

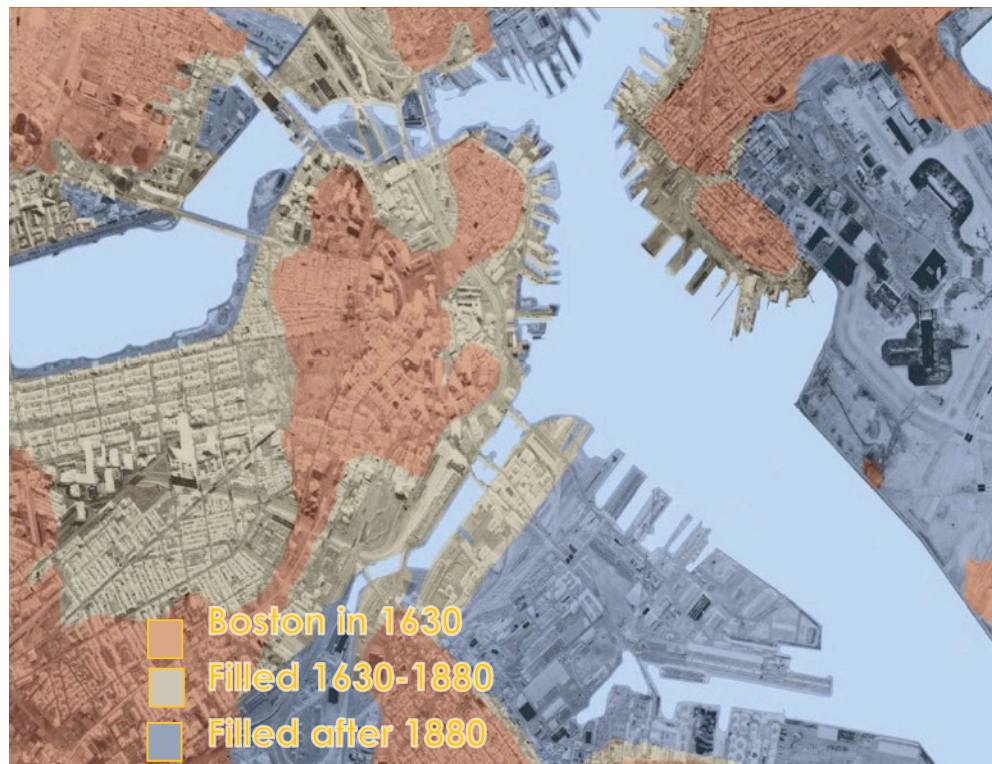


CLIMATE READY BOSTON

Bud Ris, Green Ribbon Commission
March, 2017



BOSTON FROM 1611 TO 2016: A CITY BUILT ON FILL



From Krieger, Boston Over Time

TODAY: A BOOMING WATERFRONT



CLIMATE READY BOSTON - PHASE I

1. Climate Consensus

Science-based consensus of likely ranges for future climate conditions across multiple risk factors for several time periods

2. Vulnerability Assessment

Comprehensive evaluation of future risks associated with each of three climate hazards: extreme heat, stormwater flooding and coastal and riverine flooding

3. Resilience Initiatives

Set of layered actions to address the key risks identified in the Vulnerability Assessment.

