

# A TECHNICAL ASSISTANCE PANEL REPORT

## Advancing Resiliency in East Boston

East Boston, Massachusetts



June 2015

 **Urban Land Institute** **Boston/New England**

THE KRESGE FOUNDATION



# TABLE OF CONTENTS

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- 1. ULI and the TAP Process..... 4**
  - A. Urban Land Institute (ULI)
  - B. Technical Assistance Panels (TAPs)
  - C. NOAH Support
  - D. Panel Members
  - E. TAP Process
  
- 2. Background and Assignment..... 6**
  - A. East Boston: Rising Sea Levels and Previous Studies
  - B. Objectives for the TAP
  
- 3. Strengths and Opportunities ..... 9**
  
- 4. Strategy..... 12**
  
- 5. Recommendations ..... 16**
  - A. Immediate Solutions
  - B. Short-Term Strategies
  - C. Long-Term Solutions
  
- 6. Financing Options ..... 19**
  
- 7. Community Input ..... 20**
  - A. Educational Resources
  - B. Community-led Initiatives
  - C. Job Access
  - D. Financing

# EXECUTIVE SUMMARY

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Under the direction of the Urban Land Institute's Boston/New England District Council (ULI Boston), the East Boston Technical Assistance Panel (TAP) convened a panel of architecture, public policy, real estate law, landscape architecture, engineers, and planning professionals. This TAP included a tour, community meeting, day-long charrette and planning session, and presentation to community delegates. The panelists focus was on identifying vulnerabilities due to rising sea levels and opportunities for resiliency and adaptation planning. The report that follows summarizes the TAP recommendations and is composed of seven chapters.

## CHAPTER 1:

ULI and the TAP Process gives an overview of ULI Boston and its TAPs and provides a detailed list of participants in the East Boston TAP.

## CHAPTER 2:

Background and Assignment gives background about the vulnerabilities posed in East Boston due to sea level rise and flooding and briefly reviews existing studies on the topic. This chapter also reviews the objectives of the TAP, which were to consider how public agency needs and assets overlap with community needs and assets in East Boston, identify what current and future actions can be taken to address both present and future vulnerabilities, and outline policies and financial options that exist that can be used to preserve and protect East Boston's assets.

## CHAPTER 3:

Strengths and Opportunities presents the panel's

observations about existing advantages that can be leveraged as East Boston stakeholders seek to prepare their neighborhood for the impacts of climate change.

## CHAPTER 4:

Strategy outlines a framework to help the decision-making process by prioritizing East Boston's most vulnerable assets.

## CHAPTER 5:

Recommendations presents the panel's suggestions for steps to mitigate and adapt to sea level rise. These recommendations are divided into immediate, short-term, and long-term solutions.

## CHAPTER 6:

Financing Options discusses potential sources of revenues to enact these recommendations.

## CHAPTER 7:

Community Input summarizes the neighborhood's priorities in developing a comprehensive resiliency plan.

# 1. ULI AND THE TAP PROCESS

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## A. URBAN LAND INSTITUTE (ULI)

The Urban Land Institute is a 501(c)(3) nonprofit research and education organization supported by its members. Founded in 1936, the institute now has more than 34,000 members worldwide, representing the entire spectrum of land use and real estate development disciplines, working in private enterprise and public service, including developers, architects, planners, engineers, lawyers, bankers, economic development professionals, among others.

As the preeminent, multidisciplinary real estate forum, ULI facilitates the open exchange of ideas, information, and experience among local, national, and international industry leaders and policy makers dedicated to creating better places. The mission of the Urban Land Institute is to provide leadership in the responsible use of land and to help sustain and create thriving communities. The Boston District Council serves the six New England states and has over 1,200 members.

## B. TECHNICAL ASSISTANCE PANELS (TAPS)

At the TAP, a group of diverse professionals specially assembled with expertise in the issues posed typically spends one to two days visiting and analyzing existing conditions, identifying specific planning and development issues, and formulating realistic and actionable recommendations to move initiatives forward in a way consistent with the applicant's goals and objectives.

