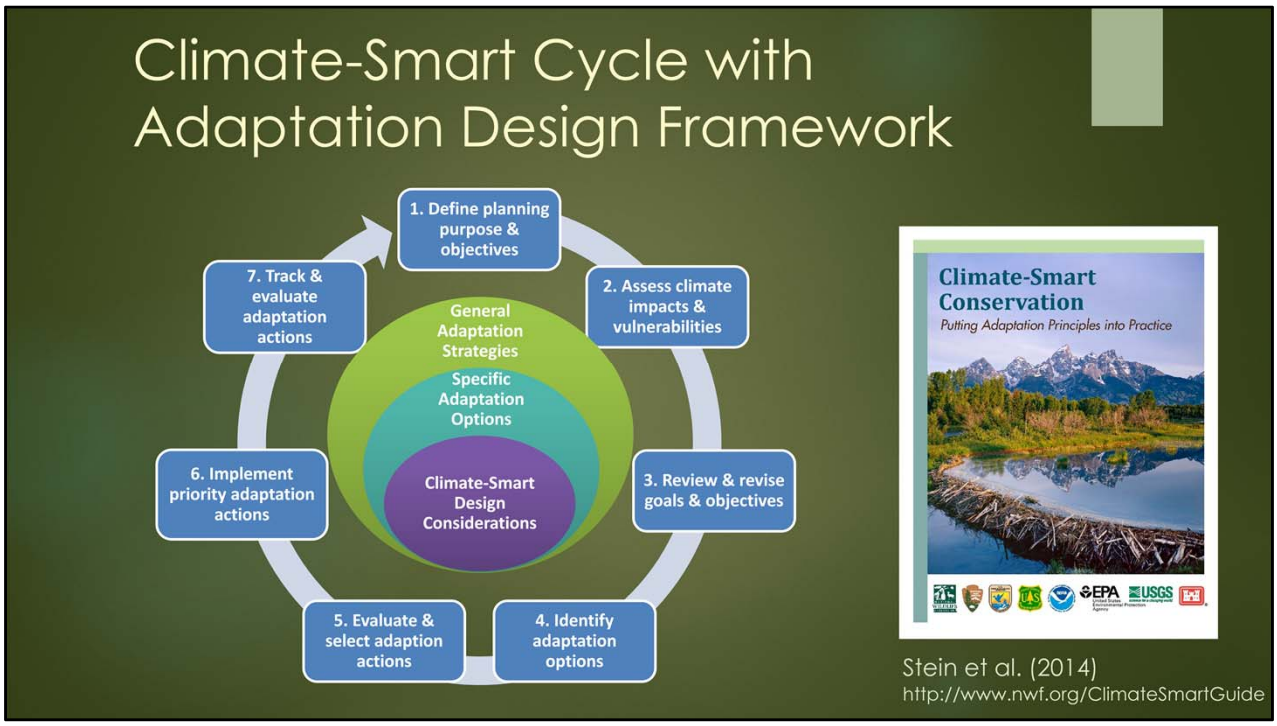
- Orient you to the project
- Introduce the workshop objectives
- Introduce the Adaptation Design Tool we will be using in the workshop

This call is to first orient you to the project and the upcoming workshop, and to provide you background & familiarity with the existing Adaptation Design Tool that we are using as a starting point to (ultimately) develop a CBP climate-smart adaptation planning framework, and to give you a preview of the process we will go through at the workshop.



The ultimate goal is to develop an analysis & decision-making matrix and implementation methodology for the CBP that is applicable across all GITs & workgroups. We are starting with a Tool that was developed regionally as an ecosystem-specific application of the generic climate smart approach. This tool worked in the context of coral reef management; this project will investigate whether it works in application for the CBP and can provide a basis for a structured, science-based framework through which the principles of climate-smart adaptation planning can be effectively applied to the existing 29 management strategies in the Watershed Agreement. You are helping develop this, starting by working with the existing tool. We won't get all the way there on this call or the workshop.

