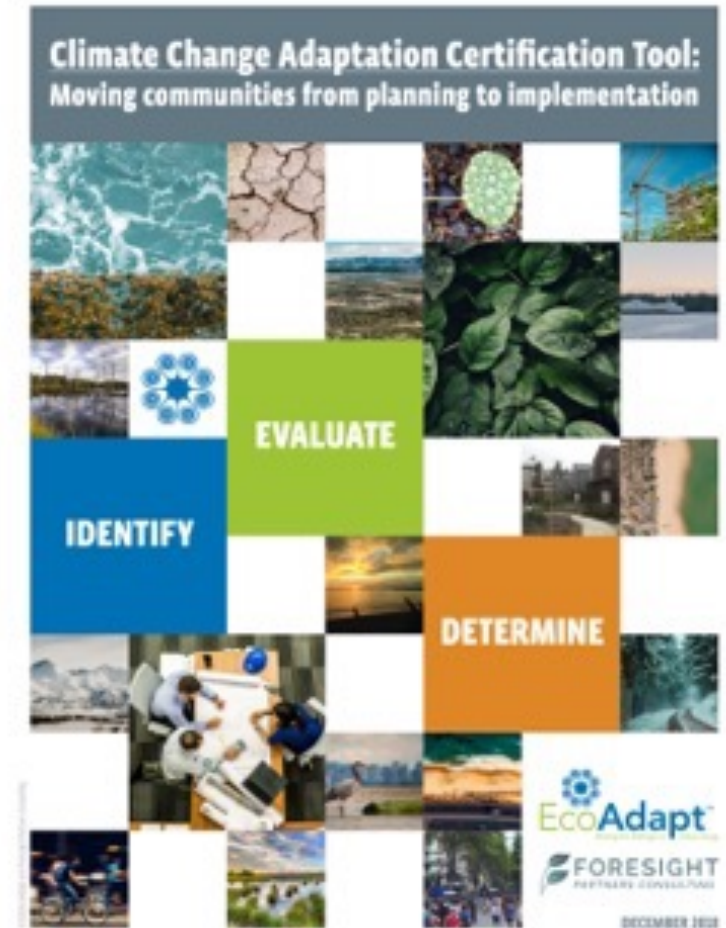




## Step 2 Climate Change Adaptation Certification (CACCC)



# Individual Activity

## Tuesday

STEP 1: Understand what Climate Change Risk Factors are of potential concern for any proposed project or policy.

### ACTIVITY:

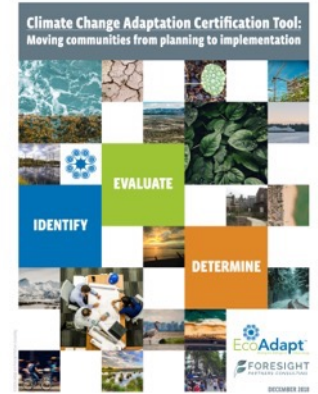
1. Select a project or policy of interest to you. Something not related to climate change, something you would be being making a decision about if climate change was not on your to do list.
2. Complete Step 1 of the CCAC, answering the questions in relation to the project or policy that you have selected, based on what you already know.
3. If you checked any boxes in column 2, check the associated "Yes" box in Column 3 of the same row.

Just complete STEP 1.

## STEP 1: Identification of Climate Change Risk Factors

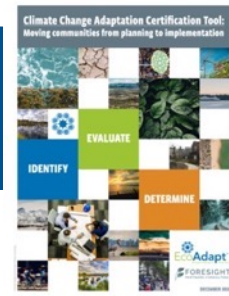
STEP 1 will determine applicability of further CCAC review of a project. It should be completed by a project proponent with review by the appropriate project review authority.