4. Implementation Roadmap

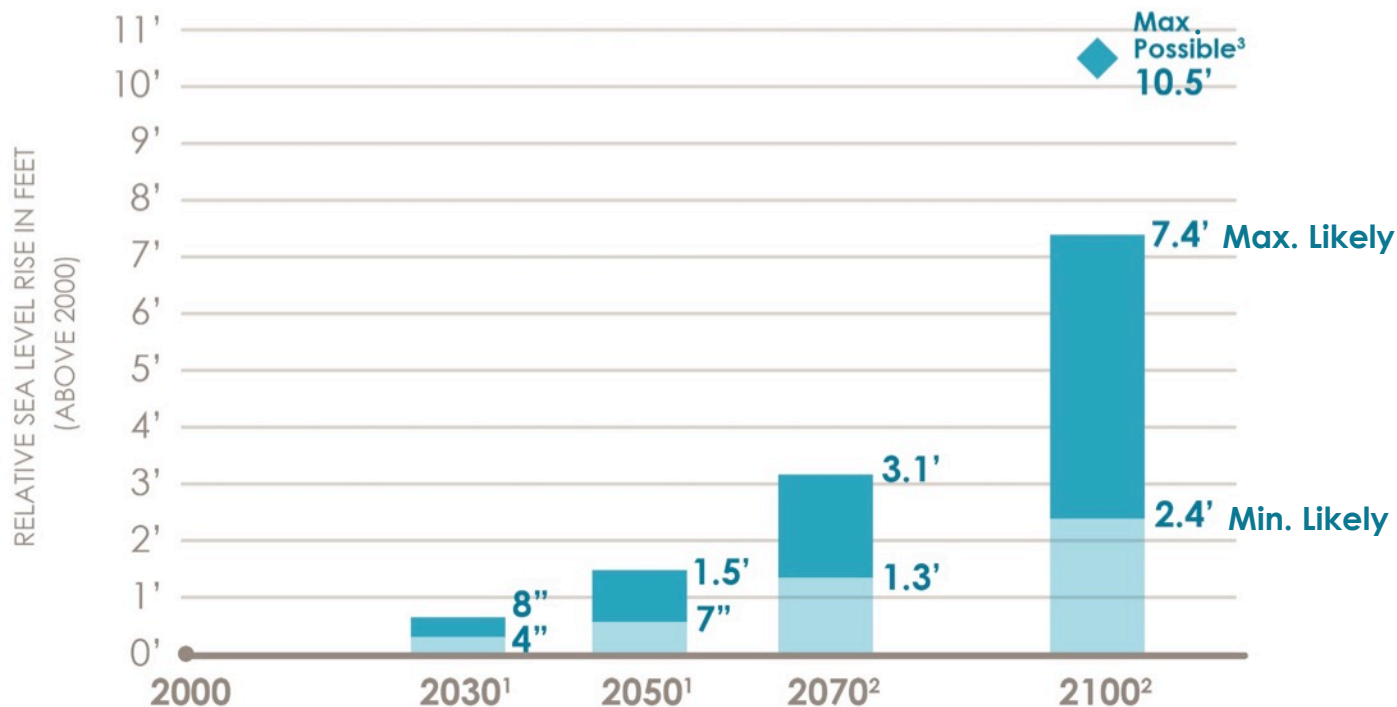
Recommendations for execution of resilience initiatives, including responsible parties and milestones

BRAG: SCIENTIFIC CONSENSUS ON CLIMATE PROJECTIONS



- Extreme Temperatures
- Extreme Precipitation
- Sea Level Rise: Coastal & Riverine Flooding

EXPOSURE TO COASTAL FLOODING WILL INCREASE, AS THE SEAS RISE



1 - Likely under all emission scenarios

2 - Likely under moderate to high emission scenarios

3 - Low probability under high emission scenario

Data Source: BRAG Report

WHY ARE THE SEAS RISING?