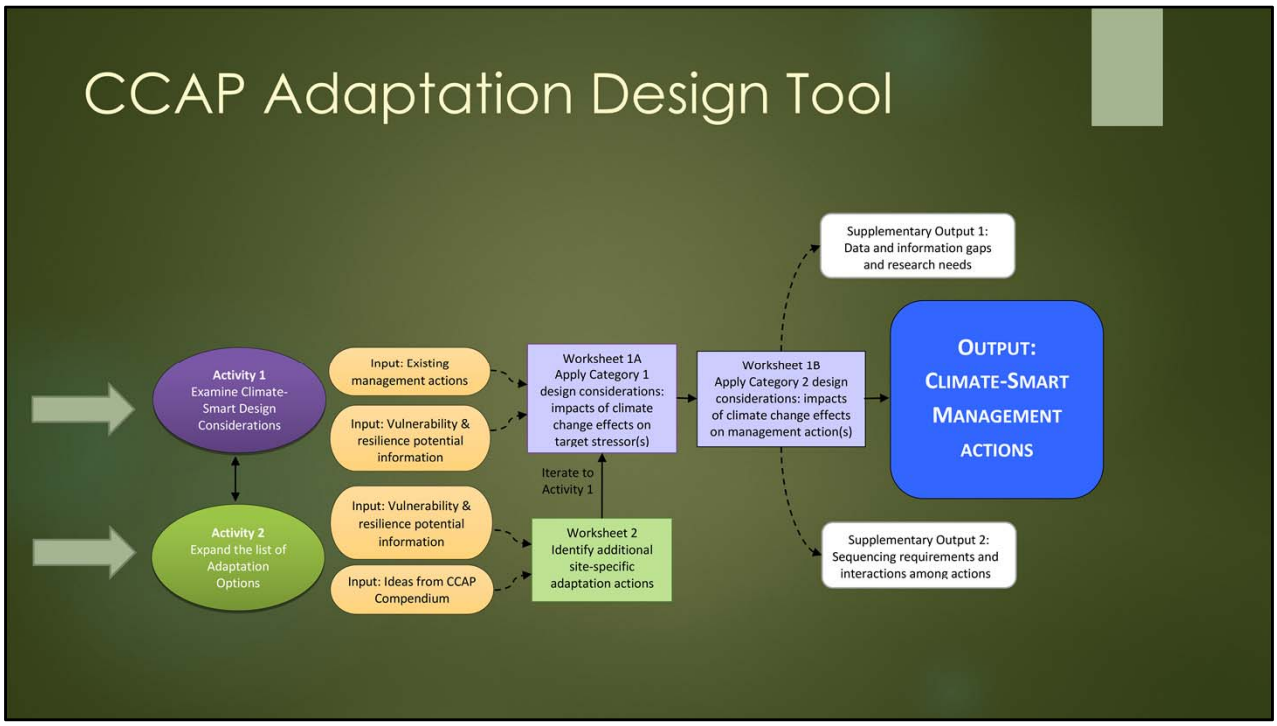
The CBP requires integration of climate smart principles at multiple levels, from place-based management actions to restoration strategies and development of partnerships. We are exploring this tool as basis for developing such a unified approach, starting with a set of relatively specific Chesapeake Bay restoration actions and taking them, as examples, through the Design Tool, expecting that a broader understanding of how the process relates to the decision contexts within which Chesapeake Bay restoration takes place will emerge. We have found that as groups take specific actions through the Tool, discussions emerge about the process and how it applies in the context being explored. We will take the information from this exercise to assess and revise the Tool for the CBP context.



Climate Smart Approach is general, needs to be tailored to particular conservation/restoration management contexts, as we are doing here. It is intended to inform (i.e. to inject climate considerations) into multiple steps of a typical planning cycle in an iterative process.