Climate Change Risk Factors	Identify if the following issues could affect the project over its lifetime. Check all that apply. If one or more of these boxes is checked, check YES in Column 3.	Climate Change Risk Identified For
<b>PRECIPITATION</b> Changing patterns will result in different and greater extremes, duration, and intensity.	<b>My project or access to it:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> involves proper <b>sizing of stormwater infrastructure</b> to treat and accommodate run-off.</li> <li><input type="checkbox"/> involves <b>diversion or impoundment</b> of surface water.</li> <li><input type="checkbox"/> involves <b>culverts, bridges, retaining walls or other structures</b> within a riparian area to convey water or prevent flooding.</li> <li><input type="checkbox"/> relies on a <b>predictable and reliable water supply</b>.</li> <li><input type="checkbox"/> is within or near a mapped <b>flood zone</b>.</li> <li><input type="checkbox"/> is affected by <b>nuisance, localized or chronic flooding</b> that is known generally to occur, though not mapped.</li> <li><input type="checkbox"/> may be vulnerable to <b>erosion or landslides</b>.</li> <li><input type="checkbox"/> relies on a predictable, reliable, and affordable <b>power supply and other utilities</b>.</li> <li><input type="checkbox"/> is located within a <b>Wildland-Urban Interface</b> boundary or may be vulnerable to wildfire.</li> <li><input type="checkbox"/> relies on <b>sanitary sewers or community/private septic systems</b>.</li> <li><input type="checkbox"/> intersects with the <b>multimodal transportation</b> system.</li> <li><input type="checkbox"/> other possible effects of precipitation changes (attach information and explanation).</li> </ul>	<b>PRECIPITATION</b> <input type="checkbox"/> YES <input type="checkbox"/> NO
<b>TEMPERATURE</b> Changes will include more extremes and prolonged highs or lows.	<b>My project or access to it:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> relies on a <b>predictable and reliable water supply</b>.</li> <li><input type="checkbox"/> may be vulnerable to <b>wildfire</b>.</li> <li><input type="checkbox"/> uses <b>energy</b> generated by fossil fuel combustion (on site or from a power utility).</li> <li><input type="checkbox"/> will have a <b>maintenance budgets for repairs and replacements</b>.</li> <li><input type="checkbox"/> relies on <b>good air quality</b>.</li> <li><input type="checkbox"/> intersects with the <b>multimodal transportation</b> system.</li> <li><input type="checkbox"/> involves <b>habitat creation, restoration, or enhancement</b> that relies on current temperature levels for successful implementation.</li> <li><input type="checkbox"/> other possible effects of temperature changes (attach information and explanation).</li> </ul>	<b>TEMPERATURE</b> <input type="checkbox"/> YES <input type="checkbox"/> NO
<b>SEA LEVEL RISE</b> Relative sea level changes will result in intermittent or permanent inundation.	<b>My project or access to it:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> is located within the <b>coastal zone</b>.</li> <li><input type="checkbox"/> relies on a <b>stable shoreline</b>.</li> <li><input type="checkbox"/> is within or adjacent to a mapped <b>flood zone</b>.</li> <li><input type="checkbox"/> is within or may be affected by an area <b>known to be vulnerable to flooding</b>.</li> <li><input type="checkbox"/> involves <b>dock or harbor infrastructure</b>.</li> <li><input type="checkbox"/> relies on <b>groundwater</b> that may suffer from saltwater intrusion over time.</li> <li><input type="checkbox"/> requires healthy and properly functioning <b>tidal marsh, estuaries, or other tidal ecosystems</b>.</li> <li><input type="checkbox"/> relies on proper functioning of a <b>sanitary sewer system</b> regulated by the National Pollution Discharge Elimination System (NPDES).</li> <li><input type="checkbox"/> relies on a <b>septic system</b> that is within or near the coastal zone.</li> <li><input type="checkbox"/> intends to enhance <b>tidal ecosystems</b>.</li> <li><input type="checkbox"/> other possible effects of sea level rise (attach information and explanation).</li> </ul>	<b>SEA LEVEL RISE</b> <input type="checkbox"/> YES <input type="checkbox"/> NO



Climate Change Adaptation Certification

# CCAC Step 2



## STEP 2: Evaluation of Climate Impacts on a Project

### 1. Continue using the same project you considered yesterday for Step 1.

*Example Project: Redevelopment of riverfront site for mixed use (housing, retail, offices) and public green space.*

