



SFMTA

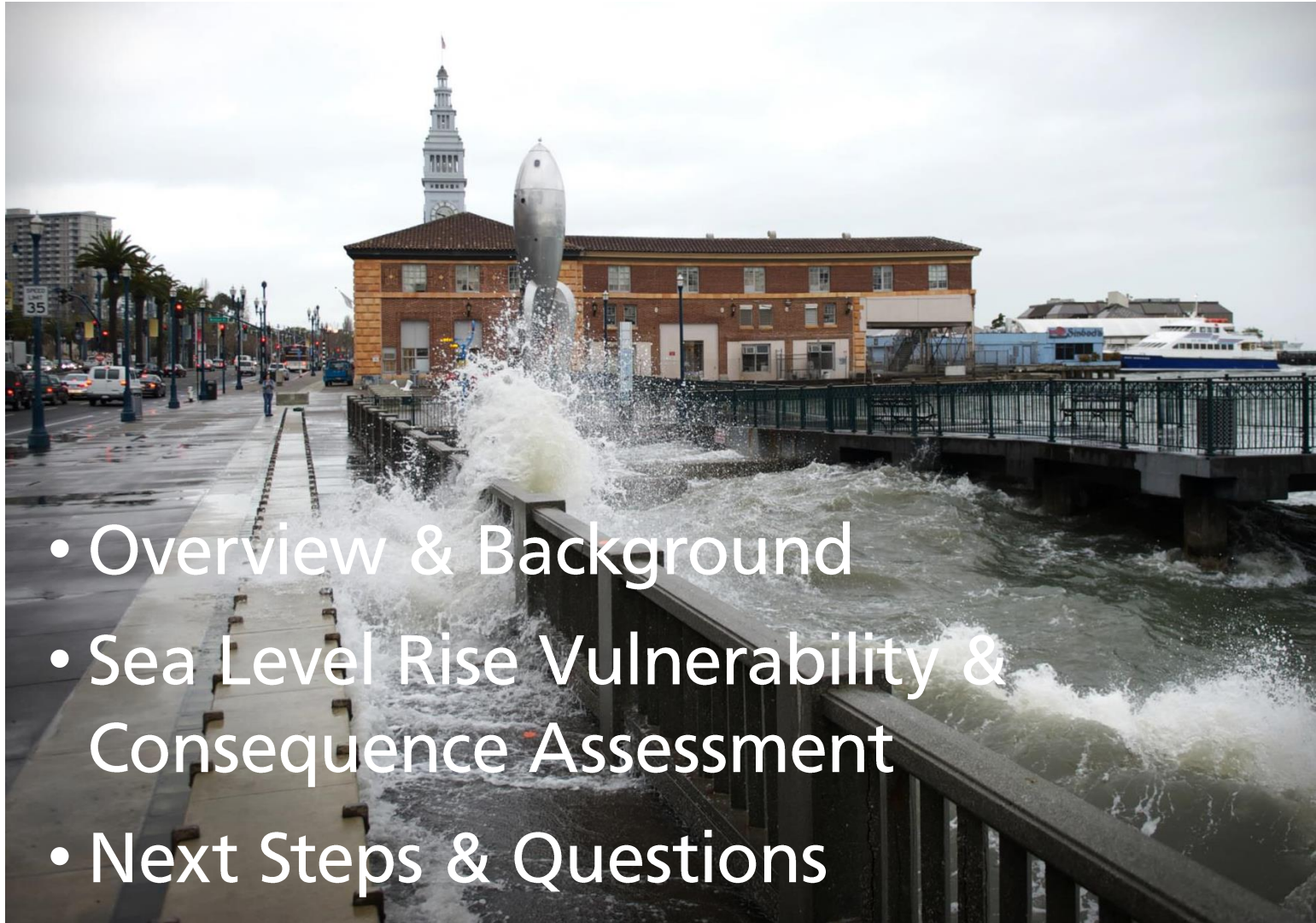
Adapting San Francisco's multimodal transportation system to a changing climate.