- Synthesis of adaptation principles for ecosystem management
  - Based on ecological principles
  - Embraces climate-adaptive principles (forward looking, avoiding maladaptation, adaptive management)
- Framework for integrating climate change information into every step of the management planning cycle
- General adaptation strategies to aid in brainstorming specific actions
- Rules for designing management actions to be “climate-smart”

Based around general strategies, process ends up informing. This is why we are trying this, to inform planning at multiple steps. How do you get this cycle to emerge from central exercise.



As mentioned, this Tool grew out of applying climate smart conservation to coral reefs. In this process, we found that it was best applied to management actions that are place-based and specific enough to enable consideration of particular design aspects. The tool was developed for place-based actions, but we think it can be adapted to apply more broadly.

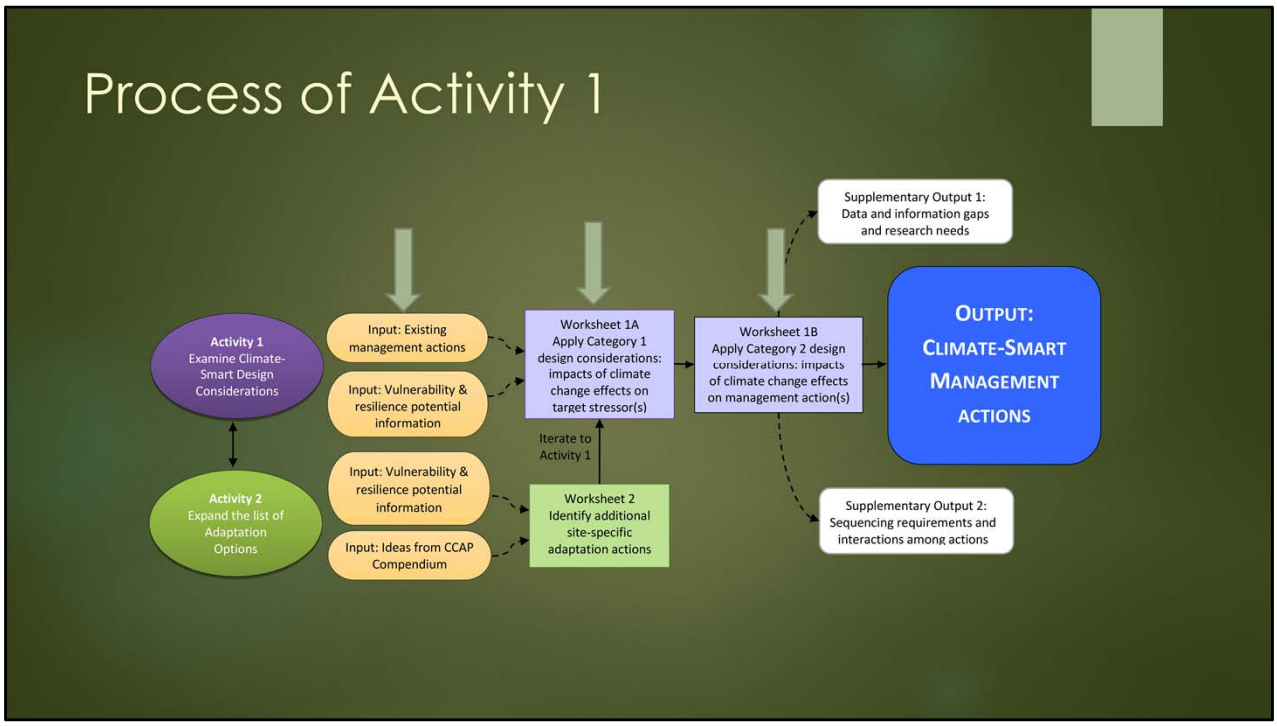
2 key pathways: Activity 1: Develop information to address Climate-Smart Design Considerations and apply it to adapt existing actions to account for climate change effects. Activity 2: Identify additional, general adaptation options that may be needed to more comprehensively address climate change impacts, tailor them as place-based actions, and add them as a second iteration of Activity 1.

