What is Climate Change?
New Orleans | 2005 | Post Katrina
Houston | 2015 | Tropical Storm Allison
East Boston
East Boston Historical Precipitation

- **total snowfall**: 0" in 1920
- **total precipitation**: Various values from 1920 to 2015
- **total snowfall above 70"**: Not specified in the image.
Projected Heat Related Death for Boston

Heat-related mortality per 100,000 population

2000 2200 2500 2800 2050 2080
Costal Flooding

TERMS

100 year flood: More accurately, a flood that has a 1% likelihood of occurring or being exceeded in a given year.

Adaptation: Successful adjustment to new environmental conditions.

DFE: Design Flood Elevation.

High Tide: The highest level of ocean level within a daily basis.

Resilience: The ability to recover quickly and relatively inexpensively from flooding or another stress.

Resistance: The ability to prevent flooding.

Sea Level: The average elevation level for an ocean’s surface.

storm surge + sea level rise + high tide
What is Storm Surge?

- Wind surge
- Low pressure surge
- High pressure surge
WHAT WE KNOW:

At the projected 2100 sea-level rise, these neighborhoods will be vulnerable to regular flooding first, due to topographical data and a projected rise of 3 to 6 feet. This is similar to the projections of storm-surge levels for the next 35 years.

WHAT DOES THIS MEAN FOR RESIDENTS:

This means that residents and home-owners along the Greenway corridor, need to prepare for minimizing personal and property damage due to rising probability of flooding of their streets, basements, and...
A WET FUTURE AHEAD

24” FLOOD LEVEL
CHELSEA ST.
what is vulnerability?
Community
residential units

- single family
- two family
- three family
- 4-6 units

Population:

- EAST BOSTON: 40,506
- LOGAN: 0
- ORIENT HEIGHTS: 9,885
- EAGLE HILL: 22,560
- JEFFERIES POINT: 8,061

ORIENT HEIGHTS

EAGLE HILL

JEFFERIES POINT
2050 sea rise + storm surge

At Risk

<table>
<thead>
<tr>
<th>Location</th>
<th>Risk (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orient Heights</td>
<td>15%</td>
</tr>
<tr>
<td>Eagle Hill</td>
<td>20%</td>
</tr>
<tr>
<td>Jeffries Point</td>
<td>35%</td>
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</tbody>
</table>
2100 sea rise + storm surge

At Risk

<table>
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<tr>
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<tbody>
<tr>
<td>ORIENT HEIGHTS</td>
<td>30%</td>
</tr>
<tr>
<td>EAGLE HILL</td>
<td>35%</td>
</tr>
<tr>
<td>JEFFERIES POINT</td>
<td>50%</td>
</tr>
</tbody>
</table>
Vulnerability
ENTRANCE HEIGHT

0” - 12”
13” - 24”
25” +

FOUNDATION

brick
stone
concrete
1/ STRUCTURE

-The main circulation of the building will be ineffective in the future, given that its access points are below the DFE.

2/ SERVICES

-Service equipment in cellar may need to be relocated above DFE to be protected against storm surges.

3/ FOUNDATION

-Basments will be experiencing constant flooding, which will directly impact the building foundation and most service layouts.
GOOD CONDITION
FAIR CONDITION
POOR CONDITION
Case study 1
- Supporting the structure of this building is a set of steel beams and columns that help carry the weight of the building.

- The services to this building are located in the basement level. With the location of this building, the services will be in danger of damage from the 100 year flood plain.

- The building's foundation has experienced water damage in the past. With the different structural systems, the building is in danger of failing.
1/ structural
- The overall structure and building envelope are left vulnerable to moisture and water damage. There is currently evidence of mold and rot throughout the building.

2/ services
- The electrical system is exemplary of how this building has added new systems on top of old systems.

3/ foundation
- The foundation of this building, much like the other parts, shows evidence of patched repair job. This leaves the foundation vulnerable to water and ice damage.
Case study 3
1/ Structural
-The building has a balloon construction with a brick facade. Due to its age and construction, the wall cavity is much smaller than standard modern construction. This makes updating the energy efficiency much harder.

2/ Services
The foundation has recently been re-bricked to be structurally sound and water resistant.

3/ Foundation
-The foundation of this building, much like the other parts, shows evidence of patched repair job. This leaves the foundation vulnerable to water and ice damage.
What is Resilience?

What is Sustainability?
THANK YOU TO OUR PARTNERS:

COMPETITION ENTRIES

A Life Aquatic: A celebration of living with water

SEE-Levels: A Glimpse into the North End's Shell

The Hydrokinetic Canal as an Urban Generator

BOSTONGENIC Evoluted DNA Urban System

MORRISSEY 2100: The Road to Resilience

The 100 Acres: Urban Resiliency Test Lab

Bountiful Delta: It's not just resilient

Total Resilience Approach

Contribute Infrastructure

Fort Point Power

High Street City

City of Boston, the Boston Redevelopment Authority, the Boston Harbor

This Competition Guide was created by the Huxtable Fellowship at the BAC

HUXTABLE

Living Shorelines for a Resilient Urban Cove

Fort Point: An Emerging Synthesis

Open Circuit: Traveling Water

The Past Informs the Future

#Rising Tides Lift All Boats

Contribute Infrastructure

The Prince Building Piers

Ecologically Connected

No building is an island

Honorable Mention

COMPETITION ENTRIES

Living Threshold

COMPETITION ENTRIES

People's Choice

Water District

A Life Aquatic: A celebration of living with water

SEE-Levels: A Glimpse into the North End's Shell

Prince Place a Community Center / Surge Shelter

MorriSEA PARKWAY

Open Circuit: Traveling Water

Emerald Necklace Extended

Reconnect-Resist-Slow-Collect

Augmenting to control the course and direction of increased water levels

Foundation and the Massachusetts Office of Coastal Zone Management.

ABSORB CHANNEL ELEVATE MOVE BLOCK CONNECT EMPLOY

#LivingWithWater

Take another look at share the ideas with friends and family!

#Rising Tides Lift All Boats
What is Sustainability?
Temperature control
PASSIVE VENTILATION: Fans

Monthly Cost

- Central AC: $129.60
- Window AC: $50.40
- Ceiling fan: $1.20
PASSIVE VENTILATION: Cross Ventilation
OPENINGS: Window replacement

- Single pane
- Double pane
- Triple pane
OPENINGS: Controlling solar gain
Flood control
FLOOD: Window vents

pressure control
FLOOD: Pump and Elevate

1 Raised switches + Outlets
2 Elevate Air + Water Heaters
3 Elevate Washer/Dryer
4 Relocate Electric Panel
5 Elevate and Anchor Fuel Tank

1 Sump Pump
2 Back-flow Valve
3 Floor Drain Float Plug
Thank you!