SFMTA

Engineering, Maintenance & Safety Committee

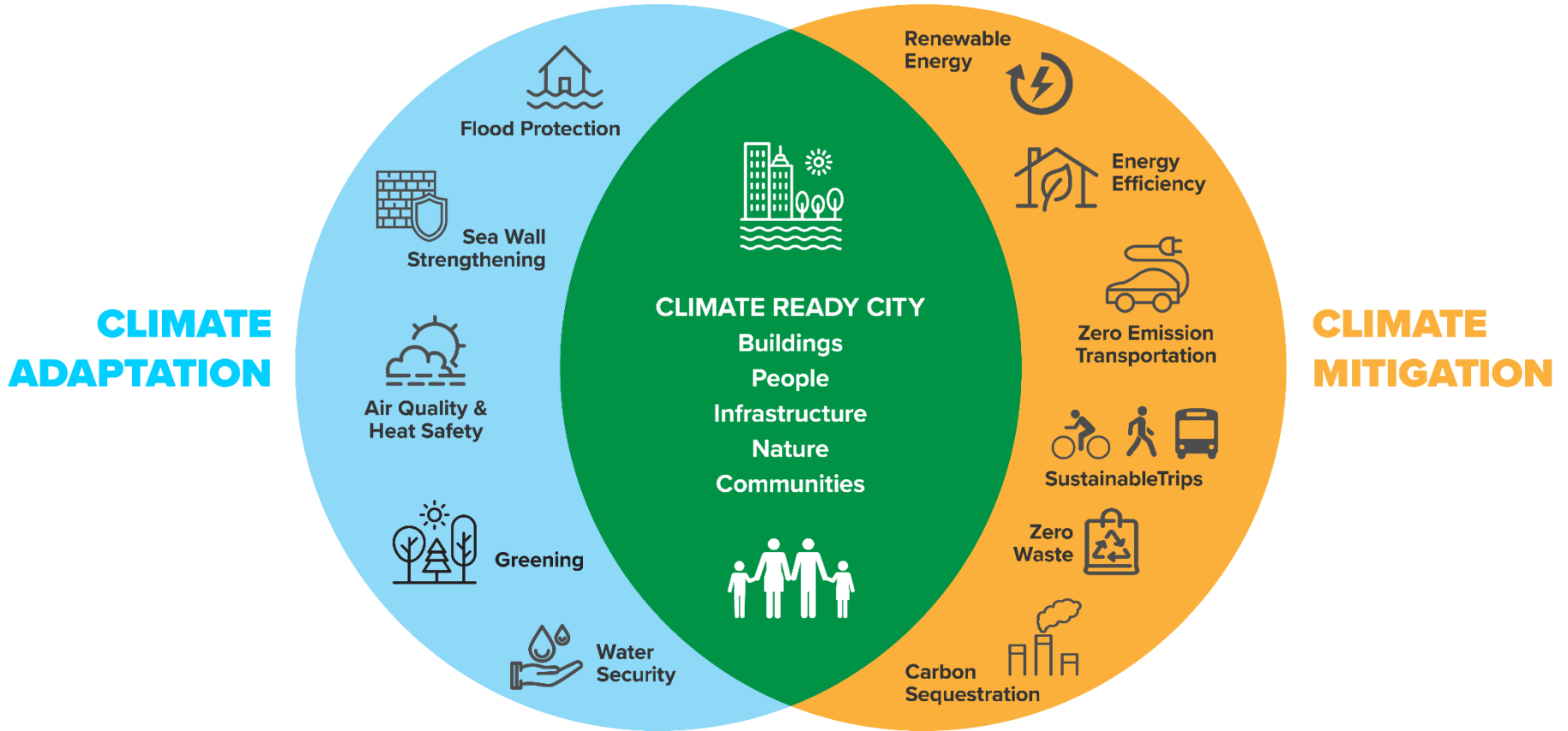
May 22, 2019

Today's Agenda:

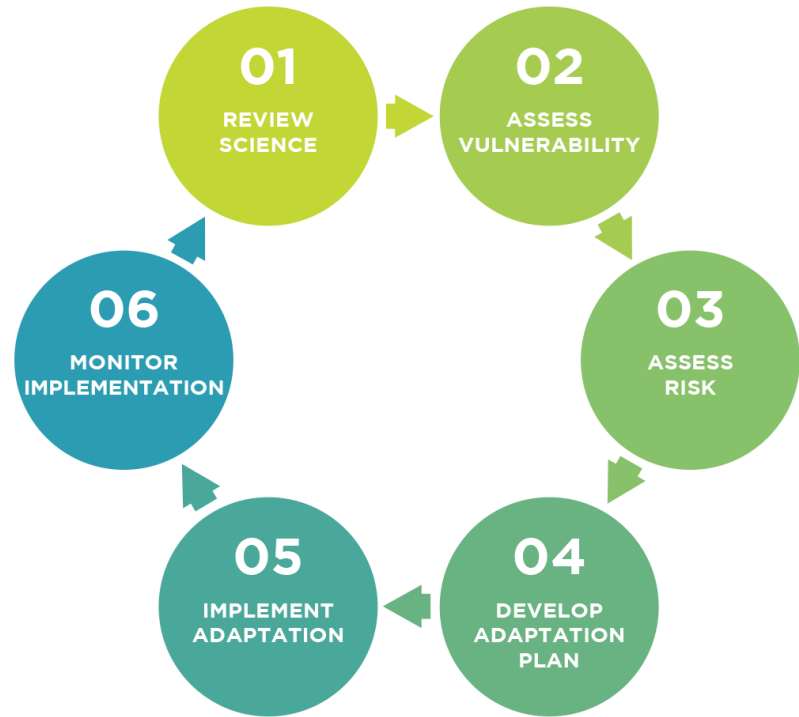


- Overview & Background
- Sea Level Rise Vulnerability & Consequence Assessment
- Next Steps & Questions