Activity 1

Examine climate smart design considerations

- Start with existing management strategy/list of management actions
  - Based on your goals & objectives
- Information on vulnerability and resilience potential
- The Design Tool then…
  - Supports generating climate-smart versions of the actions
    - How the design or implementation patterns of management actions could be modified for greatest effectiveness in the face of climate change

EXAMPLE: Action: Reduce sediment loads from soil runoff using sediment basins.
Category 1: How will increasingly severe storms affect the volume and pattern of runoff into sediment basins?
Category 2: How can sediment basins be designed (number, durability, capacity) and located (placed in the landscape) to account for these effects?



We will provide needed inputs, eg vulnerability information, strawman management actions

Information needed to address the 2 types of climate smart design considerations gathered using 2 worksheets

Worksheet 1A

A1	A2	A3	A4	A5	A6	A7
Action number	Existing management Action	Target stressor(s)	Climate change effects on stressors (direction, magnitude, mechanism, uncertainty)	Timing of climate change effects	Implications of A4 & A5 for effectiveness metrics & how to measure them	Notes
1	Install terraces adjacent to dirt roads	Sediment/ nutrients	Heavy rainfalls after dry periods will lead to increased runoff; changing seasonal patterns less understood (moderate magnitude, high uncertainty)	Longer dry periods already occurring, trends of increasing summer heavy rainfall events observed	Monitoring will have to be timed/located to catch effects of extreme events coupled with dry periods	More info needed on spatial patterns of drying and rainfall and location of worst erosion

Columns lead through the accumulation of information on how climate change is expected to affect key stressors on the management targets (e.g., ducks, wetlands, SAVs, etc.)

This is from pages 8 & 9 of the guidance. Don't have to read it all – go to it for reference.
Put in an example from the guidance.

Columns:

A1 & A2 obvious

A3 – Critical to identify the stressor(s) targeted by the planned management action

Be clear & specific to be able to move on to A4

May be multiple stressors (particularly in many CBP examples)

A4 – Describe the expected climate change impacts on those stressors

Becomes the basis for understanding how the action needs to be modified to continue to be effective under climate change

A5 – anticipated timing of climate change effects

Informs when the action is needed,

Also sequencing, when effectiveness should be evaluated

A6 – metric(s) to assess technical performance, monitoring needs (timing, frequency, duration) as affected by climate change

A7 – Notes

Important to document reasoning for decisions

Capture information on data/information gaps, research needs, etc. that come out as the worksheets are completed

Also document insights revealed on interactions among actions (sequencing, synergies, etc.) that will be valuable later in plan implementation

Much of this information can be captured and organized in ‘supplementary output’ worksheets

This column will be a valuable ‘parking lot’ for ‘emerging insights’ and issues recognized during the workshop exercise

Worksheet 1B

B1	B2	B3	B4	B5	B6	B7	B8
Action number	Existing Management Action	Changes in effectiveness of management action due to: climate impacts on target stressor	Changes in effectiveness of management action due to: climate impacts on management action	Time frame or constraint for using the action (e.g., urgency, longer or shorter term)	What changes are needed to adapt the action (place, time, and engineering design)	Climate-Smart Management Action	Notes
1	Install terraces adjacent to dirt roads	Heavy rainfall events following dry periods may overwhelm capacity of terraces	Terraces themselves could be destroyed by extreme events	Life of these practices is 5-10 yrs; need to plan ahead for strategic placement in combination with other actions	Need to adapt action spatially, design terraces to withstand extreme events	Install terraces resistant to extreme events adjacent to targeted roads	How heavy a rainfall event will destroy a standard terrace?

Columns lead through the accumulation of information on how climate change is expected to affect the management action itself

How climate change is likely to alter the functionality or durability of the management actions

How those actions would have to be modified in order to remain effective

Columns:

1 & B2 obvious, transferred from Worksheet 1A

B3 & B4 capture information on different ways climate change can alter the effectiveness of the management action

B3 - how climate impacts on the stressor (from column A40) will change the effectiveness of the management action over its functional lifetime

B4 - how climate change may directly impact the management action in ways that will change the effectiveness (pertinent for actions with physical structures or elements

B5 – timing considerations related to using the action

E.g., urgency based on the time frame over which the stressors and related climate change influences are expected

Anticipating timing requirements for implementation (E&D, permitting, construction, etc.)

