



CAPITAL PLANNING PROGRAM

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Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco
Sea Level Rise Checklist (Version 2.0)

This checklist should be used in conjunction with the SLR Guidance document ("Guidance") for use by City departments to guide the evaluation of capital planning projects in light of sea level rise.

Pre-Checklist check:

The checklist is only required if the following 3 conditions are ALL met. If the answer is 'No' to ANY of these questions, do not complete the SLR checklist. The pre-checklist should be retained for your records.

- 1. Project has a location identified (some projects are so early in planning that they do not yet have a specific location within CCSF) Yes [] No []
2. Project is within the SLR Vulnerability Zone Yes [] No []
3. Anticipated total project costs1 equal or exceed 5 million dollars Yes [] No []

Form with fields for Department Name, Project Name, Project ID, Name of Project Mgr, Name of Preparer, and Date prepared.

Only projects answering 'Yes' for questions 1, 2 AND 3 must complete the following checklist. As noted above, if the answer to questions 1, 2 OR 3 is 'No', the SLR checklist does not need to be submitted. However, it is recommended that the project manager retain this document in their project records.

1 Project costs include planning, design, and construction costs.

Department Name: [] Project ID (if available): []
Date prepared: []

SLR checklist – only for projects meeting all 3 pre-checklist conditions above:

Project Information

1. What is the project location? (Please provide the street address or GIS coordinates):
2. What type of asset or project is being proposed? (e.g., new construction, rehabilitation or modification of existing structure, building(s), roadway structure, utility structure, park, etc.):
3. What is the remaining or potential future functional lifespan of the project? <i>The functional lifespan is the period for which a structure can still meet the purposes for which it was constructed. It refers to the time the asset may realistically be in use at this location, including through one or more repair and maintenance cycles. (See Guidance for more information).</i> Remaining or Potential functional lifespan in years: _____ Please provide a brief explanation of how this number was arrived at:
4. What is the planning horizon? (The construction completion year + functional life span = planning horizon year; e.g., (2017 construction completion year + 60 years of functional life span = 2077.) Planning horizon year: _____

SECTION I - Vulnerability Assessment for Potential Projects in the SLR Inundation Zone

A. Exposure (see SLR Guidance for additional information):

Using the steps below and SFPUC inundation zone maps or site-specific modeling, please assess if the project site or asset is subject to inundation or temporary flooding during one of the future flood events.

Site Information

Past/Current

5. Has the site historically been flooded due to high tides/and or storms? If yes, please describe conditions: (e.g., King tide, storm surge, rainstorm event)	<input type="checkbox"/> Yes <input type="checkbox"/> No
6. What is the lowest ground elevation at your project location (in feet)? Please select the elevation data <u>used for all calculations</u> (NAVD88 or City Datum): <input type="checkbox"/> NAVD88: <input type="checkbox"/> City Datum:	(feet) Elevation _____ft

Future Flooding Calculation

7. Calculate the sea level rise amounts at the end of the planning horizon year _____ (enter from question 4.) Use the equations in Appendix 3 of the Guidance to derive the applicable sea level rise: (e.g. for year 2077, upper range SLR in 2077 = 111.79 cm; 44.01 inches; 3.67 ft) a) _____ in inches and _____ in feet -- most likely b) _____ in inches and _____ in feet -- upper range
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Department Name: [_____] Project ID (if available): [_____]
 Date prepared: [_____]

8. What map/modeling is used for this assessment?

- SFPUC 2014 Maps and the Supplementary Document “Sea Level Rise Scenario Selection and Design Tide Calculation” found at <http://onesanfrancisco.org/staff-resources/sea-level-rise-guidance/>
- Site Specific Modeling (*please provide date and source of information*):

9. What is the Mean Higher High Water (MHHW) elevation closest to your project location? Use the data source in question 8 (e.g., from Figure 1 in Supplementary Document cited in Question 8, which includes maps of the City with tidal data at various points along the shoreline) or site specific modeling).