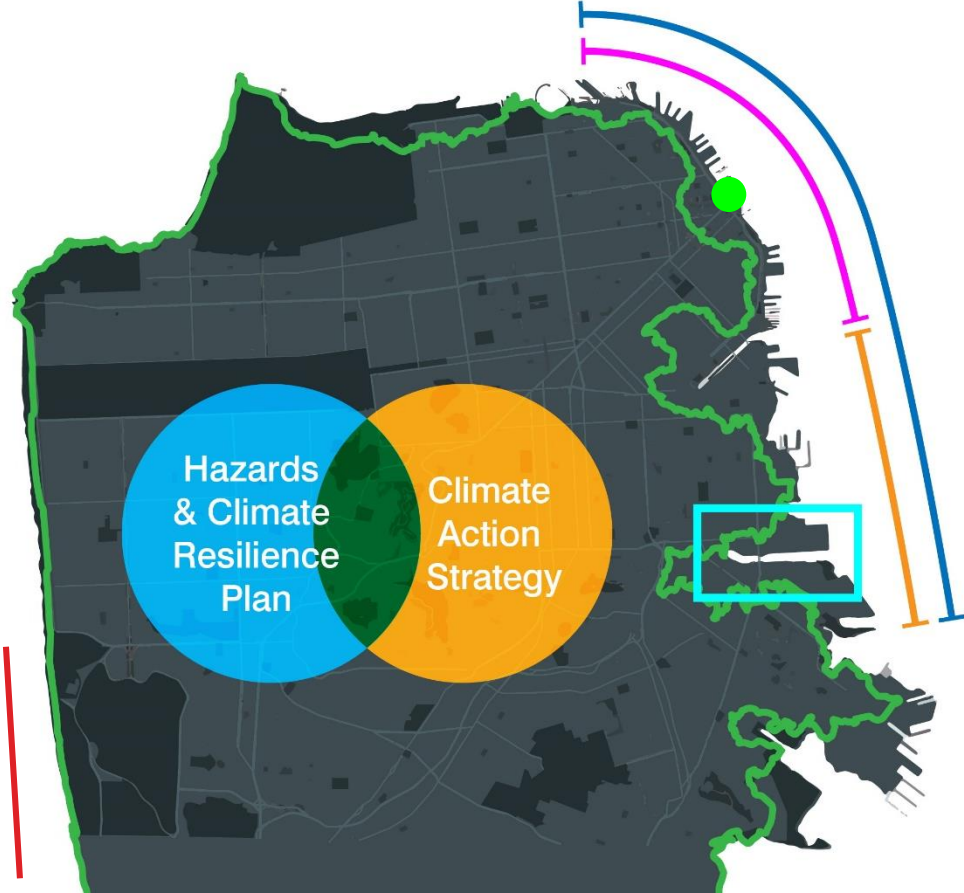
A Citywide Framework:



2016 Sea Level Rise Action Plan:



Efforts Underway Across Scales, Hazards & Assets



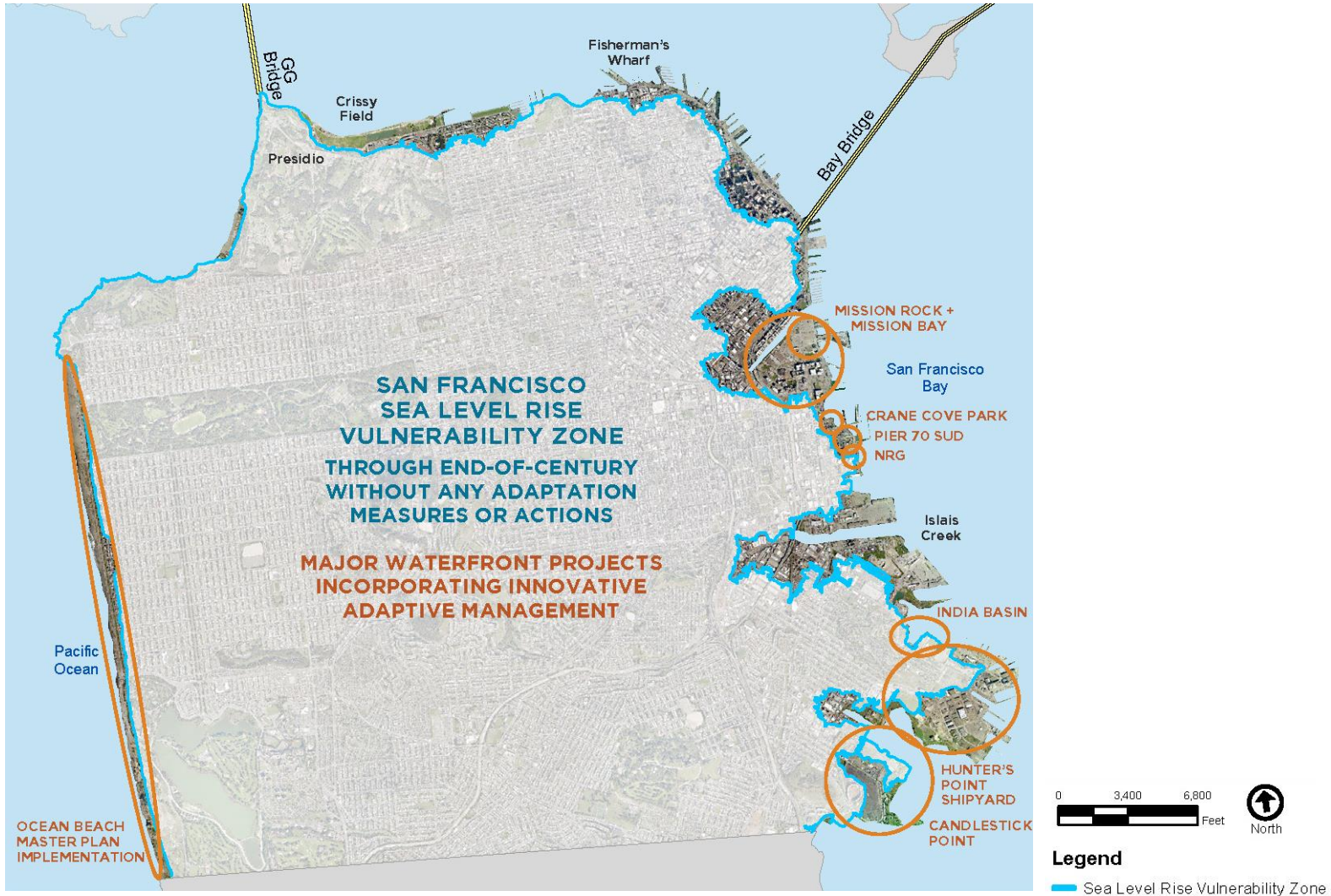
CITYWIDE PLANS & STRATEGIES

- Sea Level Rise Action Plan (Vulnerability & Consequence Analysis)
- Hazards & Climate Resilience Plan
- Climate Action Strategy

SHORELINE ASSESSMENTS & PROJECTS

- Southern Waterfront Assessment
- Embarcadero Seawall Program
- USACE/Port Flood Study
- Islais/Southeast Mobility Adaptation Strategy
- Ocean Beach Master Plan Implementation
- BART Sea Level Rise Assessment

Citywide Sea Level Rise Impacts:



Detailed Vulnerability and Consequences Assessment

Exposure



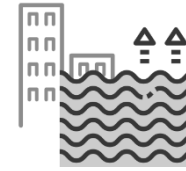
Sensitivity & Adaptive Capacity



Consequence: Environment, Economy and Equity



Key Findings: Vulnerability and Consequences Assessment (Draft 2019)



	2030 SCENARIO	2050 SCENARIO	2100 SCENARIO
Residents	5044	15471	31121
Jobs	10243	49287	168058
Streets	20 miles	50 miles	91 miles
Open Space	232 acres	550 acres	684 acres
Public Land	442 acres	887 acres	1490 acres
Schools	2	9	19

Key Findings: Vulnerable Neighborhoods

	North Beach	Financial District	Mission Creek	Islais Creek	Hunters Point
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Transportation Impacts



Loss of Open Space



New Development



Joint Coastal and Precipitation Flood Risk



Contamination and Liquefaction





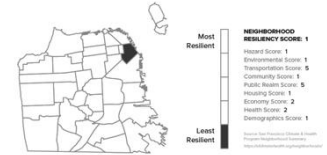
North Beach Fishermans Wharf



- PUBLIC SAFETY**
 - 1 Contaminated Land
- MOBILITY**
 - 4 Kirkland Division
 - 4 The Embarcadero
 - 4 Streetcar (E-Line)
- WASTE WATER**
 - 5 North Point Wet-Weather Treatment Plant
 - 5 Northshore Major Pump Station
- OPEN SPACE**
 - 7 Fisherman's Wharf
- PORT**
 - 1 Pier 9: Offices, bar pilots, WETA offices
 - 1 Piers 15-17: Exploratorium, public spaces, offices, iconic
 - 1 Pier 35: Cruise Ship terminal and public serving
 - 1 Pier 39 Marina
 - 1 Pier 39: Public serving, restaurants, retail, aquarium, iconic
 - 1 Pier 41: Ferries, offices
 - 1 Pier 43: Ferries
 - 1 Pier 45: Public spaces, entertainment, fish processing
 - 1 Pier 47: Restaurants, Fisherman's Wharf, retail, public serving
 - 1 Hyde Street Harbor: Commercial fishing, fish processing, historic vessels, recreational boating, fuel dock
 - 1 Seawall 315-317: Waterfront Plaza (offices and restaurants)
 - 1 Seawall 322: 88 Broadway (future affordable housing)
 - 1 Seawall 324: Hotel Teatro Zinzani and open space