B6 – summary of what needs to be done to adapt the design of the action (place, time and engineering design), based on information from the previous columns

B7 – The Main Tool Output

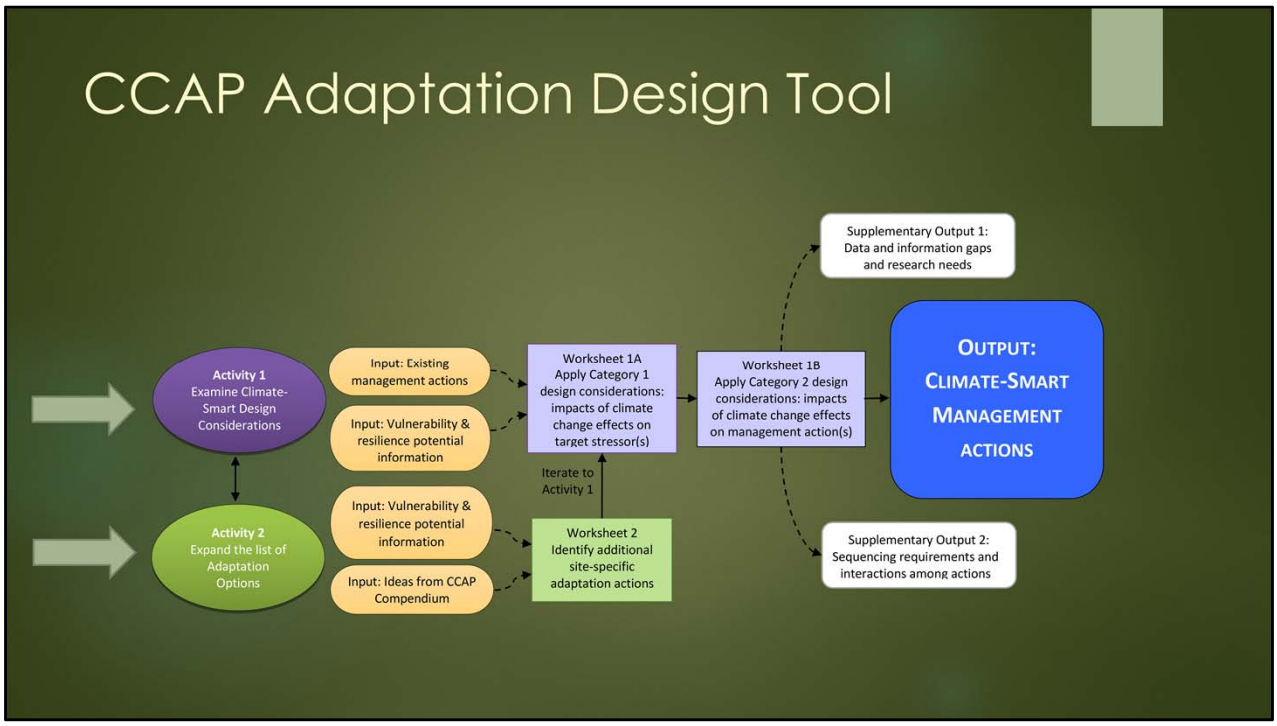
Recrafted action with respect to climate change

B8 – Notes

Document reasoning

Additional capture of supplementary information (research gaps, potential interactions with other actions (e.g., sequencing, synergies)

Information that can be used in subsequent steps for evaluation, selection, and plan formulation



Activity 2 is looking at what might be missing from the plan, explicitly considering climate change vulnerabilities.