## C. NOAH AND THE KRESGE FOUNDATION SUPPORT

The Neighborhood of Affordable Housing (NOAH), an East Boston community development corporation, received a 9-month planning grant from The Kresge Foundation in September 2014 to assist the community in making plans for sea level rise. The grant is part of foundation's Climate Resilience and Urban Opportunity Initiative, a multi-year program that supports community-based nonprofits as they work with low-income neighborhoods to create regional climate resiliency plans. ULI Boston was asked by NOAH to serve as technical partner and provide recommendations on how to adapt to changing sea levels.

## D. PANEL MEMBERS

ULI Boston convened a panel of volunteers whose members represent a range of the disciplines associated with the planning and development challenges presented by climate change, sea level rise and flooding that face East Boston.

Disciplines represented include architecture, public policy, real estate law, landscape architecture, engineering, and planning. Members were selected with the intent of convening a robust array of professional expertise relevant to the Neighborhood of Affordable Housing's objectives for this TAP. The following is the list of panelists and the land use disciplines they represent:

- Architecture: Jordan Zimmermann, Arrowstreet (TAP Chair)
- Architecture: Nina Chase, Sasaki
- Coastal Engineering: Varoujan Hagopian, GEI Consultants
- Engineering: Paul Kirshen, University of New Hampshire
- Real Estate Law: David Lewis, Goulston & Storrs
- Finance: John Macomber, Harvard Business School
- Civil Engineering: John Schmid, Nitsch Engineering
- Architecture: Gretchen Schneider, Boston Society of Architects & CDRC
- Policy: Brian Swett, Former Chief of Environment, Energy, and Open Space, City of Boston
- Landscape Architecture: Bob Uhlig, Halvorson Design Partnership

NOAH Executive Director Philip Giffee, Director of Community Building and Environment Chris Marchi and Magdalena Ayed, East Boston Community Liaison, served as the primary contacts between ULI Boston and NOAH.

Sarah Barnat and Ileana Tauscher of ULI Boston provided organizational and technical support in preparation for and during the TAP event. Calvin Hennick served as the consulting technical writer.

A special thanks to Arrowstreet for their in-kind contribution to the report.

## E. TAP PROCESS

The East Boston TAP process began on March 25, 2015 with a tour of East Boston. The tour included visits to four different East Boston neighborhoods: Eagle Hill, Jeffries Point, Maverick, and Orient Heights. Specific sites the panelists visited were Marginal Street, Piers Park and Clippership Wharf, and the New Street Development in Jeffries Point; Central Square in Maverick; the Condor Street Urban

Wild in Eagle Hill; and Constitution Beach in Orient Heights. Following the tour, the panelists convened with community delegates and agency representatives to hear presentations by public agencies on the work they have done on climate resiliency. The panelists and community delegates were then able to discuss the presentations in greater depth in breakout sessions that occurred afterwards.

On April 13, 2015, panelists came together once again for an intensive one-day charrette. Representatives from NOAH were interviewed in the morning to outline some of the critical issues arising from climate change and sea level rise. The afternoon was spent developing recommendations later finalized into a presentation.

The third part of the TAP occurred on May 27, 2015 at a community meeting in East Boston, during which panelists presented their findings to residents, public agency representatives and government officials. As in the first community meeting, residents were given the opportunity to discuss the recommendations in detail in breakout sessions following the presentations.



*TAP charrette on April 13, 2015*

## 2. BACKGROUND AND ASSIGNMENT

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### A. EAST BOSTON: RISING SEA LEVELS AND PREVIOUS STUDIES

As a dense, coastal neighborhood with a large amount of low-lying land, much of which is reclaimed fill, East Boston is particularly vulnerable to negative impacts from rising sea levels and storm-related flooding. Thus far, the Boston metro area generally – and East Boston in particular – have escaped the sort of disastrous flooding experienced by New Orleans during Hurricane Katrina and by New York and New Jersey during Superstorm Sandy. This, in large part, has to do with luck. East Boston has missed four 100-year flooding events (defined as an event that has a 1% likelihood of happening in a given year) because storm surges hit several hours off high tide.

