

Incorporating Sea Level Rise into Capital Planning

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Capital Plan

- Provides road map for ensuring long-term safety, accessibility, & modernization of infrastructure & facilities
- Guidance provides departments with step-by-step approach for considering SLR vulnerability & risk
- Requires all projects over \$5 million located in SLR zone to submit completed checklist to City Engineer & City Administrator for project to be eligible for inclusion in Capital Plan or capital budget

Benefits

- Adaptation measures can potentially open-up new funding streams for project proponents
- Federal, state, & private funds available for projects
- For example, FEMA's Building Resilient Infrastructure & Communities funding program
- Bond language requires floodproofing



London Breed
Mayor

NAOMI M. KELLY
City Administrator

BRIAN STRONG
Director, Office of
Resilience and Capital
Planning

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 at this time. 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
(see the Supplementary Document "SLR Vulnerability Zone Map" at: <http://onesanfrancisco.org/staff-resources/sea-level-rise-guidance/>; contact Hemiar Alburati (hemiar.alburati@sfgov.org) to request a Geodatabase (GIS file) of the SLR Vulnerability Zone Map (overlaid on San Francisco base layers).

**GUIDANCE FOR
INCORPORATING
SEA LEVEL RISE
INTO CAPITAL PLANNING**

ASSESSING VULNERABILITY AND RISK TO SUPPORT ADAPTATION



<https://www.onesanfrancisco.org/node/148>

Key Steps



Example Vulnerability Matrix

Asset	Exposure to 2050 Sea Level Rise ^a		Sensitivity ^b		Adaptive Capacity ^c		Total Score
	Sea Level Rise	Storm Surge	Sea Level Rise	Storm Surge	Sea Level Rise	Storm Surge	
Asset #1	None	None	N/A	N/A	N/A	N/A	0
Asset #2	None	Low (1)	N/A	Low (1)	N/A	High (1)	3
Asset #3	Low (1)	Low (1)	Low (1)	Med (2)	Med (2)	Med (2)	9
Asset #4	Med (2)	Med (2)	Med (2)	High (3)	Low (3)	Med (2)	14
Asset #5	High (3)	High (3)	High (3)	Med (2)	Low (3)	Low (3)	17

Location – is Project Located in an Inundation Zone During its Lifespan?

— SLR



Sea Level Rise
Inundation
Mapping

Functional Lifespan

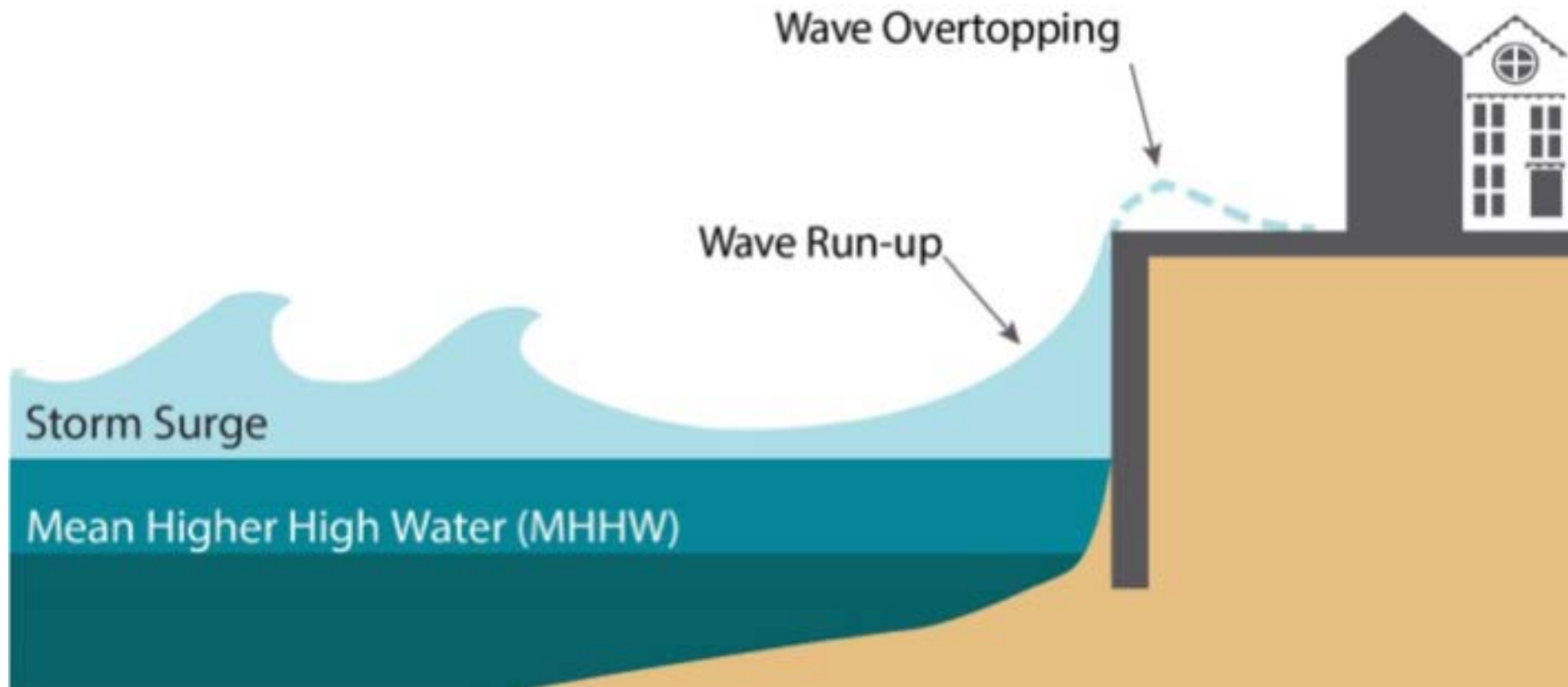
Guidance for determining a project's or facility's useful life		
< 20 years	Temporary or rapidly replaced assets	<ul style="list-style-type: none"> • Interim and deployable flood protection measures • Asphalt pavement, pavers, and other ROW finishing • Green infrastructure • Street furniture • Technology components (e.g., telecommunications equipment, batteries, solar photovoltaics, fuel cells)
20 – 50 years	Facility improvements, and components replaced on regular replacement cycles	<ul style="list-style-type: none"> • 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 tanks, conduit, emergency generators) • Stormwater detention systems
60 – 80 years	Long-lived buildings and infrastructure	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

Recommended Sea Level Rise Projections

	NRC 2012 Prior Guidance Levels		RCP 4.5 <i>Rising Seas 2017</i> New Low Range		RCP 8.5 <i>Rising Seas 2017</i> New High Range	
Year	Likely	Upper Range	Likely	1 in 200 Chance	Likely	1 in 200 Chance
2030	6	12	6	10	6	10
2050	11	24	13	23	13	23
2070	20	38	20	39	24	45
2100	36	66	33	71	41	83
2150	--	--	55	140	70	156

Storm Surge and Waves



Questions?