MHHW Elevation (year 2000): _____ ft NAVD88 CITY DATUM

Assess Project Vulnerability to Permanent Inundation from SLR

10. Subtract MHHW (9) from the Project Elevation (6)

a) Difference in feet: _____ ft

A negative number indicates that the project is below MHHW today and is at risk. If the number is positive, this is the amount of sea level rise needed to result in permanent inundation at your project location.

b) Is the Project vulnerable to permanent inundation during the functional lifespan using the most likely SLR scenario? (Yes if the value of question 7a is greater than the value of question 10a).

- Yes:** The project is at risk and requires design considerations that address most likely sea level rise.
- No:** Not at risk. Go to 10c.

The Project is vulnerable to permanent inundation during the functional lifespan if SLR raises MHHW above the Project Elevation.

c) Is the Project vulnerable to permanent inundation during the functional lifespan using the upper range SLR scenario? (Yes if the value of 7b is greater than the value of 10a)

- Yes:** The project may be at risk at upper range SLR. This requires either a finding of adaptive capacity OR identification of adaptation strategies that address upper range SLR.
- No:** Assess temporary flooding risk below.

Assess Project Vulnerability to Temporary Flooding from 100-year Coastal Flood

11. What is the 100-year storm surge elevation (in feet) closest to your project location? Use the Supplementary Document cited in Question 8 or site specific modeling. If the project is located directly along the shoreline, the 100-year total water level (which includes wave runup along the shoreline) should also be evaluated.

a) 100-year storm surge elevation (in feet): _____ ft NAVD88 CITY DATUM

Only for projects directly adjacent to the shoreline:

b) 100-year total water level elevation (in feet): _____ ft NAVD88 CITY DATUM

Department Name: _____ Project ID (if available): _____
 Date prepared: _____

12. Subtract the 100-year storm surge elevation (11a) from the Project Elevation (6).

a) Difference in feet: _____ ft

If the answer is negative, the project is at risk of temporary flooding today by the 100-year storm surge event under existing conditions.

b) Is the answer to Question 12a less than the answer to Question 7a (most likely sea level rise)?

- Yes:** project will be at risk of temporary flooding and requires design considerations that address temporary flooding or an acknowledgement that temporary flooding doesn't result in any impacts
- No:** Not at risk. Go to 12 c.

c) Is the answer to Question 12a less than the answer to Question 7b (upper range sea level rise)?

- Yes:** The project may be at risk of temporary flooding and requires design adaptation strategies that can reduce potential future risk and/ or the project has inherent adaptive capacity.
- No:** The project is not vulnerable to SLR/ temporary flooding. Please proceed to Section 3.

13. Only for projects directly adjacent to the shoreline. If project is not adjacent to the shoreline, go to 14.

Subtract the 100-year total water elevation (11b) from the Project Elevation (6).

a) Difference in feet: _____ ft

If the answer is negative, the project is at risk of temporary flooding today by the 100-year total water level event under existing conditions.

b) Is the answer to Question 13a less than the answer to Question 7a (most likely sea level rise)?

- Yes:** project will be at risk of temporary flooding due to wave hazards and requires design considerations that address wave hazards or an acknowledgement that wave hazards don't result in any impacts
- No:** Not at risk. Go to 13c.

c) Is the answer to Question 13a less than the answer to Question 7b (upper range sea level rise)?

- Yes:** The project may be at risk of temporary flooding due to wave hazards and requires design adaptation strategies that can reduce potential future risk and/ or the project has inherent adaptive capacity.
- No:** The project is not vulnerable to existing or future wave hazards. Please proceed to Section 3.

B. Sensitivity (see SLR Guidance for definition):

14. What is the proposed overall sensitivity to flooding and other sea level rise impacts?

- Low Sensitivity:** flooding would cause minimal impact; project/ asset(s)/ surrounding infrastructure are able to function during and/or after temporary flooding event
- Medium Sensitivity:** flooding would cause medium impact; project/ asset(s)/ surrounding infrastructure would be impacted, but are able to maintain most functions during and/or after temporary flooding event, though repairs may be needed
- High Sensitivity:** flooding would result in complete loss of project/asset/surrounding infrastructure or shut-down of operation with high cost and potential impact to health and safety

Please explain briefly*:

*(If more space is required, please provide on separate page).

