London Breed
Mayor

NAOMI M. KELLY
City Administrator

BRIAN STRONG
Director, Office of Resilience and Capital Planning

ONESF
Building Our Future

CAPITAL PLANNING PROGRAM

Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco
Sea Level Rise Checklist *(Version 3.0 Nov 2020)*

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

Pre-Checklist Conditions

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 at this time. Retain page 1 of the checklist for your project 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 ☐
   (Please review the "SLR Vulnerability Zone Map" at: https://data.sfgov.org/SLR-Vulnerability-Zone/)

3. ***Anticipated total project costs[1] equal or exceed 5 million dollars*** Yes ☐ No ☐

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.***

Preparer and Project Information

Reset Form

Department Name:	
Project Name:	
Project ID:	
Name of Project Mgr:	
Name of Preparer:	
Dept. Director:	
Date prepared:	

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

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

Checklist 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.):*

Functional Lifespan / Useful Life of Project

3. Use the table below to select an appropriate useful life, and support your selection in Question 4.

(A resilient facility should be built to withstand, or recover quickly from, natural hazards. This includes performing its intended design standard(s) throughout its functional lifespan or useful life in a changing climate. Meeting this goal requires designing or rehabilitating facilities to withstand the climate conditions protected to occur by the end of the facilities full useful life.)

Guidance for determining a project's or facility's useful life		
< 20 years	Temporary or rapidly replaced assets	• Interim and deployable flood protection measures • Asphalt pavement, pavers, and other ROW finishing • Green infrastructure • Street furniture • Technology components (e.g., telecommunications equipment, batteries, solar photovoltaics, fuel sells)
20 – 50 years	Facility improvements, and components replaced on regular replacement cycles	• Electrical, HVAC, and mechanical components • Most building retrofits (substantial improvements) • Concrete paving • Infrastructural mechanical components (e.g., compressors, lifts, pumps) • Outdoor recreational facilities • At-site energy equipment (e.g., above ground fuel tables, conduit, emergency generators) • Stormwater detention systems
60 – 80 years	Long-lived buildings and infrastructure	• Most buildings (e.g., public, office, residential) • Piers, wharfs, and bulkheads • Plazas • Retaining walls • Culverts • On-site energy generation / co-generation plants
> 80 years	Assets that cannot be relocated	• Major infrastructure (e.g., tunnels, bridges, wastewater treatment plants) • Monumental buildings • Road reconstruction • Subgrade sewer infrastructure (e.g., sewers, catch basins, force mains, transport / storage boxes outfalls)

Source: NYC Climate Resiliency Design Guidelines, September 2020, Version 4.0

Department Name: _____

Project ID (if available): _____ *Date prepared:* _____

4. What is the functional lifespan / useful life of the project?
(Refer to the guidance in Question 3)

Construction completion year: _____
Functional lifespan / useful life *(in years)*:_____

(Please provide a justification for the functional lifespan / useful selected. The justification should be consistent with the guidance provided in Question 3.

5. What is the planning horizon?
(The construction completion year + functional life span = planning horizon year; e.g., 2030 construction completion year + 60 year functional life span = 2090.)

Planning horizon year: 0

Existing Site Elevation and Coastal Hazards Information

6. Has the site historically been flooded due to high tides/and or storms?
(If yes, please describe conditions: e.g., extreme high tide, storm surge, rainstorm event)

☐ **Yes** ☐ **No** _____

7. What is the lowest ground elevation at your project location (in feet NAVD88)?
*(Please download the **Digital Elevation Model Visualization Tool** for the neighborhood where your project is located, and select the lowest elevation on the project site. Record the lowest elevation, latitude, and longitude of the selected point.)*

_____**feet NAVD88**

_____ **Latitude** _____ **Longitude**

8. What is the Mean Higher High Water (MHHW) elevation closest to your project location?
*(Please download the **Tidal Datum Visualization Tool** and select the closest point to your project location and record the year 100-year extreme tide elevation).*

MHHW Elevation (year 2000):_____**feet NAVD88**

9. What is the 100-year extreme tide elevation (in feet) closest to your project location?
*(Please use the **Tidal Datum Visualization Tool** and select the closest point to your project location and record the year 100-year extreme tide elevation).*

100-year extreme tide elevation (in feet):_____**feet NAVD88**

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

10. Is the project located within 100 ft of the shoreline?
*(The **Tidal Datum Visualization Tool** includes the 100-foot shoreline buffer. If the project is located within this zone, the 100-year total water level -- which includes wave hazards at the shoreline -- must be considered.)*

☐ **Yes** (Go to Question 11). ☐ **No** (Go to Question 12).

11. If the project is within 100 ft of the shoreline, what is your 100-year total water level elevation?
*(Please use the **Tidal Datum Visualization Tool** and select the closest point to your project location and record the year 100-year extreme tide elevation).*

100-year total water level elevation (in feet): _____ft NAVD88

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

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

Assess if the project site or asset could be subjected to sea level rise inundation, temporary coastal flooding, or wave hazards. Some fields below will auto-calculate based on the information entered.