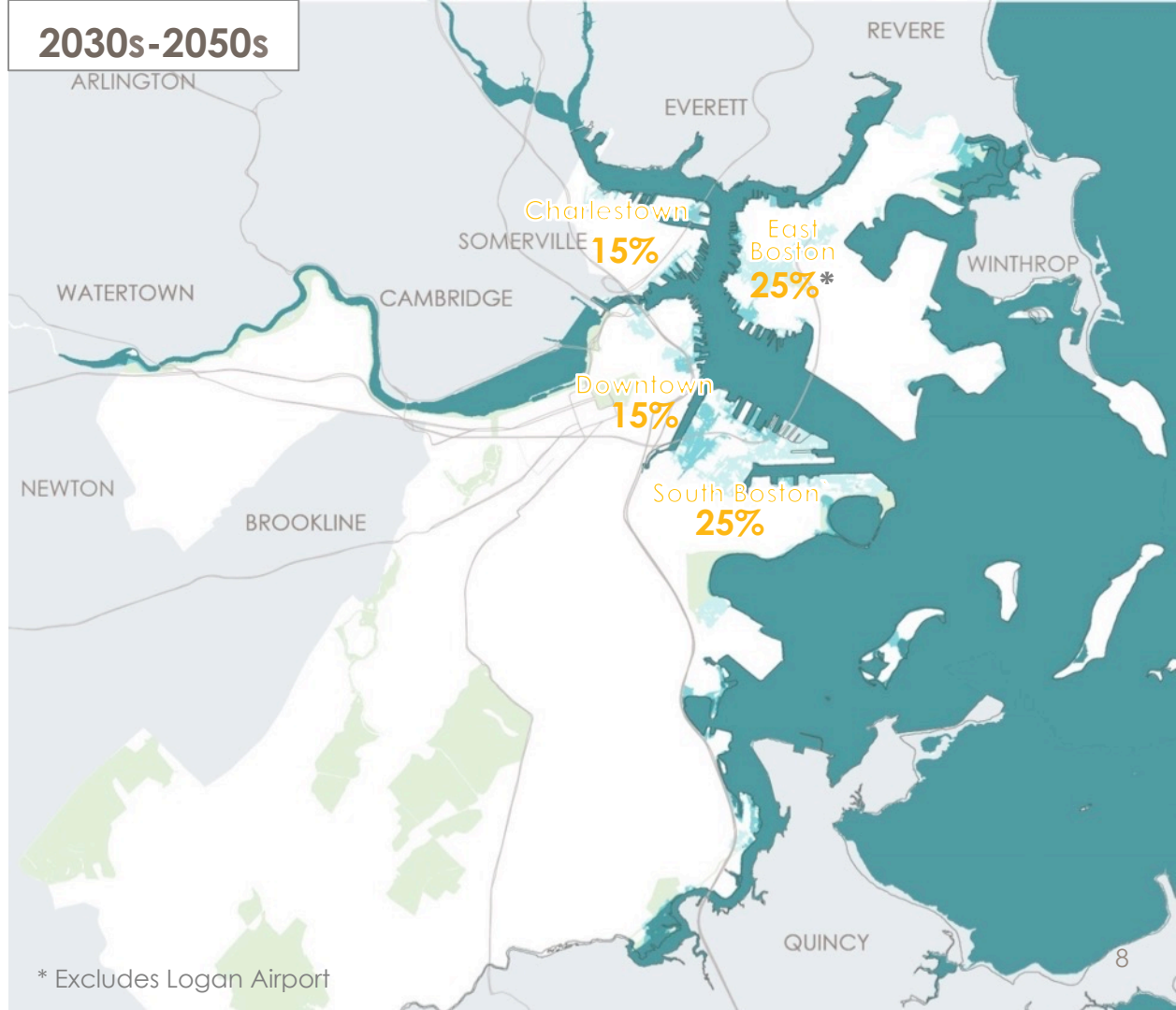


- Thermal expansion
- Melting glaciers
- Melting ice from Greenland and Antarctica
- Not Arctic ice
- Boston has minimal freeboard

FLOOD PROGRESSION

COASTAL & RIVERINE FLOODING

In the near term, **exposure will be concentrated in South Boston, East Boston, Charlestown, and Downtown**, and represents a significant threat to these neighborhoods and the rest of the city.