C. Adaptive Capacity (see SLR Guidance for definition):

15. What is the inherent adaptive capacity to tolerate flooding and other sea level rise impacts or to relatively easily be subsequently adapted to higher levels of SLR should they occur (see Guidance text for explanation)?

- High Adaptive Capacity:** ability of the project/asset(s)/surrounding infrastructure to tolerate flooding, moderate potential damages, and cope with the consequences without the need for significant intervention or modification (e.g. alternate infrastructure routes available, elevated structure/site, etc...)
- Medium Adaptive Capacity:** ability of the project asset(s)/surrounding infrastructure to tolerate flooding, moderate potential damages, and cope with the consequences with some significant intervention or modification (e.g. modifications, repairs and replacements are possible to restore the function, etc...)
- Low Adaptive Capacity:** the project/asset(s)/surrounding infrastructure have limited or no ability to tolerate flooding and/ or inundation, moderate potential damages, and cope with the consequences without significant modification (e.g. no alternate infrastructure routes available, elevation of site not feasible, function can't be restored in that location without replacement, etc...)

Please explain briefly*:

*(If more space is required, please provide on separate page).

Department Name: _____ Project ID (if available): _____

Date prepared: _____

SECTION 2 – Risk Assessment for Projects vulnerable to SLR per the above

16. What is the anticipated level of **DAMAGE** to the project/ asset(s)?

Low Damage: Asset(s) could be repaired/ partially replaced

Medium Damage: Asset(s) would require complete replacement or very costly repairs

High Damage: Asset(s) would not be repairable or replaceable in the existing location

Unknown

Please explain briefly*:

17. What is the level of **DISRUPTION**?

Low: no or little disruption in service or function

Medium: disruption in service or function that doesn't threaten public health & safety (non-critical)

High: disruption of service and/or function that threatens public health & safety (critical)

Unknown

Please explain briefly*:

18. What are the **COSTS** (to replace/repair or for health & safety)?

Low: no or little cost to return asset(s) or minor secondary service disruption costs

Medium: moderate costs to repair/ replace asset(s)

High: high costs to fully replace asset(s) in new location and/ or high secondary costs attributed to asset being out of service

Unknown

Please explain briefly*:

If all answers to Section 2, 15, 16, and 17 are Low, proceed to adaptation planning. If answers are Low and/ or Medium, additional information may be needed to justify certification. If any answers are High, alternatives should be considered.

Please briefly summarize sea level rise adaptation measures associated with this project or program*:

Additional Comments*:

*(If more space is required, please provide on separate page).

Department Name: _____ Project ID (if available): _____
Date prepared: _____

SECTION 3 – Department Certification Submittal

This section is for the Dept’s Director and Deputy Director level only. Please submit signed copy to the Capital Planning Program for processing.

_____ (Dept Name) certifies that the information provided herein is complete and is consistent with CCSF Sea Level Rise Guidance.

Department Director Name (please type/print): _____

Signature: _____ **Date:** _____

SECTION 4 – Capital Planning Committee

This section is for City Engineer and Capital Planning Committee or Designee completion only.

This project is certified as consistent with the CCSF Sea Level Rise Guidance and

- will not be exposed to expected SLR and related flooding impacts during its functional lifespan
- is exposed but is not vulnerable due to low sensitivity or high adaptive capacity
- is exposed, is vulnerable, but includes sufficient adaptation planning for SLR
- will require additional adaptation planning

Comments: _____

City Engineer Name (please type/print): _____

Signature²: _____ **Date:** _____

Capital Planning Committee Chair Name (please type/print):

Signature: _____ **Date:** _____

² (Digital Signatures are preferred; if this file needs to be printed and scanned for signatures, please ensure high resolution document print and scan for legibility. Thank you.)

Department Name: _____ **Project ID (if available):** _____

Date prepared: _____