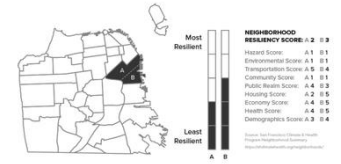
Financial District



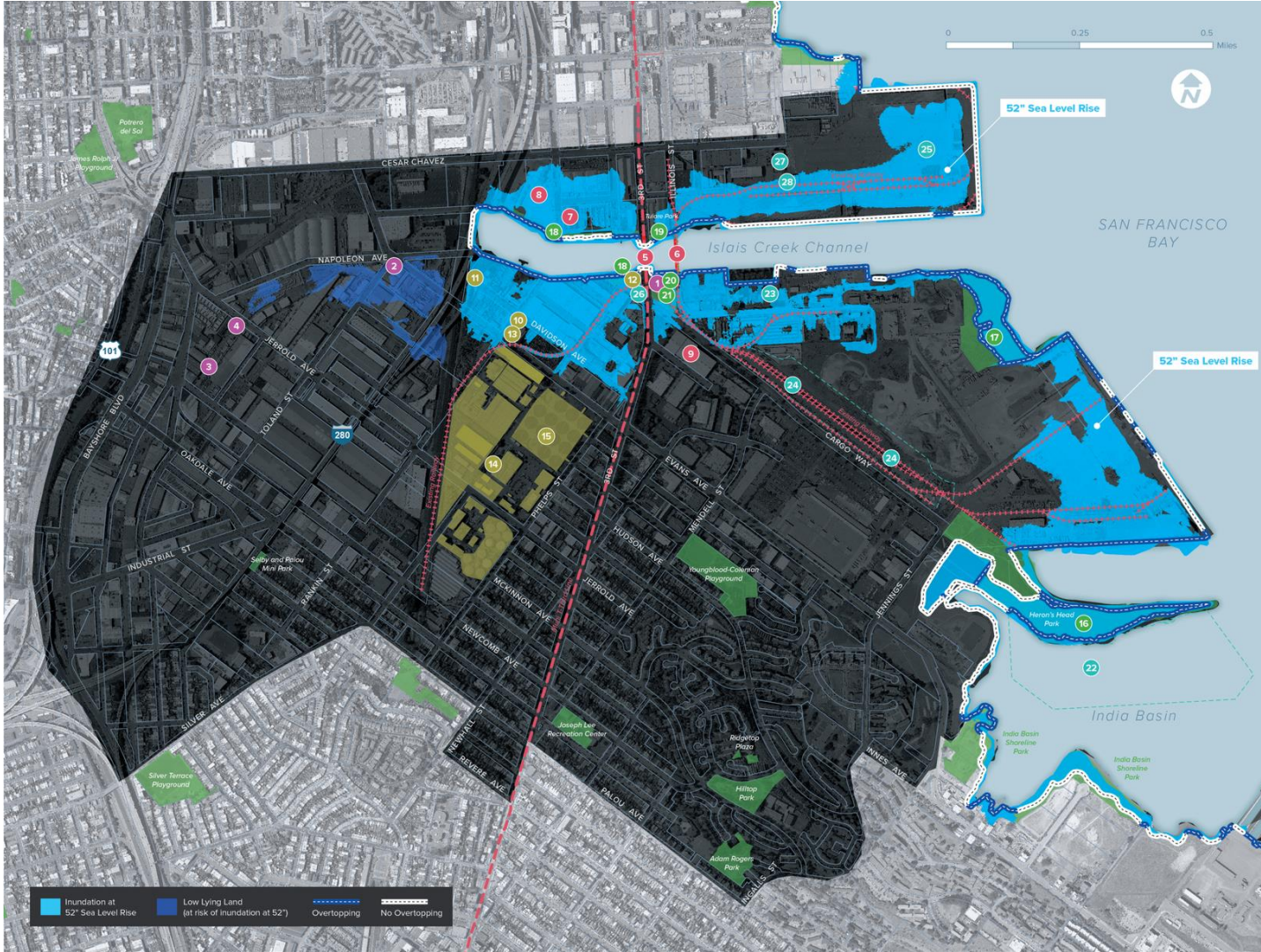
- NEIGHBORHOOD RESILIENCY SCORE: 1**
 - Hazard Score: 1
 - Environmental Score: 1
 - Transportation Score: 5
 - Community Score: 1
 - Public Realm Score: 5
 - Housing Score: 1
 - Economy Score: 2
 - Health Score: 2
 - Demographics Score: 1
-
- PUBLIC SAFETY**
 - 1 Fire Station #13
 - 2 Contaminated Lands
-
- MOBILITY**
 - 3 The Embarcadero
 - 4 Streetcar (E-Line)
 - 5 Embarcadero BART
 - 6 Ferry Terminal
 - 7 Cable Car
 - 8 Regional bus routes (Temporary Transbay Terminal)
-
- OPEN SPACE**
 - 9 Embarcadero Plaza
 - 10 Ferry Park/Plaza
 - 11 Harry Bridge's Plaza
 - 12 Maritime Plaza
-
- PORT**
 - 13 Pier 7: Public pier and fishing
 - 14 Pier 3: Restaurants, offices, water taxi, Hornblower, parking (#)
 - 15 Pier 1: Office (#)
 - 16 Ferry Building: Offices, public serving, restaurants, retail, inconic (#)
 - 17 Pier 14: Public pier and fishing
 - 18 Embarcadero Promenade (Bay Trail)
 - 19 WETA, Golden Gate Ferries