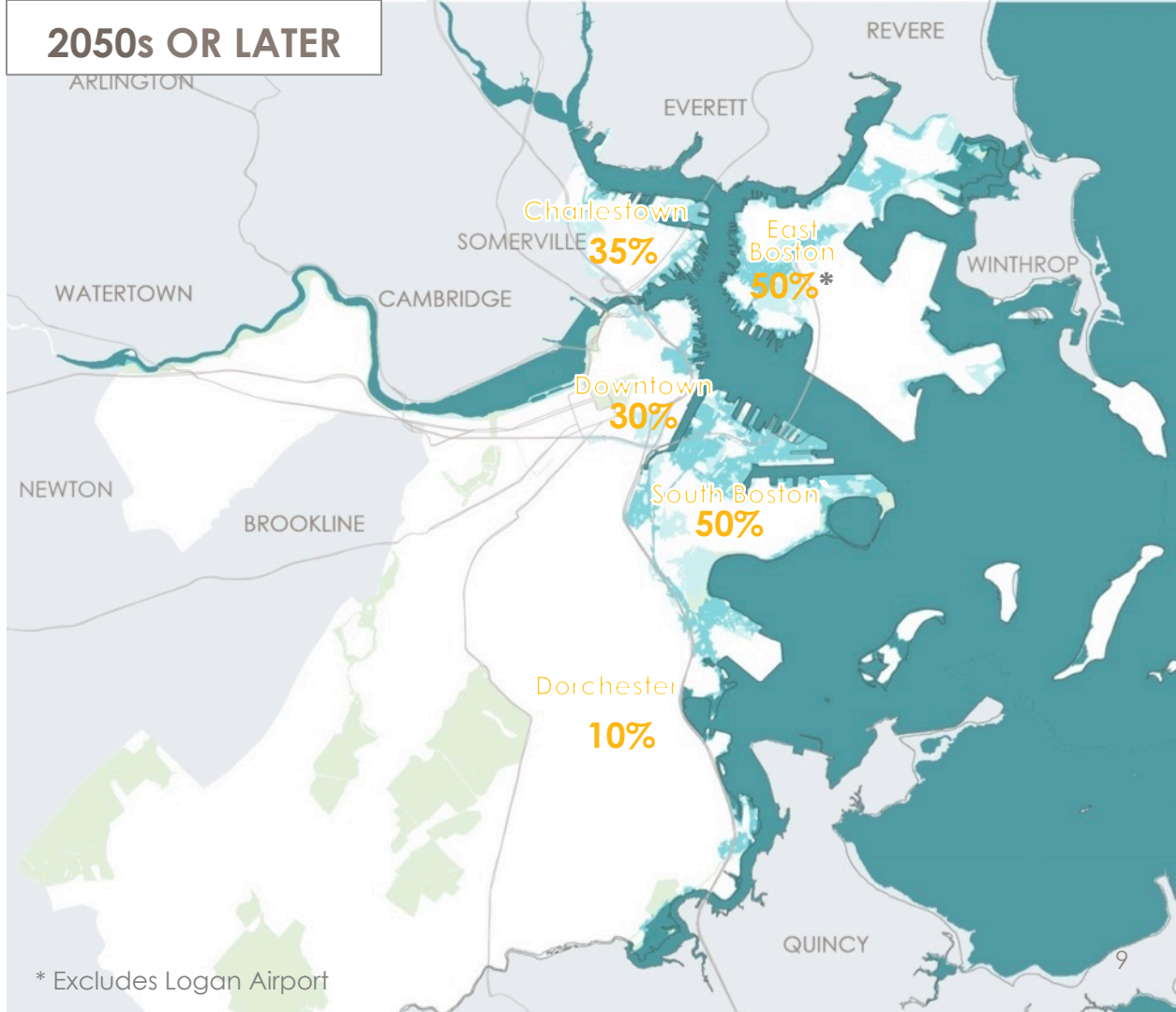


FLOOD PROGRESSION

COASTAL & RIVERINE FLOODING

By the middle of the century, **exposure will increase across waterfront neighborhoods, and start to be significant in Dorchester.**

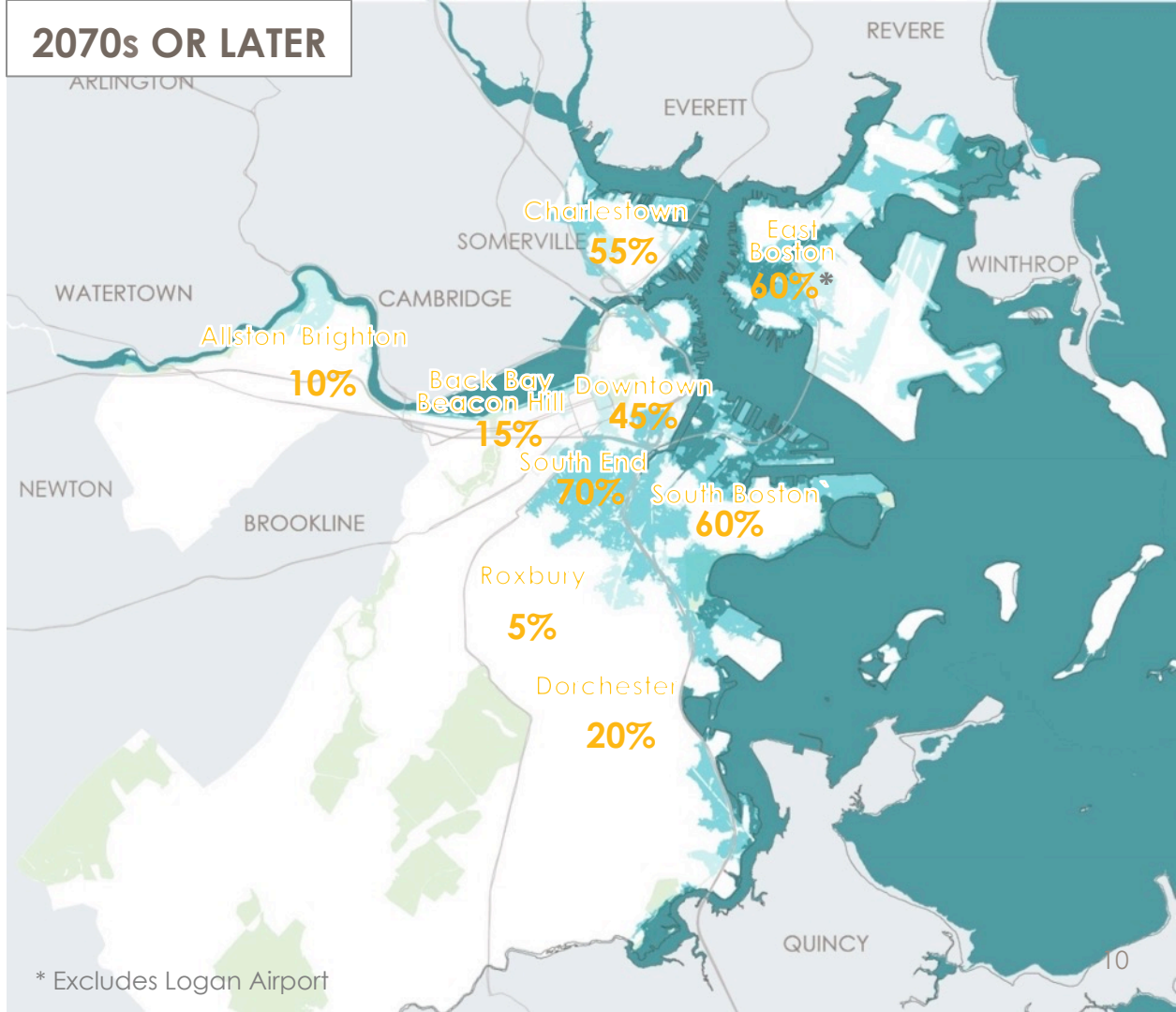
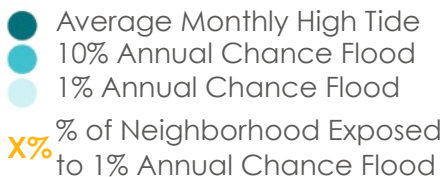
- Average Monthly High Tide
- 10% Annual Chance Flood
- 1% Annual Chance Flood
- X% % of Neighborhood Exposed to 1% Annual Chance Flood