### 2. At the bottom of Page 5, identify all of the Climate Change Risk Factors for which you had a "Yes" answer.

#### CHECK ALL YOUR "YES" FACTORS

PRECIPITATION

SEA LEVEL RISE

SLOPE STABILITY

PEOPLE

TEMPERATURE

VEGETATION CHANGES

OCEAN ACIDIFICATION

GREENHOUSE GAS EMISSIONS

- For each Climate Change Risk Factor that indicated "YES" to climate risk, evaluation of the project is now required.
- Proceed to STEP 2 and complete each Evaluation marked as Required.
- If you did not check any "YES" factors, no further CCAC steps are required. STEP 1 documentation becomes permanent record on file.

# CCAC Step 2



3. Carry "Yes" answers over to Page 6.

Check your "YES" factors from STEP 1	Climate Change Risk Factor	Complete the Evaluations for Each Checked Factor											
		A	B	C	D	E	F	G	H	I	J	K	L
<input checked="" type="checkbox"/>	PRECIPITATION	x		x	x	x	x	x	x	x	x		x
<input checked="" type="checkbox"/>	TEMPERATURE				x	x	x	x	x	x	x		x
<input type="checkbox"/>	SEA LEVEL RISE	x	x										x
<input checked="" type="checkbox"/>	VEGETATION CHANGES	x		x	x			x	x	x	x		x
<input checked="" type="checkbox"/>	SLOPE STABILITY			x									x
<input type="checkbox"/>	OCEAN ACIDIFICATION					x	x						x
<input checked="" type="checkbox"/>	PEOPLE							x	x	x	x	x	x
<input checked="" type="checkbox"/>	GREENHOUSE GAS EMISSIONS								x	x	x		x

Page 6



4. Complete the Indicated Evaluation Questions

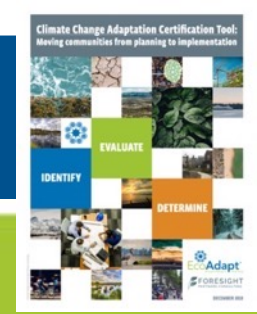
If you had a yes for **Precipitation**, complete evaluations A, C, D, E, G & H.

If you had a yes for **Precipitation & Temperature**, complete A, C, D, E, F, G & H.

And so forth.



# Homework



## A Evaluate project susceptibility to flooding and determine impact.

1. **Map the project area** (inclusive of its access corridors, key utility infrastructure, and associated multimodal transportation infrastructure) in relation to **flood zones and frequently flooded areas** (both episodic and chronic) using:
  - Local flood zone data;
  - Local wetland data;
  - Project site assessment data;
  - Regional flood zone data;
  - Regional flood mapping tools:
    - Use FEMA's Flood Map Service Center (MSC) portal (<https://msc.fema.gov/portal/search>) by entering the project address and reviewing maps it produces to identify any potential flooding impacts. MSC is the official public source for flood hazard information produced in support of the National Flood Insurance Program.
    - The NOAA Coastal Flood Exposure Mapper online visualization tool (<https://coast.noaa.gov/floodexposure/#/map>) supports communities that are assessing their coastal hazard risks and vulnerabilities by creating a collection of user-defined maps that show the people, places, and natural resources exposed to coastal flooding. The tool is currently unavailable for the west coast (see <https://coast.noaa.gov/digitalcoast/tools/flood-exposure.html> for more information). Use if available to the project area.

2. **Provide a narrative review** explaining the projects' overlap with mapped flood areas. Also, document that you have contacted City or County engineering and public works' staff and incorporate their knowledge of whether the project area is affected by **nuisance, localized or chronic flooding** that is generally known to occur, though not necessarily mapped.