Worksheet 2

1	2	3	4	5
General Adaptation Strategy	Definition	Potential New Site-Specific Action	Key Vulnerabilities Addressed	Notes
Protect key ecosystem features	Focus management on structural characteristics (e.g., geophysical stage), organisms, or areas (e.g., spawning sites) that represent important "underpinnings" or "keystones" of the current or future system of interest)	• Expand or duplicate the herbivore replenishment areas in reefs in the 5 watersheds and adjacent source areas in Olowalu, North Kihei • Protect some of the most durable reef areas (reefs that have survived multiple stressors) as being resilient to multiple stressors	Coral bleaching impacted reefs in 2014 – 2015	Attention to adjacent source areas in addition to the managed reefs associated with the 5 watersheds may extend the area of managed reefs, may require review of goals & objectives

Activity 2: Expand the list of adaptation options

Identify additional, general adaptation options needed to more comprehensively address climate change impacts

- Any key vulnerabilities, stressors, locations left out?
- Tailor them as place-based actions
- Add them as a second iteration of Activity 1

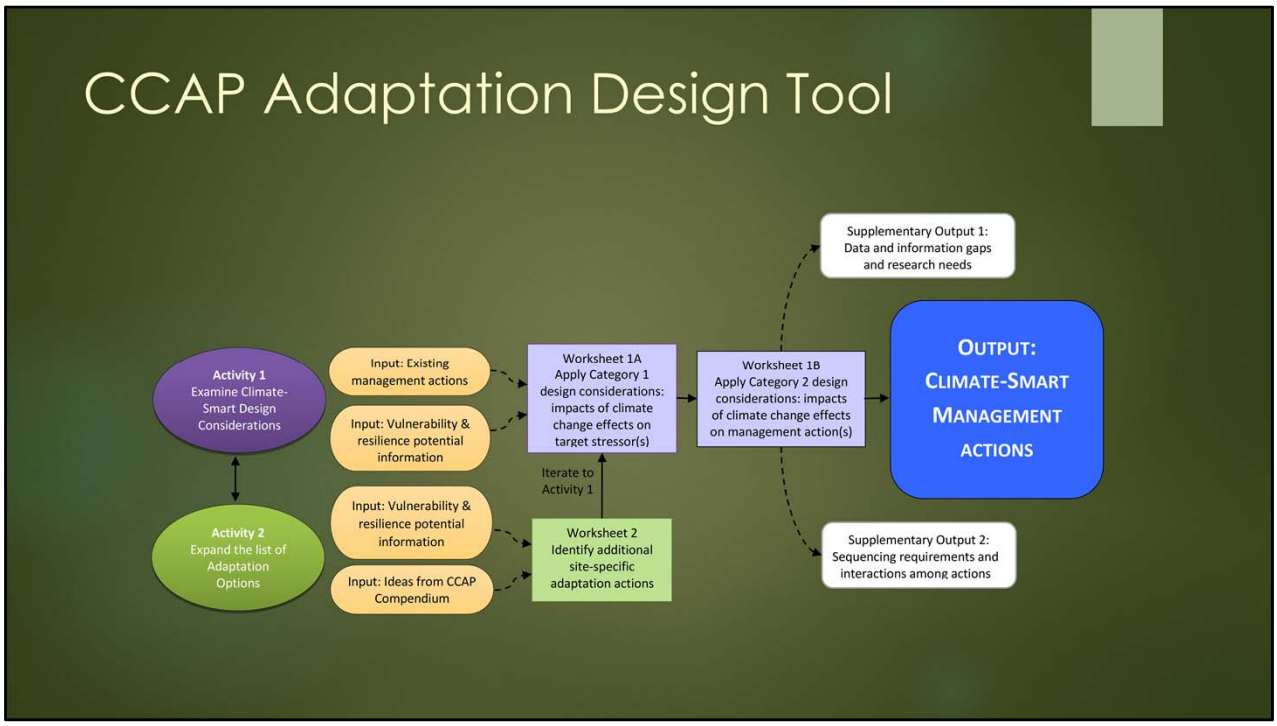
Brainstorm these using ecological guidance → 7 general adaptation strategies