Future Sea Level Rise Calculations

12. Calculate projected sea level rise at the end of the planning horizon year 0 (from Question 4.)
*(If your project is within 500 feet of the shoreline, or if it provides a critical service, please select RCP 8.5 for all following calculations. If RCP 4.5 is selected, please provide justification for this selection below. The **Tidal Datum Visualization Tool** includes the 500-foot shoreline buffer.)*

☐ RCP 4.5
a) 0 in inches and 0.0 in feet -- likely value
b) 0 in inches and 0.0 in feet -- 1-in-200 chance value

☐ RCP 8.5
c) 0 in inches and 0.0 in feet -- likely value
d) 0 in inches and 0.0 in feet -- 1-in-200 chance value

Assess Project Vulnerability to *Permanent Inundation* from Sea Level Rise

13. Subtract MHHW (8) from the Project elevation (7)

Difference in feet: 0.0 ft
(If the answer is negative, the project is below MHHW and could be vulnerable today.)

a) Is the project vulnerable to permanent inundation during the functional lifespan using the likely SLR scenario? *(Is the answer to Question 12a greater than the answer to Question 13?).*

☒ Yes: The project could be inundated by likely sea level rise and will require adaptation strategies.
☐ No: Not vulnerable.

b) Is the project vulnerable to permanent inundation during the functional lifespan using the 1-in-200 chance SLR scenario? *(Is the answer to Question 12b is greater than the answer to Question 13).*

☒ Yes: The project could be inundated by 1-in-200 chance sea level rise and adaptation strategies are recommended.
☐ No: Not vulnerable.

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

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

14. Subtract 100-year extreme tide elevation (9) from the Project elevation (7):

Difference in feet: 0.0 ft

(If the answer is negative, the project could be vulnerable to temporary flooding by the 100-year extreme tide event today.)

a) Is the project vulnerable to temporary coastal flooding coupled with likely sea level rise during the functional lifespan? ***(****Is the answer to Question 14 less than the answer to Question 12a?)*

☒ Yes: The project could be inundated by a 100-year extreme tide coupled with likely sea level rise. Flood-proofing adaptation strategies may be required.

☐ No: Not vulnerable.

b) Is the project vulnerable to temporary coastal flooding coupled with 1-in-200 chance sea level rise? *(Is the answer to Question 14 less than the answer to Question 12b?)*

☒ Yes: The project could be inundated by a 100-year extreme tide coupled with 1-in-200 chance sea level rise. Flood-proofing adaptation strategies are recommended.

☐ No: Not vulnerable.

15. For projects within 100 ft of the shoreline *(If project is not within 100 ft of the shoreline, go to Question 16.)*

Subtract 100-year total water elevation (11) from the Project elevation (7):

Difference in feet: _____ft

(If the answer is negative, the project could be vulnerable to wave inundation if the 100-year total water level can overtop the adjacent shoreline under existing conditions.)

a) Is the project vulnerable to potential wave inundation with likely sea level rise during the functional functional lifespan? *(Is the answer to Question 15 less than the answer to Question 12a?)*

Yes: The project could be inundated by wave hazards with likely sea level rise. Adaptation strategies may be required.

No: Not vulnerable.

b) Is the project vulnerable to potential wave inundation with 1-in-200 chance sea level rise? *(Is the answer to Question 15 less than the answer to Question 12b?)*

Yes: The project could be inundated by wave hazards with 1-in-200 chance sea level rise. Adaptation strategies are recommended.

No: Not vulnerable.

Department Name: _____

Project ID (if available): _____ *Date prepared:* _____

B. Sensitivity (see SLR Guidance for definition):

16. Is the project/asset(s) sensitive to inundation (i.e., is it physically or functionally impaired if it gets wet?)

- ☐ **Low Sensitivity**: sea level rise and temporary flooding would have little or impact on the project asset(s) physically or functionally.
- ☐ **Moderate Sensitivity:** sea level rise and temporary flooding would have an impact on the project/ assets(s) physically or functionally, but the project would recover quickly one floodwaters subside. The project would retain partial function while inundated.
- ☐ **High Sensitivity:** sea level rise and storm surge inundation have a significant influence on the project/asset(s) physically or functionally, and the project would not recover quickly once floodwaters subside. The project would lose major function while inundated.

Please explain briefly*:

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

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

17. Does the project/asset(s) have adaptive capacity (i.e., can it easily be adapted to mitigate potential damage or functional impairment, or does it have redundancy to minimize potential consequences?)

- ☐ **High Adaptive Capacity:** Project/asset(s) has little inherent capacity to adapt to future inundation or flooding without additional capital investments.
- ☐ **Moderate Adaptive Capacity:** Project**/**asset(s) has some inherent capacity to adapt to inundation or flooding without additional capital investments (e.g., the project includes redundancy, or a reasonable alternate route is available).
- ☐ **High Adaptive Capacity:** Project/asset(s) has substantial capacity to adapt to inundation or flooding without additional capital investments (e.g., the ability to adapt to higher sea level rise has been designed into the project, such as automatic flood barriers on doorways).

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 identified as vulnerable to sea level rise or temporary coastal flooding.

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

- ☐ **Low Damage**: Asset(s) could be repaired/ partially replaced
- ☐ **Moderate Damage**: Asset(s) would require complete replacement or very costly repairs
- ☐ **High Damage**: Asset(s) would not repairable or replaceable in the existing location
- ☐ Unknown

Please explain briefly*:

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

- ☐ **Low**: no or little disruption in service or function
- ☐ **Moderate**: 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*:

20. 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
- ☐ **Moderate**: 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, Questions 18, 19, and 20 are Low, project likely has sufficient adaptation planning. If any answers are Medium, additional adaptation planning may be required. If any answers are High, alternatives should be considered.

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

22. 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.

Dept. Director: _____

Signature[2]:_____ Date: _____

SECTION 4 – Capital Planning Committee

(This section is for City Engineer, 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 sea level rise 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 to address sea level rise
☐ will require additional adaptation planning

Comments: _____

City Engineer Name (please type/print): _____

Signature[2]: _____ Date:_____

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

Signature[2]: _____ 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:* _____