### RESULT:

- Project unaffected by flooding or flood zones.
- Assessment indicates climate change risk to project that cannot be avoided.
- Assessment indicates climate change risk to the project, but risk could be minimized by (explain here or in attachment):

Each question will:

- Direct you to **data** if it is available
- Ask you an **analysis question**
- Ask you to **make a determination**

# STEP 2: Evaluation of Climate Impact on a Project



**PROJECT:** Riverfront redevelopment for mixed use buildings & public green space.

## EVALUATION QUESTIONS:

Question with recommended data sources

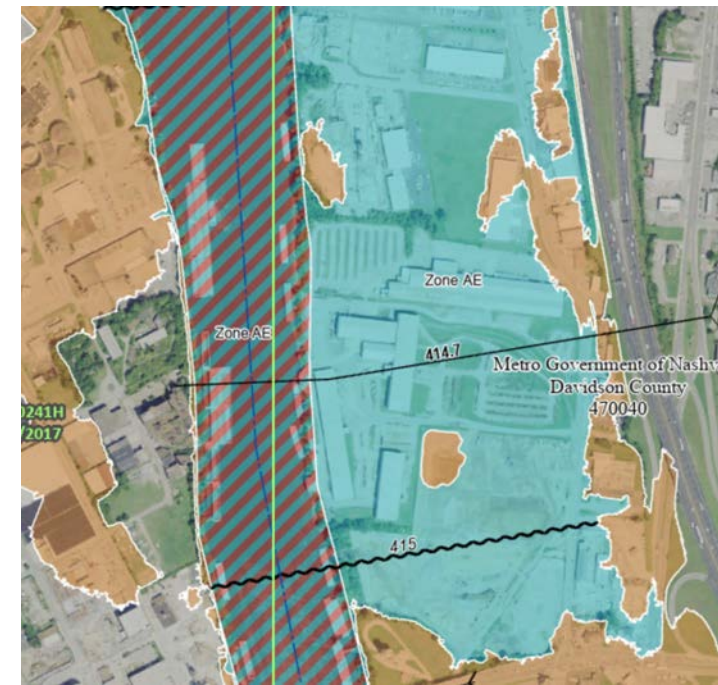
A

Evaluate project susceptibility to flooding and determine impact.

1. Map project area in relation to flood zones and frequently flooded areas. Use local or regional flood zone data, NOAA Coastal Flood Exposure Mapper, or the FEMA Flood Map Services Center.

 **Map shows flood risk to site**

It is important to document and show your work as you develop the answer to each question. This allows for traceability and review.





# STEP 2: Evaluation of Climate Impact on a Project



**PROJECT:** Riverfront redevelopment for mixed use buildings & public green space.

**EVALUATION QUESTIONS:**

**Narrative analysis** for use in your evaluation






**A** Evaluate project susceptibility to flooding and determine impact.

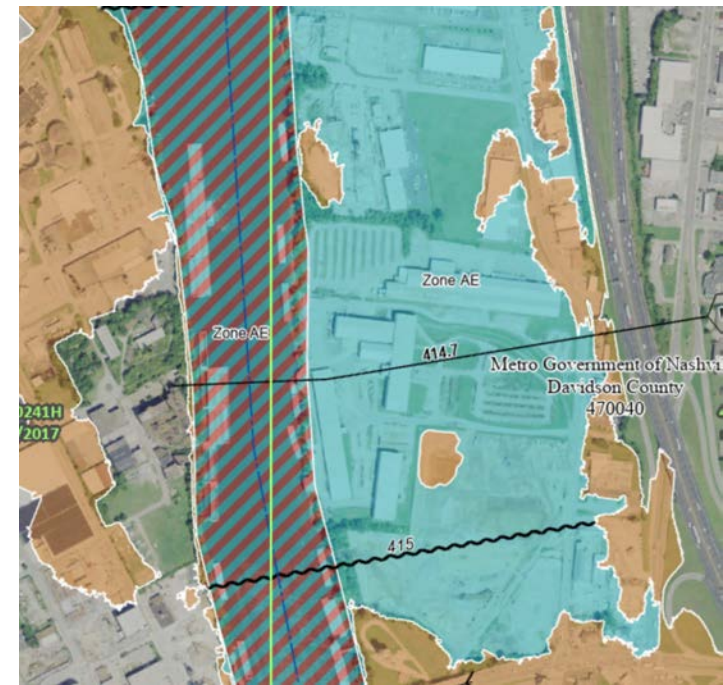
2. Provide a narrative review explaining overlap and document whether project area is affected by nuisance, localized, or chronic flooding that is known to occur, though not necessarily mapped.