Climate Smart Adaptation Strategies

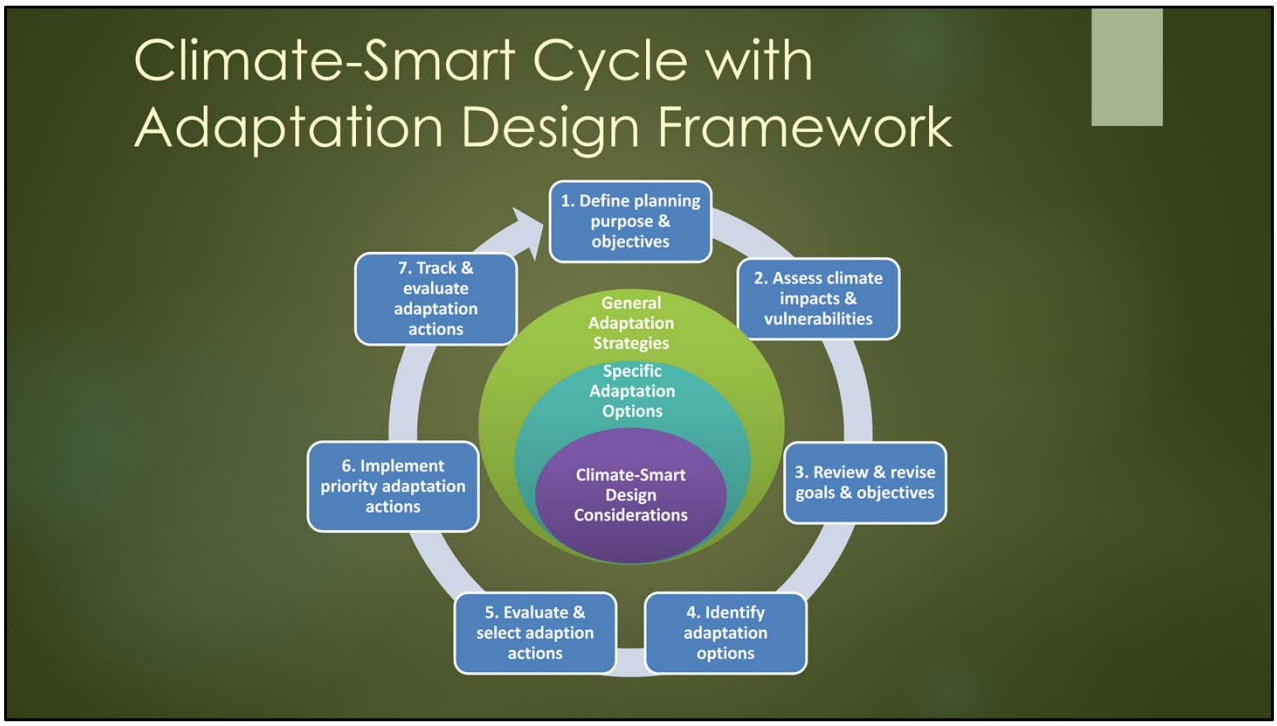
- Reduce non-climate stressors
- Ensure connectivity
- Support evolutionary potential
- Protect key ecosystem features
- Restore structure & function

Protect refugia

Relocate organisms



The key is the output at the end – climate-smart management actions.



Have statements of climate smart version of actions, sense of whether it's adaptable. In process get supplementary info that moves forward and backward around the planning cycle (back for more information on vulnerability, forward with information on metrics of effectiveness, inputs to selection criteria). The Tool can be used in a full blown brainstorming activity (step 4) or in the more detailed design of selected actions for implementation (step 6). This is what we are exploring at the workshop, including thinking about this as a potentially useful tool for higher level actions as well.

Looking forward to the workshop:

- Come ready to engage.
  - This is a hands-on workshop, and we are looking forward to your active participation.
- We will send some resources, which you can use for preparation, or for reference during the workshop.
  - This presentation.
  - The draft Tool Guidance (not yet for general distribution).
- Workshop materials are posted under the "Meetings" Tab on: http://www.chesapeakebay.net/groups/group/climate_change_workgroup