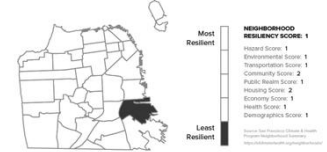
South of Market Mission Creek



- PUBLIC SAFETY**
 - 1 Bureau of Fire Investigation
 - 2 Southern District Fire Station
 - 3 Fire Station #4
 - 4 Public Safety Building
 - 5 Fire Station #35 - Fireboat Headquarters
 - 6 Fifth Street Homeless Center
 - 7 Fire Station #6
 - 8 Contaminated Land
- MOBILITY**
 - 9 Lefty O'Doul Bridge
 - 10 Fourth Street Bridge
 - 11 Giants Stadium Ferry Terminal
- WATER**
 - 12 Bay Bridge Pump Station
- WASTE WATER**
 - 13 Merlin Morris Minor Pump Station
 - 14 Berry Street Minor Pump Station
 - 15 Harriet/Lucerna Minor Pump Station
 - 16 Channel Major Pump Station
- OPEN SPACE**
 - 17 Pier 52
 - 18 China Basin Park
 - 19 Boat Launch
 - 20 Rincon Park
 - 21 Shoreline Park
 - 22 Mission Creek Garden
 - 23 South Beach Park
 - 24 South Beach Harbor
 - 25 Giant's Promenade
 - 26 Brannan Street Wharf
- PORT**
 - 27 South Beach Marina
 - 28 Pier 62/McCovey Cove and China Basin
 - 29 The Promenade
 - 30 Seawall Lot 337 (48')
 - 31 Mission Creek Marina
 - 32 Giants Ballpark
 - 33 Embarcadero Promenade (Bay Trail)
 - 34 WETA, Golden Gate Ferries