However, as sea levels rise and as extreme weather events are projected to become more frequent, large parts of East Boston will very likely be flooded by extreme events in the future unless effective resiliency and adaptation measures are enacted.

Models project that sea level rise alone will not lead to flooding in the neighborhood before 2050. However, when the projected sea level rise is coupled with a major storm (defined as five or more feet of storm surge), models project that half or more of the neighborhood could experience flooding sooner. The situation in 2100 is projected to become even more dire, with sea level rise alone causing significant flooding, and a major storm putting nearly the entire neighborhood underwater.

Also worth noting is an increase in precipitation and intensity of rainfall, which will necessitate a closer look at storm water management. The Boston Water and Sewer Commission found that annual rainfall could rise from the current 52 inches per year to 65 inches per year by 2100.

Fortunately, a number of organizations have already invested considerable time and effort in studying this looming problem, laying an important foundation for this report. A list of previous studies can be found in Appendix A.



*Lunar High Tide behind Shaw's site is Designated Port Area use requiring marine business at the water's edge.*

## B. OBJECTIVES FOR THE TAP

The panel of experts was tasked with addressing three key issues during the TAP.

1. Consider how public agency needs and assets overlap with community needs and assets in East Boston
2. What current and future actions can be taken to address both present and future vulnerabilities?
3. Identify policies and financial options that exist that can be used to preserve and protect East Boston's assets

In addition to these questions, The Kresge Foundation has outlined three focus areas that served as a guide for panelists as they devised resiliency strategies:

1. Mitigation, including a reduction in energy use and a transition to clean renewable energy sources
2. Adaption, including preparation for climate change as it specifically relates to the East Boston community
3. Social cohesion, including forging connections among individuals and networks to foster equity

Located throughout the report are a series of maps created by the panelists, which serve as a visual guide to flooding risks. The maps show 7 feet of sea water. This depth was chosen to simulate a storm surge at high tide in 2050. By this year, sea level is projected to rise 2 feet and a predicted storm surge at high tide in East Boston is 5 feet, totalling 7 feet above the current sea level.

*Both the report and presentation can be found online at <http://boston.uli.org>.*