FLOOD PROGRESSION

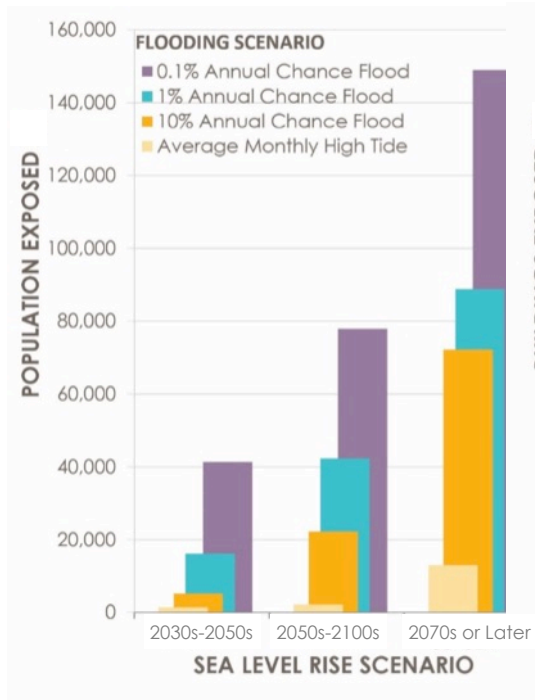
COASTAL & RIVERINE FLOODING

In the late century, **exposure will expand to vast areas of the city, including inland neighborhoods** like the **South End** and neighborhoods **along the Charles River**.

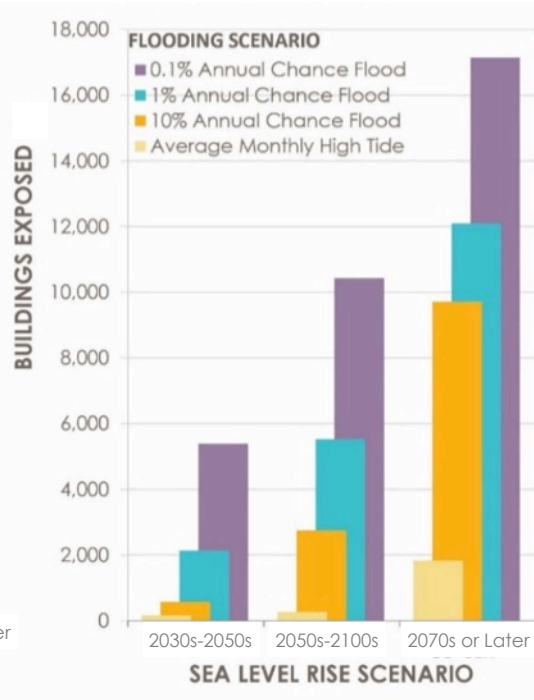


PEOPLE AND BUILDINGS EXPOSED TO FLOODING

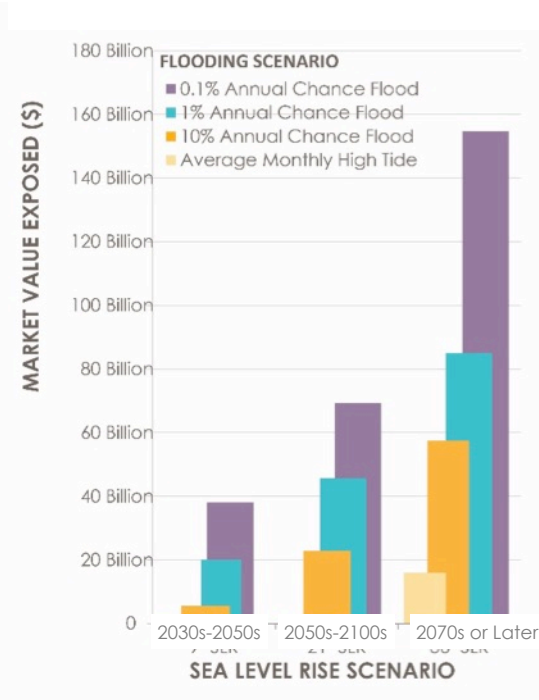
POPULATION



BUILDINGS



BUILDING VALUE



PEOPLE AND BUILDINGS EXPOSED TO 1% FLOOD RISK:

18,000 People
2000 Buildings
valued at
\$20 Billion

2030 +

85,000 People
12,000 Buildings
valued at
\$85 Billion

2070 +

DOWNTOWN



DOWNTOWN

- Average Monthly High Tide
- 10% Annual Chance Storm
- 1% Annual Chance Storm



EAST BOSTON

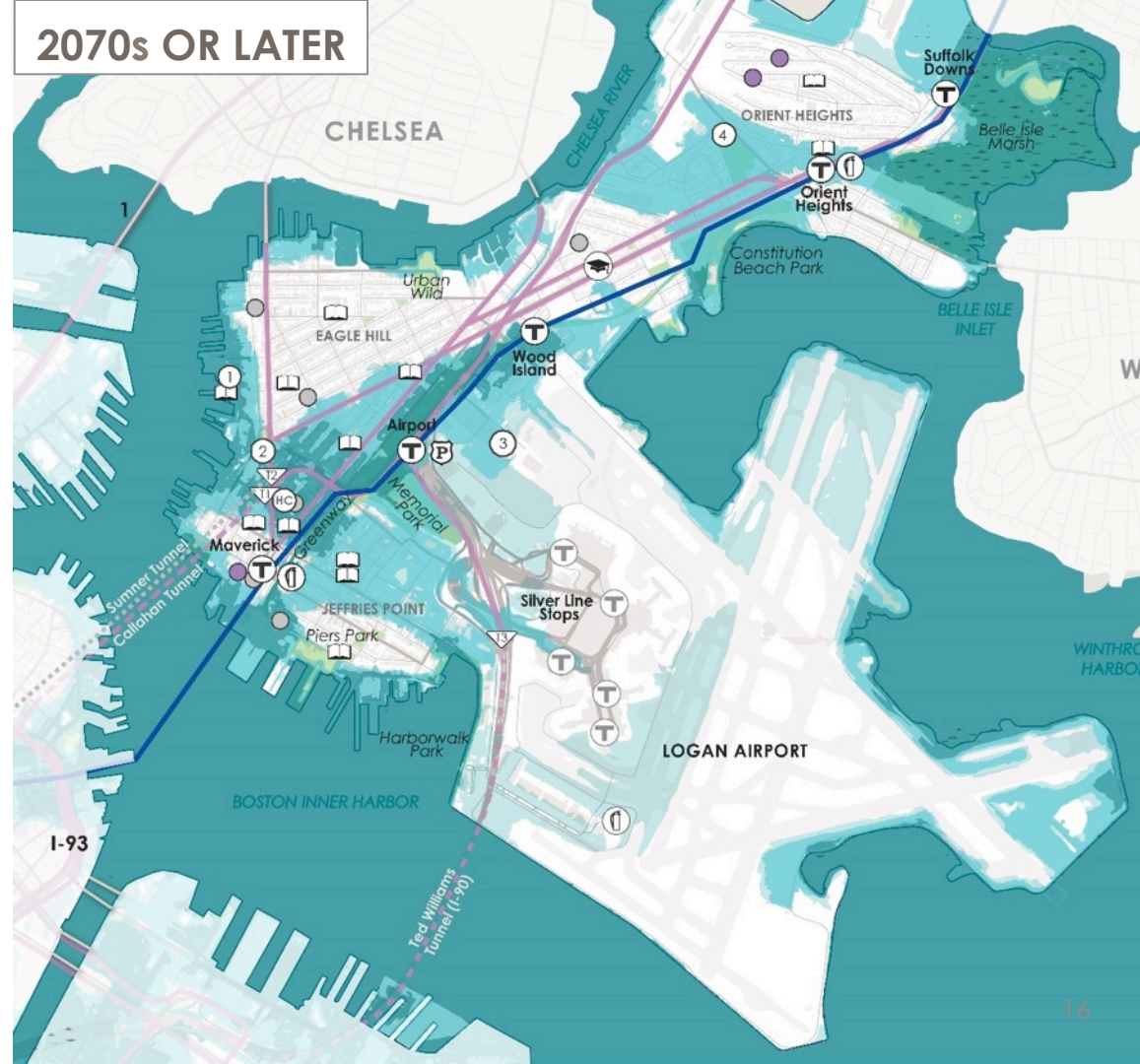


2070s OR LATER

FLOOD PROGRESSION

EAST BOSTON

In the late century, **exposure** will extend to much of Logan Airport, and large areas around the Greenway and Central Square will flood at least monthly.



