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ONESF
Building Our Future

CAPITAL PLANNING PROGRAM

Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco
Sea Level Rise Checklist *(Version 5.0 December 2024)*

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 4 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 is in the Conceptual Planning/Phase*** *(which allows for adaptation considerations to be developed before the design is solidified).* Yes ☐ No ☐

2. ***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 ☐

3. ***Project is within the SLR Vulnerability Zone*** Yes ☐ No ☐
   (Please review the "SLR Vulnerability Zone Map" at: https://data.sfgov.org/Geographic-Locations-and-Boundaries/108-Inundation-Vulnerability-Zone-Line-Sea-Level-R/ff7h-99em#

4. ***Anticipated total project cost[1] equals or exceed 5 million dollars*** Yes ☐ No ☐

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 cost includes planning, design, and construction costs.

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

Checklist for projects meeting all four 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. Review the table when determining an appropriate useful life. Support your selection in Question 4. In your selection, consider accounting for multiple repair and rehabilitation cycles for projects that include major facility improvements and long-lived buildings and infrastructure

(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. This requires designing or rehabilitating facilities to withstand the climate conditions projected to occur by the end of the facilities 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) • 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)*:_____

(Provide a justification for the functional lifespan/useful life selected consistent with the guidance provided in Question 3 and inclusive of any expected repair and rehabilitation cycles.

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 **Water Levels Visualization Tool** and select the closest point to your project location and record the MHHW elevation).*

MHHW Elevation :_____feet NAVD88

9. What is the 100-year (1% annual exceedance probability) extreme tide elevation (in feet) closest to your project location?*(Please use the **Water Levels 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 Water Levels Visualization Tool includes the 100-foot shoreline buffer. If the project is located within this zone, the 100-year (1% annual exceedance probability) 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 (1% annual exceedance probability total water level elevation?
(Please use the Water Levels Visualization Tool and select the closest point to your project location and record the year 100-year total water level elevation).

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

12. Is project is influenced by subsurface conditions? This could be because the project includes underground infrastructure such as tunnels, pipes, roadway subgrades, and or foundation elements that are typically designed relative to the highest annual groundwater table.

☐ **Yes** ☐ **No**

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

13. Calculate projected sea level rise at the end of the planning horizon year __0__ (from Question 4.)
Enter projected sea levels for the Intermediate and Intermediate-High scenarios below:

a. Intermediate Scenario _____0_____ in inches and __0.0__in feet

b. Intermediate-High Scenario _____0_____ in inches and __0.0__in feet

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

14. 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.)

Is the project vulnerable to permanent inundation during the functional lifespan under the Intermediate SLR scenario? *(Is the answer to Question 13a greater than the answer to Question 14?).*

☐ **Yes**: The project could be inundated by more likely sea level rise and will require adaptation strategies.

☐ **No**: Not vulnerable.

Is the project vulnerable to permanent inundation during the functional lifespan under the Intermediate-High SLR scenario? *(Is the answer to Question 13b greater than the answer to Question 14?).*

☐ **Yes**: The project could be inundated by more extreme sea level rise and will require adaptation strategies.

☐ **No**: Not vulnerable.

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

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

15. Subtract the 100-year (1% annual exceedance probability) 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.)

Is the project vulnerable to temporary coastal flooding coupled with the **Intermediate** SLR scenario during the functional lifespan? (Is the answer to Question 15 less than the answer to Question 13a?)

☐ **Yes**: The project could be inundated by a 100-year (1% annual exceedance probability) extreme tide coupled with moderate sea level rise. Flood-proofing adaptation strategies may be required.

☐ **No**: Not vulnerable.

Is the project vulnerable to temporary coastal flooding coupled with the **Intermediate-High** SLR scenario during the functional lifespan? (Is the answer to Question 15 is less than the answer to Question 13b?)

☐ **Yes**: The project could be inundated by a 100-year (1% annual exceedance probability) extreme tide coupled with more extreme sea level rise. Additional flood-proofing adaptation strategies may be required.

☐ **No**: Not vulnerable.

16. For projects within 100 ft of the shoreline *(If project is not within 100 ft of the shoreline, go to Question 17.)*
Subtract the 100-year (1% annual exceedance probability) total water elevation (11) from the Project elevation (7): **Difference in feet:** ____0____**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.)