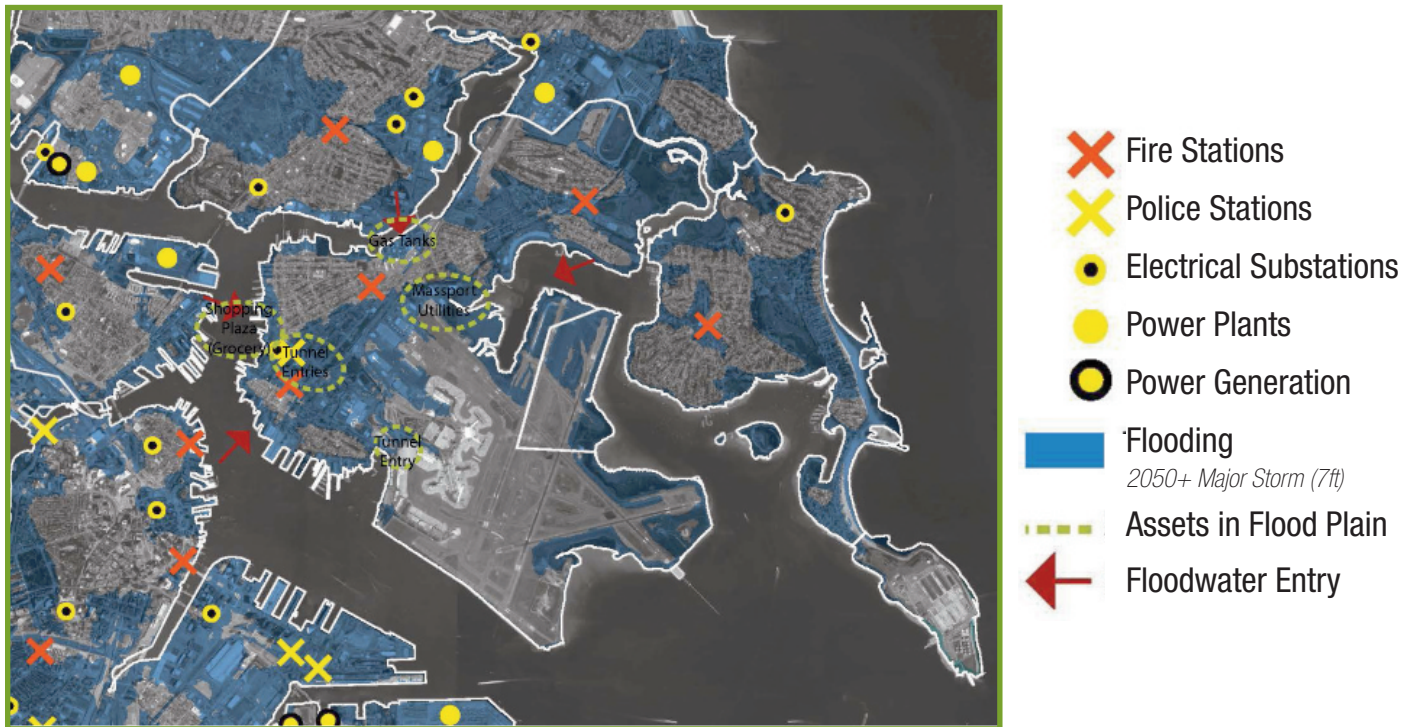


*Panelists touring Jeffries Point.*

### Map of Police Stations and Utility Substations Location



### Map of Police Stations and Utility Substations with 7 Feet of Flooding





## 3. STRENGTHS AND OPPORTUNITIES

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The panel identified a number of neighborhood factors working in East Boston's favor as stakeholders seek to address rising sea levels. These include:

### CONNECTION TO METRO BOSTON INFRASTRUCTURE

The entire metropolitan region depends on infrastructure that either sits in, runs through, or is connected to the neighborhood of East Boston. This includes Logan International Airport as well as MBTA infrastructure, major roads and three harbor tunnels.

### OVERLAPPING AGENCY INTERESTS

A number of public agencies have an interest in protecting their assets in East Boston from flooding and other impacts of sea level rise (see maps on page 11). These agencies include Massport, the MBTA, the Massachusetts Department of Transportation, Boston Water and Sewer Commission, the Massachusetts Water Resource Authority, and utility companies. While it may be difficult for any one of these individual agencies to enact neighborhood-wide change, all of the agencies working in concert to protect their overlapping interests and to collaborate with the community could be extremely powerful.

### CLEAR NEIGHBORHOOD BOUNDARIES

East Boston sits on a peninsula, creating a distinct geographical boundary between the neighborhood and the rest of Boston. This clear boundary will help the neighborhood's stakeholders focus their efforts.

### FINITE SET OF KNOWN VULNERABILITIES

Thanks to previous and ongoing studies, locations vulnerable to flooding have been identified. The number of known vulnerabilities is finite, meaning that neighborhood stakeholders can focus their efforts as they seek to eliminate these stress points.

### HISTORY OF SUCCESSFUL COMMUNITY ENGAGEMENT

There is a long history of successful community engagement on issues of environmental justice. As a community affected by Massport, MassDOT and the MBTA, there is a strong culture of community activism. Well-attended and productive workshops on climate change and sea level rise have been held in the recent past by a joint team from NOAA, the University of Massachusetts-Boston, MIT, the University of New Hampshire, and the University of Maryland.