CRB RESILIENCE INITIATIVES STRATEGY FRAMEWORK



1: Updated
Climate
Projections



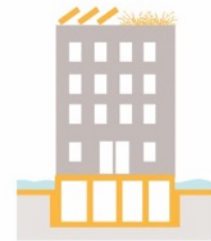
2: Prepared &
Connected
Communities



3: Protected
Shores

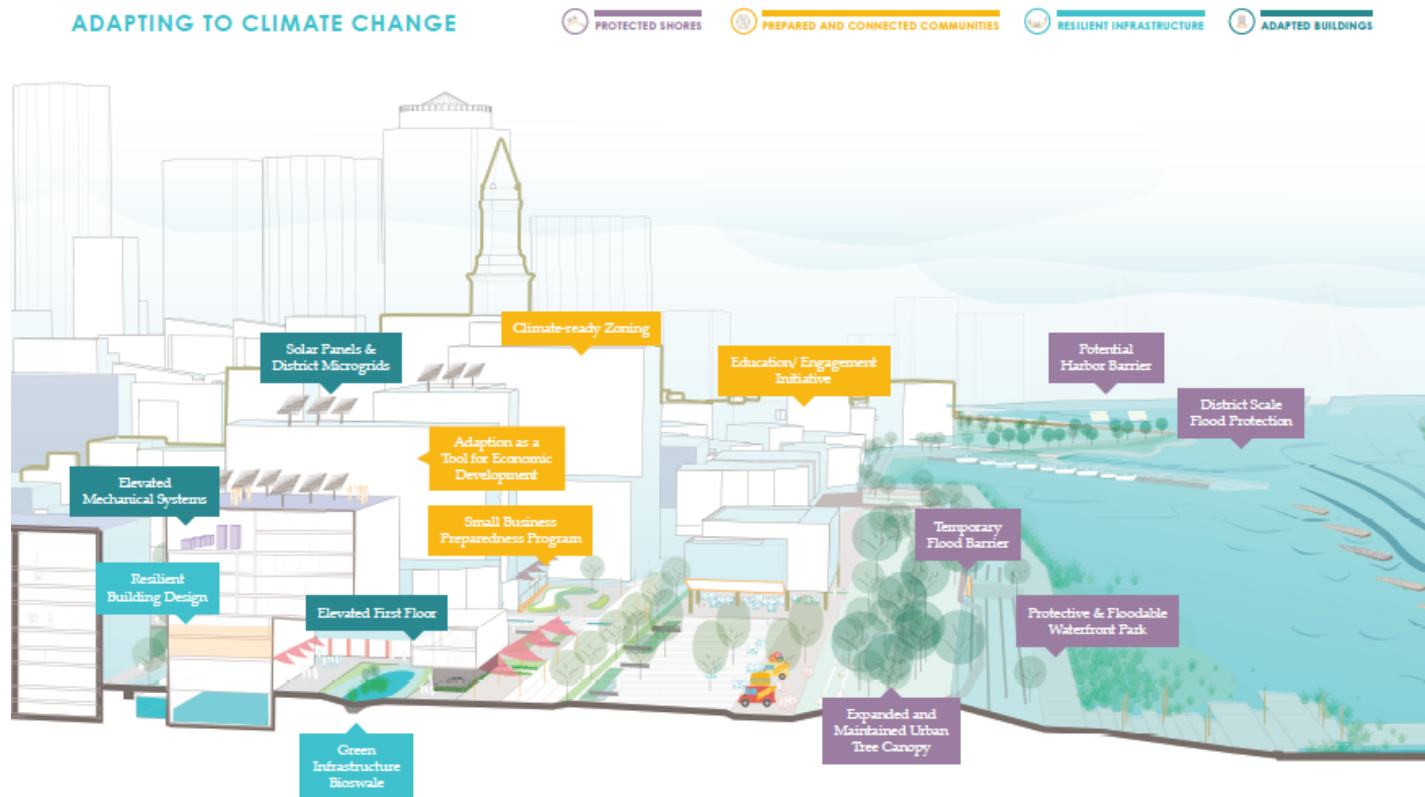


4: Resilient
Infrastructure



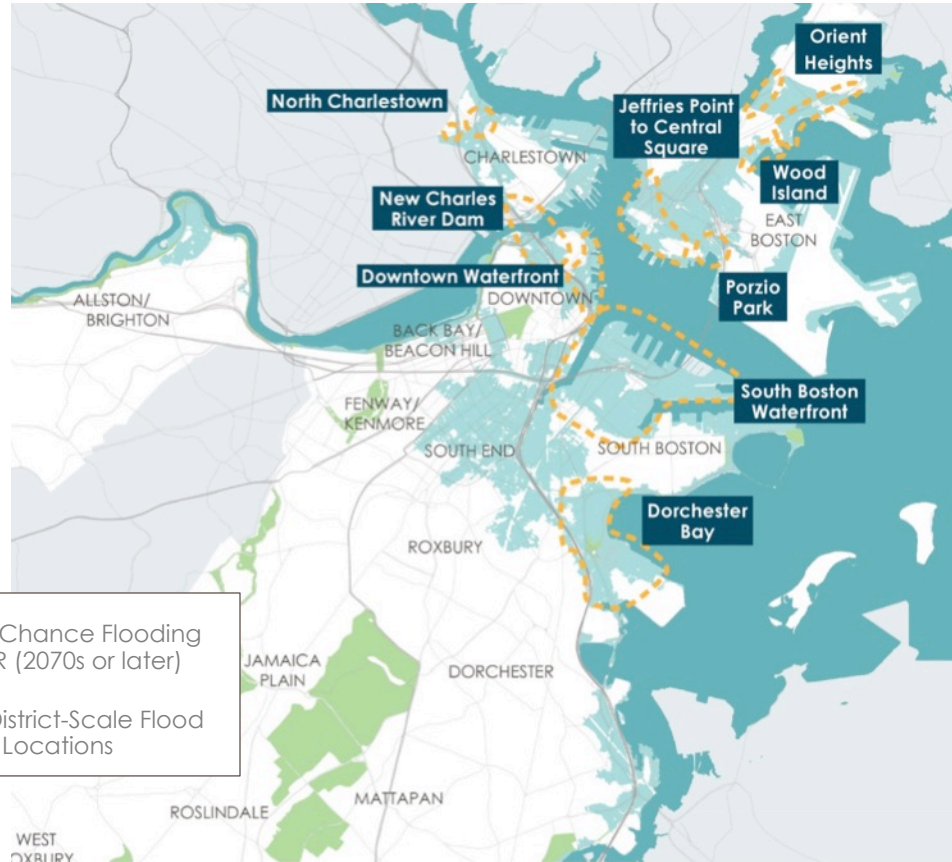
5: Adapted
Buildings

CRB RESILIENCE INITIATIVES – LAYERS ARE KEY!



Layer 3: Protected Shores

Strategy: Create inner harbor coastal protection systems



Living Shoreline



Dune Landscape



Multipurpose
Levee
Park



Multipurpose
Levee
Road

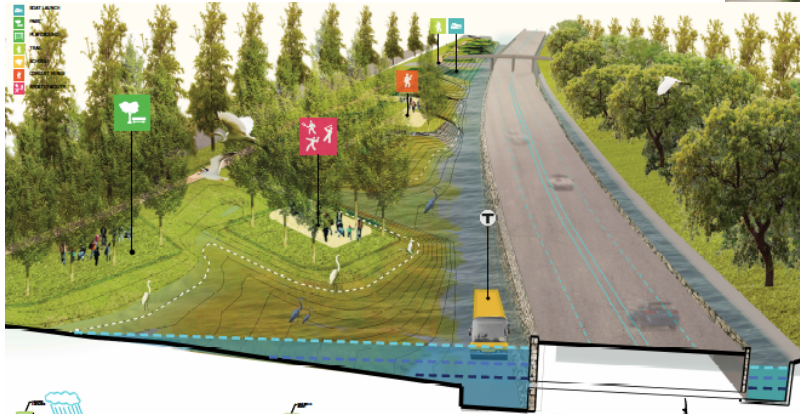


Permanent
Floodwall



Temporary
Floodwall

NEW OPPORTUNITIES FOR RESILIENCE-BASED OPEN SPACE?



Living With Water Competition

DOWNTOWN RESILIENCE-BASED OPEN SPACE



- Mostly fully developed
- Very vulnerable
- Emerging interest in new open space/green solutions
- Rethink prohibition on “fill?”

EAST BOSTON RESILIENCE-BASED OPEN SPACE



- Next wave of development activity
- Very vulnerable – with some topographic relief
- Substantial interest in creating new parks/ open space
- Future of Belle Isle Marsh?

Layer 3: Protected Shores

Strategy: Assess feasibility of harbor-wide coastal protection system



Conflicts with the BHI National Park and other harbor uses?



FINANCING TOOLS FOR GREEN INFRASTRUCTURE – OPEN SPACE RESILIENCE

- Limited returns – avoided losses
- Limited federal disaster funds
- Tax Increment Financing, Business Improvement Districts – Resilience Zones
- Stormwater Fees, Trading Stormwater Retention Credits
- Green Bonds/Catastrophe Bonds
- PAR – Property Assessed Resilience fees to finance adaptation

New GE HQ





CLIMATE **READY** BOSTON

For the Executive Summary and full report:
www.climateready.boston.gov