Is the project vulnerable to potential wave inundation with the **Intermediate** SLR scenario during the functional lifespan? (Is the answer to Question 16 is less than the answer to Question 13a?)

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

☐ **No**: Not vulnerable.

Is the project vulnerable to potential wave inundation with the **Intermediate-High** SLR scenario during the functional lifespan? (Is the answer to Question 16 is less than the answer to Question 13b?)

☐ **Yes**: The project could be inundated by wave hazards with more extreme sea level rise. Adaptation strategies may be required.

☐ **No**: Not vulnerable.

Assess Project Vulnerability to *Groundwater Rise*

17. Is project is vulnerable to **groundwater rise**? If the answer to Question 12 is **Yes**, than consider how the project could be affected by higher fresh and saline groundwater levels corresponding with sea level rise over its functional lifespan.

(*Note: even if the response to question 13 is **NO**, the project could be influenced by groundwater conditions. This is because subsurface elements of the project **may** extend well below grade*.)

☐ **Yes**: The project could influenced by higher fresh or saline groundwater levels.

☐ **No**: Not vulnerable.

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

B. Sensitivity (see SLR Guidance for definition):

18. 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 no 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 once 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)

19. Is the project/asset(s) sensitive to **groundwater rise** (i.e., is it physically or functionally impaired if groundwater interacts with any of its features?)

- ☐ **Low Sensitivity**: fresh or saline groundwater would have little or no impact on the project asset(s) physically or functionally.
- ☐ **Moderate Sensitivity:** fresh or saline groundwater would have an impact on the project/assets(s) physically or functionally, but the project would recover quickly once groundwater levels subside. The project would retain partial function while affected.
- ☐ **High Sensitivity:** fresh or saline groundwater would have a significant influence on the project/asset(s) physically or functionally as a result of the additional forces placed on structural elements or the corrosive effects of saline water over time.

Please explain briefly*:

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

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

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

20. Does the project/asset(s) have **inundation** or **flood** 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?)

- ☐ **Low Adaptive Capacity:** Project/asset(s) has little inherent ability to adapt without additional capital investments.
- ☐ **Moderate Adaptive Capacity:** Project/asset(s) has some inherent capacity to adapt 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 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)

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

21. Does the project/asset(s) have **groundwater rise** 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?)

- ☐ **Low Adaptive Capacity:** Project/asset(s) has little inherent capacity to adapt to rising fresh or saline groundwater levels without additional capital investments.
- ☐ **Moderate Adaptive Capacity:** Project/asset(s) has some inherent capacity to adapt to rising fresh or saline groundwater levels without additional capital investments (e.g., project elements can be replaced or retrofit with moderate cost and disruption.).
- ☐ **High Adaptive Capacity:** Project/asset(s) has substantial capacity to adapt to rising fresh or saline groundwater levels without additional capital investments (e.g., the ability to add features such as pumps or structural stabilizing elements with minor additional cost or disruption).

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, temporary coastal flooding, and/or groundwater rise.

For most projects assessing risk using the **Intermediate** scenario is the recommended starting point. If the project includes major new assets, particularly with low adaptive capacity per Questions 20 and 21, consider assessing risk using the **Intermediate-High** scenario.

22. What would be 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 be repairable or replaceable in the existing location
- ☐ Unknown

Please explain briefly*:

23. What would be the anticipated level of **DISRUPTION** to the functionality of the project/ asset(s)?

- ☐ **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*:

24. What would be the anticipated **COSTS** (to replace/repair, return to service, or relative to health & safety)?

- ☐ **Low**: no or little cost to return asset(s) or minor secondary service disruption costs
- ☐ **Moderate**: moderate cost to repair/ replace asset(s)
- ☐ **High**: high cost to fully replace asset(s) in new location and/ or high secondary costs attributed to asset being out of service
- ☐ Unknown

Please explain briefly*:

Department Name: _____

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

If all answers to Section 2, Questions 22, 23, and 24 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 and additional evaluation of adaptive capacity should be performed.

25. Please briefly summarize sea level rise adaptation measures associated with this project or program and the identified risks*:

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 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:* _____