The flood map shows this site is vulnerable to what has historically been a 100 year flood.

## Flood Hazard Zones

-  1% Annual Chance Flood Hazard
-  Regulatory Floodway
-  Special Floodway
-  Area of Undetermined Flood Hazard
-  0.2% Annual Chance Flood Hazard



# STEP 2: Evaluation of Climate Impact on a Project



**PROJECT:** Riverfront redevelopment for mixed use buildings & public green space.

## EVALUATION QUESTIONS:

**A**

Evaluate project susceptibility to flooding and determine impact.

1. Map project area in relation to flood zones. FEMA map presented.

2. Provide a narrative review.

The flood map shows this site is vulnerable to what has historically been a 100 year flood.

3. Document RESULT:

Project unaffected by flooding or flood zones.

Assessment indicates climate change risk to project that cannot be avoided.

Assessment indicates climate change risk to the project, but risk could be minimized by:

Development needed in location, redesign to have permeable first floor, protected utilities & some elevated access (pedestrian, bike or automotive). Design open space with living shoreline

Menu of results options

Select a result based on the analysis of the evaluation question. Providing your ideas for minimizing impact or risk from climate change can help in creating a path forward at the determination in STEP 3.



# STEP 2: Evaluation of Climate Impact on a Project



**PROJECT:** Riverfront redevelopment for mixed use buildings & public green space.

## EVALUATION QUESTIONS:

**C** Evaluate project vulnerability to landslides and other geologic hazards.

1. Map your project and its access corridors using local Geological Hazardous Areas Maps.

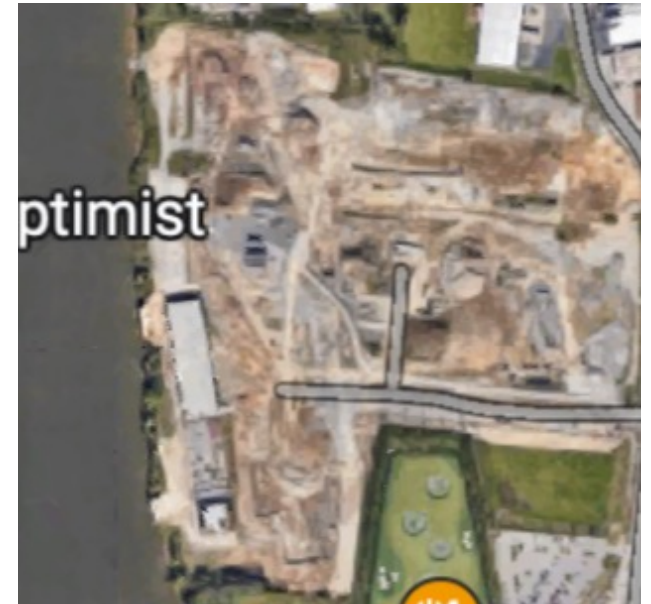
County hazard maps unavailable; see historic landslides map

2. Provide a narrative review of your project in relation to slope stability.

Site is relatively flat and along river bank, not historic evidence of slope instability or significant erosion in area.

3. Document RESULT

Project unaffected by landslides and other geologic hazards.



# STEP 2: Evaluation of Climate Impact on a Project



## H

### Evaluate project transportation needs.

- 1. Provide a narrative review explaining how motorized and non-motorized transit will be influenced by the project.** Will non-motorized and/or public transit be increased or supported by this project (e.g., creation of bike lanes, sidewalks, or non-motorized paths)? Will this project increase automotive miles driven or idle times?

Project success relies on transportation for those who live, work and frolic at the site. Initial design intersects with surface streets and local public transit routes but not with bike or pedestrian paths.