### HISTORY OF SUCCESSFUL AGENCY ENGAGEMENT

Neighborhood stakeholders also have a history of successfully working with area agencies on issues of importance to the neighborhood.

## **HISTORY OF EXTENSIVE STUDY AND PLANNING**

A number of different organizations have already conducted extensive research in East Boston. The reports produced by these agencies represent a tremendous resource that the community can draw on as it prepares for the impacts of climate change.

## **DIVERSE POPULATION**

Historically and currently, East Boston has had a population made up of people from a variety of ethnic and socioeconomic backgrounds. This diversity can be leveraged by including the voices of people from all different backgrounds in the planning process, which will provide multiple perspectives on the issues at hand.

## **EXISTING INFRASTRUCTURE OF COMMUNITY ORGANIZING**

With the existence of strong neighborhood groups like NOAH, a community organizing infrastructure is already in place. That infrastructure will be essential as stakeholders work to educate residents and business owners on proposed adaptations.

## **RECENT INFLUX OF CAPITAL**

East Boston has recently seen a flurry of new development, especially along the waterfront. This new development is supported by “institutional grade investors” and developers who are invested in the neighborhood and whose long-term success depends on the long-term viability of the neighborhood.

## **STRONG POLITICAL CAPITAL**

In part because of these regional connections and proximity to downtown, significant political will exists to ensure the continued success of the East Boston neighborhood. Historic activism and strong political leadership is evident.

## **PROXIMITY TO DOWNTOWN**

East Boston sits close to Downtown Boston, making it a highly visible neighborhood and giving it tremendous opportunity in the regional economy.

### Public Agency Assets



- City of Boston
- City of Boston Parks
- Mass Bay Transit Authority
- Mass Turnpike Authority
- MassDOT

### Public Agency Assets with 7 Feet of Flooding



- City of Boston
- City of Boston Parks
- Mass Bay Transit Authority
- Mass Turnpike Authority
- MassDOT
- Flooding  
*2050+ Major Storm (7ft)*
- Assets in Flood Plain
- ← Floodwater Entry

## 4. STRATEGY

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Working with information provided by community members, panelists identified a number of valuable assets in the East Boston neighborhood that they feel warrant protection from flooding and sea level rise. The panelists also created a framework for the community to use as a way to organize their efforts around protecting these assets, which is described below.

In the following three matrices, which serve as living documents, panelists outlined three time frames:

- A.** Assets that need to function during an event
- B.** Assets that need to be available within 72 hours of the event
- C.** Assets whose protection requires long-term planning so that they are the anticipated sea level rise by 2050

Within those time frames, panelists designated assets as either low or high priority and low or high cost in terms of capital investment. Here, “priority” does not designate a level of importance. Panelists recognize that all of the assets that appear in the matrices are of high importance to the community. Rather, priority relates to those assets which need to be available in cases of life or death. For example, emergency services and clean drinking water necessitate higher prioritization than the protection of public amenities, like parks.

Prioritization of assets provides a roadmap to develop a resilience strategy and timely allocation of financial resources.



*Underutilized waterfront at East Boston Shipyard.*



*Public agencies meet with East Boston residents for a workshop on climate resiliency*

## A. ASSETS AVAILABLE DURING AN EMERGENCY EVENT

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<b>Priority</b>		<b>Cost of Protecting</b>
Low	High	
<ul style="list-style-type: none"> <li>• Major Roads</li> </ul>	<ul style="list-style-type: none"> <li>• Fire Station &amp; Ambulance access to residents sheltering in place</li> <li>• Stormwater Drainage</li> <li>• Potable Water</li> </ul>	High
<ul style="list-style-type: none"> <li>• Functioning Sewer System</li> </ul>	<ul style="list-style-type: none"> <li>• Phone Service</li> <li>• Program for potable water resources when direct water access is compromised</li> <li>• Basement waterproofing measures in place or basement allowed to flood with minimized damage</li> </ul>	Low