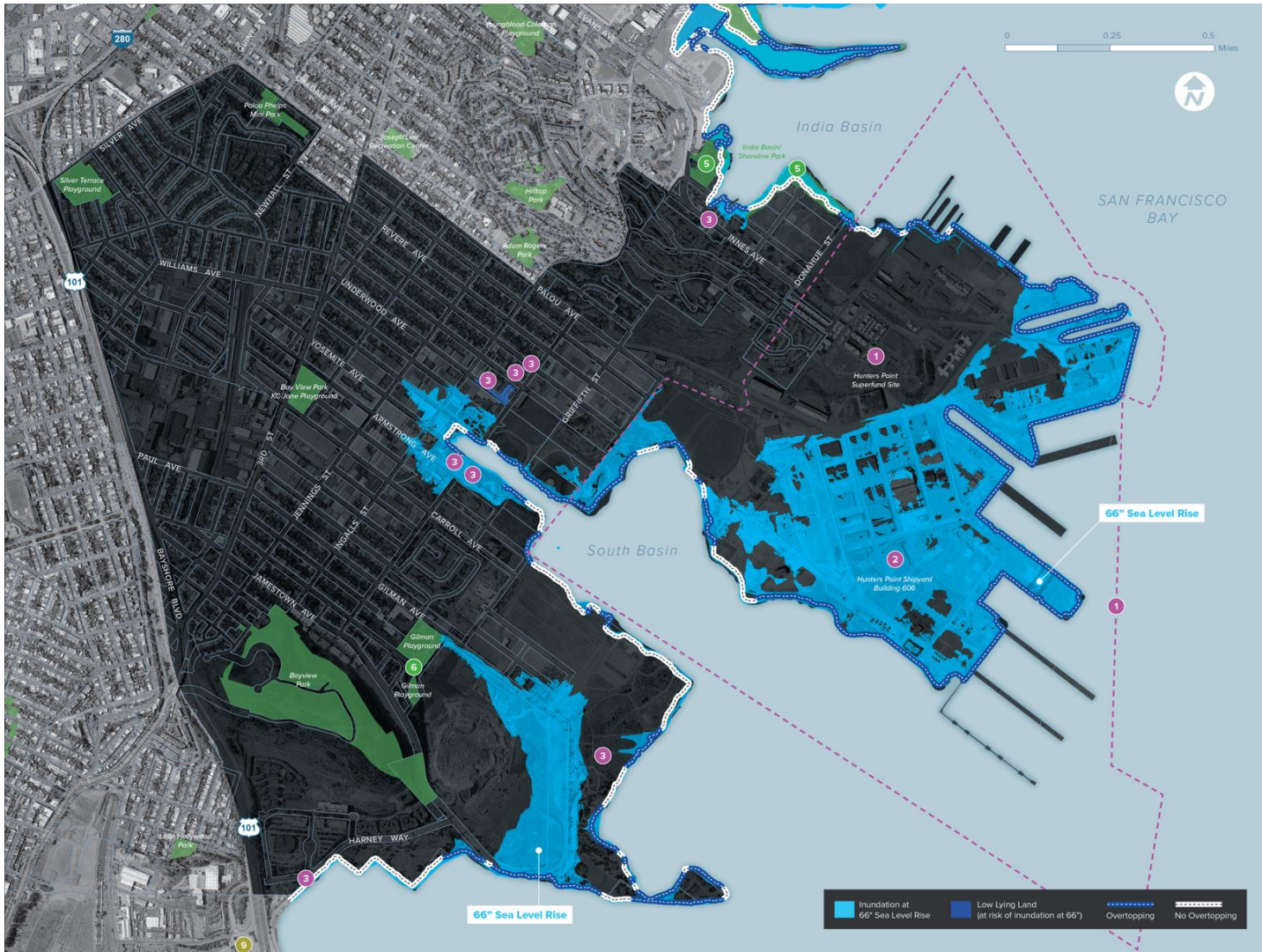


Bayview North Islais Creek

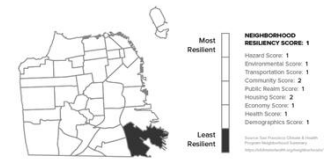


- PUBLIC SAFETY**
 - 1 Fire Station #25
 - 2 Forensic Service Police Department
 - 3 Emergency Firefighting Water System (EFWS) Yard
 - 9 Fire Station #9
- MOBILITY**
 - 3rd Street Bridge
 - Illinois Street Bridge
 - Marin Yard
 - Islais Creek Division
 - Burke Warehouse
- WASTE WATER**
 - Rankin Minor Pump Station
 - Davidson Minor Pump Station
 - Booster Major Pump Station
 - Bruce Flynn Pump Station
 - Southeast Major Pump Station
 - Southeast Treatment Plant
- OPEN SPACE**
 - Heron's Head
 - Pier 92 Wetlands
 - Islais Plaza/Islais Creek Park
 - Tulare Park
 - Fireman's Plaza Park
 - Gateway Park
- PORT**
 - India Basin Marina
 - Pier 92: industrial, cargo ship loading
 - Intermodal Container Transfer
 - Pier 80: working pier and railroad connection
 - 3rd Street/Cargo Way Triangle
 - Pier 80 Administration Building
 - Pier 80 Quonset Building