#### RESULT:

- Project will facilitate multimodal transportation.
- Assessment indicates no accommodation of multimodal transit.
- Assessment indicates that multimodal transit could be accommodated by:

Project could be designed to better integrate multi-modal transportation, including better design (elevated and/or drained) to ameliorate the effects of flooding on transportation and accessibility.

# STEP 2: Evaluation of Climate Impact on a Project



## **K** Evaluate the project's connection to local and regional population.

- 1. Provide a narrative review explaining how the project will function over time relative to population change.** Will either increases or decreases (possibly due to climate migration) affect the long-term success of the project? Do your anticipated outcomes depend on certain local or regional population statistics?

If population increases, demand for open space for recreation may increase. If population decreases, this development may be underutilized or use patterns could adjust to use more space per capita.

### **RESULT:**

- Project unaffected by population.
- Assessment indicates climate change risk to project that cannot be avoided.
- Assessment indicates climate change risk to the project, but risk could be minimized by (explain here or in attachment):

Design to accommodate more open space users (better transit and path connections), as well as fewer tenants (design to support alternative uses for structures)



# STEP 3: Determination of Project Review



If this were being used as a formal evaluation tool, you would proceed to Step 3 to make a determination.

In Step 3 project proponent and the “review authority” both provide an assessment based on Step 2 findings. From those a determination is made.

Possible determination options include:

- Project Approved as Proposed
- Project Denied
- Project Redesigned to Reduce Risk and Approved
- Project Relocated/Sited in Alternative Location and Approved
- Project Approved with Condition (e.g., Bond, Fee)
- Project Approved with Informed Consent Regarding Risk

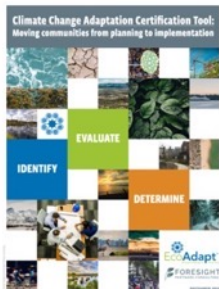
**STEP 3: Determination of Project Review**

STEP 2 results indicate climate change risk to the project during its expected life cycle.  
Complete STEP 3 to decide conditions of approval.

- 1. Proponents assessment** of the proposed project under future conditions:  
- Explain how risk was reduced due to the components of the redesign.
- 2. Staff assessment** of the proposed project under future conditions (include reference to any existing local, regional, and state natural hazard vulnerability assessments, climate vulnerability assessments, and/or climate action plans):  
- Explain how risk was reduced due to the components of the redesign.
- 3. CCAC Determination:**
  - Project approved as proposed.** Low risk from future climate conditions.
  - Project denied.** High risk that cannot be minimized or avoided with project alterations.
  - Project redesigned to reduce risk and approved.**
    - Explain how risk was reduced due to the components of the redesign.
  - Project relocated/sited in alternate location and approved.**
    - Explain how risk was reduced because of this move. Explanation should include a review of new site to ensure vulnerabilities do not exist at the new location.
  - Project approved with conditions.** Applicant required to assume responsibility for anticipated future remediation necessitated due to permitting/funding/approving this now despite the known vulnerabilities.
    - Bond required in the amount of \$ \_\_\_\_\_
    - Fee required in the amount of \$ \_\_\_\_\_
    - Explain and document the expected remediation.
  - Project approved with informed consent regarding the risk.**
    - Describe the risk.

Project Review Authority  
Name: \_\_\_\_\_  
Date: \_\_\_\_\_

Project Proponent  
Name: \_\_\_\_\_  
Date: \_\_\_\_\_



# Optional Assignment



Give Steps 2 & 3 of the Climate Change Adaptation Certification a try.

Deadlines:

1) Monday by 3pm ET please send Lara (Lara@EcoAdapt.org):

- a one sentence description of the project you used,
- a copy of your completed CCAC or an email with
  - Which climate risk factors you had a "YES" for in Step 1,
  - Your Evaluation Question (A-J) answers from Step 2
  - Your determination analysis (Step 3)

Don't get hung up if it asks you for something you don't have. Simply do the best you can, make an educated guess and move on.