## B. ASSETS AVAILABLE WITHIN 72 HOURS OF EVENT

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<b>Priority</b>		
Low	High	
<ul style="list-style-type: none"> <li>• Access to Jobs</li> <li>• MBTA</li> <li>• Evacuation routes</li> <li>• Heating/Air conditioning</li> </ul>	<ul style="list-style-type: none"> <li>• Massport runways</li> <li>• Main access roads</li> <li>• Pump Stations</li> <li>• Utilities (Electrical and Natural Gas)</li> <li>• Tunnel Access</li> <li>• Access to Local hospitals or clinics</li> </ul>	<b>High</b>
	<ul style="list-style-type: none"> <li>• Access to food (Grocery stores or other)</li> <li>• Access to Community Centers/Shelters</li> </ul>	<b>Low</b>

**Cost of Protecting**

## C. ASSETS AVAILABLE / PROTECTED AS SEA LEVEL RISES 2050

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<b>Priority</b>		<b>Cost of Protecting</b>
Low	High	
<ul style="list-style-type: none"> <li>• Piers</li> </ul>	<ul style="list-style-type: none"> <li>• Massport</li> <li>• MBTA</li> <li>• Tunnel Access</li> <li>• Evacuation Routes</li> <li>• Utilities</li> <li>• Pump Stations</li> <li>• Fuel Tanks</li> <li>• Homes</li> </ul>	High
	<ul style="list-style-type: none"> <li>• Belle Isle Marsh</li> <li>• Condor Urban Wild</li> <li>• Community Gardens</li> <li>• Bike Routes</li> <li>• Water Transit</li> <li>• (New or Revised) Harbor Access Routes for recreation and transportation</li> </ul>	Low

## 5. RECOMMENDATIONS

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The panel divided its recommendations into three parts:

1. Immediate steps that can be taken by individual residents, businesses, and property owners working in conjunction with a neighborhood group like NOAH
2. Short-term strategies that, while more complex than the immediate steps, can be implemented at a lower cost than long-term measures
3. Permanent strategies that require additional investment, as well as partnerships between public and private entities

### 1. IMMEDIATE STRATEGIES

**Boston Architectural College Huxtable Fellows:** A toolkit of individual property solutions is being created for homeowners and business owners looking to become more resilient. It was created through the Huxtable Fellow audit of East Boston housing stock and one-on-one surveys with residents. The toolkit includes resources related to flooding, heat and cold.

**Understand Individual Vulnerabilities Further:** Already, extensive work has been undertaken to help stakeholders understand the dangers posed to East Boston by sea level rise. This work should continue – for example, by tracking alley flooding in order to more firmly establish which areas are most prone to flooding. The housing

typology analysis currently being completed by the Huxtable Fellows will also aid in improving this understanding.

**Simple Flood-Proofing Programs and Education:** Individual property owners could be equipped with flood kits that include sealants, mold-testing kits, and other materials to help prepare for, prevent flooding, and speed recovery. Educational pamphlets (printed in multiple languages) could also be distributed to encourage residents to take simple flood-preparation steps – for example, keeping their vital documents in a waterproof bag that they can take with them in the case of a flood evacuation.

**“Check-the-Neighbor” Program:** During times of crisis, it can be difficult to ascertain whether the elderly, people with disabilities, and other vulnerable populations are in need of help. The distribution of simple signs that can be displayed in residents’ windows – one side to ask for help, the other to announce that all is well – will allow these residents to quickly communicate whether they are in need of assistance. Because 30% of households are linguistically isolated (no English spoken), signs would need to have phrases in more than one language.

**Move Hazards out of Flood Plain:** Efforts should be made to move hazardous materials out of low-lying areas that are prone to flooding.

**Basement Cleaning Program:** NOAH or another neighborhood organization could spearhead a program to encourage and assist individual property owners in cleaning out their basements, removing trash, old furniture, and hazardous materials like paint and other chemicals. Such



a cleaning program would make it easier to access basements in order to install flood-proofing materials, and would also help to mitigate damage in the case of a flood.