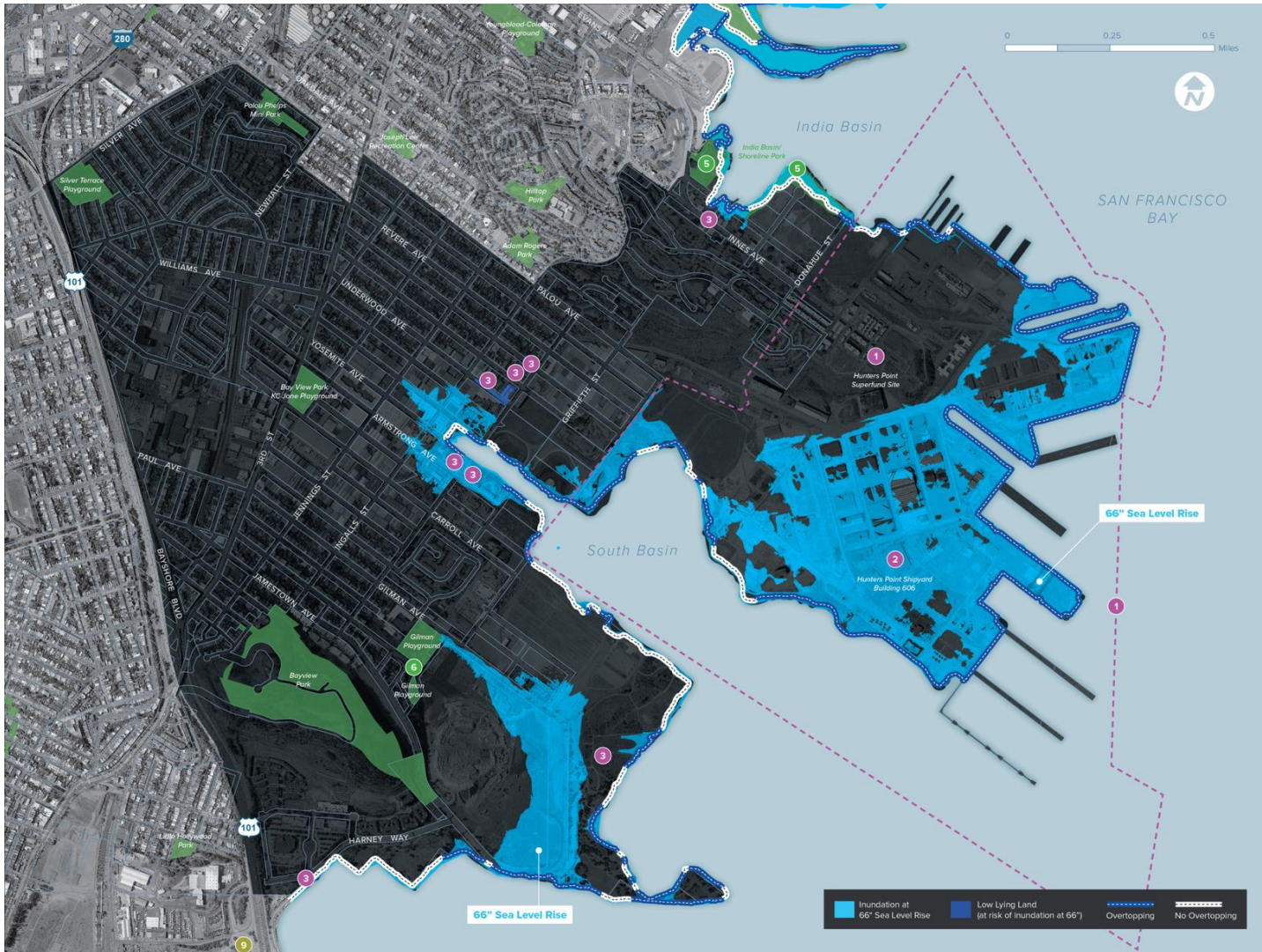
■ Inundation at 52" Sea Level Rise
 ■ Low Lying Land (at risk of inundation at 52")
 ⋯ Overtopping
 No Overtopping



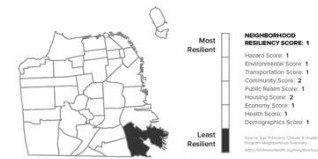
Bayview South Hunters Point



- PUBLIC SAFETY**
 - Hunters Point Superfund Site
 - Hunters Point Shipyard Building
 - Contaminated Land
- WASTE WATER**
 - Sunnydale Major Pump Station
- OPEN SPACE**
 - India Basin Shoreline Park
 - Gilman Playground



Bayview South Hunters Point



- PUBLIC SAFETY**
 - 1 Hunters Point Superfund Site
 - 3 Hunters Point Shipyard Building
 - 3 Contaminated Land
- WASTE WATER**
 - 2 Sunnydale Major Pump Station
- OPEN SPACE**
 - 5 India Basin Shoreline Park
 - 5 Gilman Playground

■ Inundation at 66" Sea Level Rise
 ■ Low Lying Land (at risk of inundation at 66")
 Overlapping
 No Overlapping

Ongoing Efforts / Next Steps



Ocean Beach Long-Term Improvements Project

- Implements projects from Ocean Beach Master Plan
- Addresses erosion at Great Highway and protects critical infrastructure
- SFPUC lead agency; other agency partners



Islais Creek/Southeast Mobility Adaptation Strategy

- Caltrans grant award of \$390,000
- January 2019-2021
- Partnership with Port and SFMTA
- Youth engagement in Bayview



US Army Corps/Port Flood Study

- Approximately 3-5 year of shoreline flood risk
- Assesses flood risk and identifies a preferred alternative
- Preferred project becomes eligible for Federal funding

Ongoing Efforts / Next Steps



Sea Level Rise Capital Planning Guidance

- 2019 update based on revised State guidance
- Applies to large capital projects in SLR exposure zone



Hazards and Climate Resilience Plan

- Assessment and Strategies for climate and other hazards
- Updates Local Hazard Mitigation Plan; incorporated into GP Safety Element
- Expected completion 2019, submitted to Cal OES and FEMA for review



Citywide Climate Resilience (Scope of Work TBD)

- Comprehensive capital planning for climate resilience
- Multi-hazard climate resilient codes and guidelines
- Funding, legislative, and governance strategies

And continued integration with other projects such as:

- **BART's Sea Level Rise Vulnerability Assessment**
- **Connect SF**
- **Regional efforts such as Plan Bay Area / Adapting to Rising Tides**