### **Engage Local Contractors to Understand**

**Best Practices:** As property owners perform maintenance and complete upgrades to their structures, they will often rely on contractors for advice on best practices. Therefore, it will be helpful for neighborhood groups to work with contractors to ensure that they understand best practices for flood mitigation – including steps such as installing additional vents in buildings and using mold-resistant materials.

**Install Flood Vents in Basements:** Once basements are clear of hazards and utilities, vents can be installed for water to flow in and out of individual basements in an emergency event. Allowing water to enter the basement can reduce damage to foundations by equalizing flood water pressures.

**Food Delivery:** Devise a network for food delivery through grocery and local convenience stores in the event of a major storm to make sure that residents have access to food and water.

**Check-in/Follow-up Programs:** If the neighborhood does establish new programs such as a basement clean-up program or a contractor education program, a follow-up process should also be established to ensure that any positive changes enacted are maintained over time.

### **Continued Community Engagement:**

The community will benefit from continued engagement by NOAH and its collaborators, including workshops and meetings conducted in multiple languages.

## **2. SHORT-TERM STRATEGIES**

**Develop Mitigation Plan:** The creation of a whole-neighborhood flood mitigation plan could lay out a comprehensive set of modifications that would allow floodwaters to be diverted to specific locations.

**New Development Flood Control:** The new large-scale, mixed-used development being constructed on the East Boston waterfront offers an unprecedented opportunity to protect the larger neighborhood. Agencies, city officials and residents should encourage coordination, incentives and regulations to enhance the new developments protective nature. Some measures that would protect both individual properties and the rest of the neighborhood include adjusting the grade of the land and installing sea walls.

### **Water Storage in Low-Lying Areas:**

Identify naturally low-lying areas where water might be stored during floods. These areas might be allowed to flood on their own, or water might be diverted to the areas, depending on their location. Such areas might include undeveloped green space such as the East Boston Greenway.

**Temporary Floodwalls:** While not a permanent solution for sea level rise, products such as AquaFence can be installed temporarily to hold back flood waters from a storm event.

**Minor Re-Grading of Land:** On individual parcels owned by public agencies or private entities, land may be re-graded, or features such as berms may be installed, in order to prevent

flooding to the parcels.

**Bury Utility Lines:** East Boston utility lines are above ground, which is extremely hazardous in the event of a storm or flooding. Moving lines underground means a lower likelihood of power and telephone outages.

### 3. LONG-TERM STRATEGIES

**Regional Efforts:** Agencies should collaborate to align resiliency strategies on a regional basis in order to coordinate rather than duplicate efforts. As it stands, many agencies have authored reports on resiliency and are investing time and money into solutions. Cross pollination of these efforts will be more effective.

**Develop and Implement Contiguous Waterfront Flood Protection Plan:** A long-term plan will cover all aspects of the waterfront, including parcels owned by individual property owners, larger companies, and public agencies.

**Flood Walls:** A series of seawalls in specific locations around East Boston could offer protection for agency assets as well as neighborhood residents. NOAA and other organizations should work with Massport and other agencies to identify areas which a sea wall offers protection for multiple stakeholders.

**Revise Zoning and Height Restrictions:** The prevalence of basement apartment units in East Boston presents a considerable challenge as sea levels rise and flooding becomes more likely.

However, building owners are unlikely to give up the right to rent out these spaces without resistance. In order to encourage owners to phase out these units, the City may offer incentives, such as allowing owners to increase the height of their buildings.

#### **Promote Resilient Residential Buildings:**

New residential growth can be incentivized to be designed to flood in a way that doesn't put residents at risk. Buildings that are designed to flood not only protect residents of the building itself, but they also protect other areas of the neighborhood by providing a space to which water can be diverted.

#### **Encourage Use of Local Contractors**

**for Development:** Local contractors are often the source for homeowners' knowledge on building improvements and available systems. Training and hiring local contractors to work on projects in East Boston provides local jobs and presents an opportunity to integrate best practices for sustainability and resilience into the neighborhood.

**Conduct Progress Check-ins:** Panelists suggested that progress toward long-term goals should be continuously monitored, and perhaps evaluated through a formal process once every five years.

## 6. FINANCING OPTIONS

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Many infrastructure improvements require long-term investment strategies and public private partnerships. To simplify the process of determining how to finance specific resiliency initiatives, panelists have outlined some suggestions found below. The panelists discussed financing options that are directed specifically at resiliency, as well as options which use existing financing structures to fund improvements that could include improved resiliency.

### **District Improvement Financing (DIF):**

A DIF program allows cities to fund public works, infrastructure, and development projects by allocating future tax revenues collected from a predetermined district to pay for project costs. The new development on the waterfront provides a significant opportunity to direct new property tax revenues to further strengthen the East Boston neighborhood.

### **Infrastructure Investment Incentive (I-Cubed):**

A program created to finance new public infrastructure improvements that are necessary to support private economic development projects. Financing of the projects comes through a cost sharing agreement between the state, municipality and private developer. The program is funded through future job taxes and is intended for new developments that create jobs.

**Chapter 23L:** Legislation that allows a property owner to finance public infrastructure through the tax-exempt bond market. This can be combined with other financing programs such as DIFs and I-Cubed.

### **Financing Options for Individual Homeowners:**

The Commonwealth of Massachusetts and City of Boston through the Mass Save program and Department of Neighborhood Development's

Home Center offer free energy audits and minor modifications (such as LED light bulbs) to home owners, and also provide low- or no-interest loans for homeowners wishing to rehab their homes as more energy efficient. Many of these energy efficiency measures also increase long-term resiliency.

**User Fees:** Travelers flying in and out of Logan International Airport would be beneficiaries of any infrastructure improvements protecting the airport and East Boston from rising sea levels. Even a small resiliency fee paid by each traveler would have the potential to raise a large sum of money each year. Similarly, developers might be asked to pay such a fee when obtaining building permits if their projects do not meet resiliency standards.

**Matching Funds:** Once project plans are in place, city, state, federal government, or foundation matching funds should be leveraged.

**Army Corps of Engineers:** Funding is available through Army Corps for specific resilient infrastructure projects.

**Natural Hazard Mitigation Plans:** Both the Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA) have access to funds that could potentially be used for resiliency projects.

**PACE Now:** Property Assessed Clean Energy financing options can include resiliency improvements. This program offers low-cost financing and tax incentives.

**Green Bonds:** Green bonds work like normal bonds, except they are used to finance climate change mitigation and adaptation programs. Massachusetts began issuing green bonds in 2013.

## 7. COMMUNITY INPUT

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On May 27, 2015, panelists presented preliminary findings in a community meeting attended by East Boston residents, NOAH representatives, government officials, and public agency affiliates. After the presentation, panelists held a moderated Q&A session followed by breakout discussions. Many of the residents' priorities surfaced as a result of these talks, which panelists feel should act as a starting point for any future community plans.

### A. EDUCATIONAL RESOURCES

First and foremost is the availability of educational resources specific to storm preparation and a strategy for disseminating that information. Because of East Boston's cultural diversity, materials must be made available in different languages, specifically Spanish, Portuguese and Arabic. A multi-generational approach is needed as well, starting with educating children in schools to creating networks of volunteers who can reach older residents.

The types of educational resources residents would like to see are individual property solutions that are simple and affordable. Emphasis was placed on storm preparedness rather than planning for longer-term sea level rise since events like Hurricane Sandy make disaster planning seem more pressing.

### B. COMMUNITY LED INITIATIVES

There is a general distrust of the development process in East Boston and with the state of the city's preparedness for major storms. As a result, residents value community-led initiatives because they feel they align with their specific

needs. For any processes that are not community led, it is crucial to engage residents so that there is a higher likelihood of success in adopting new plans.

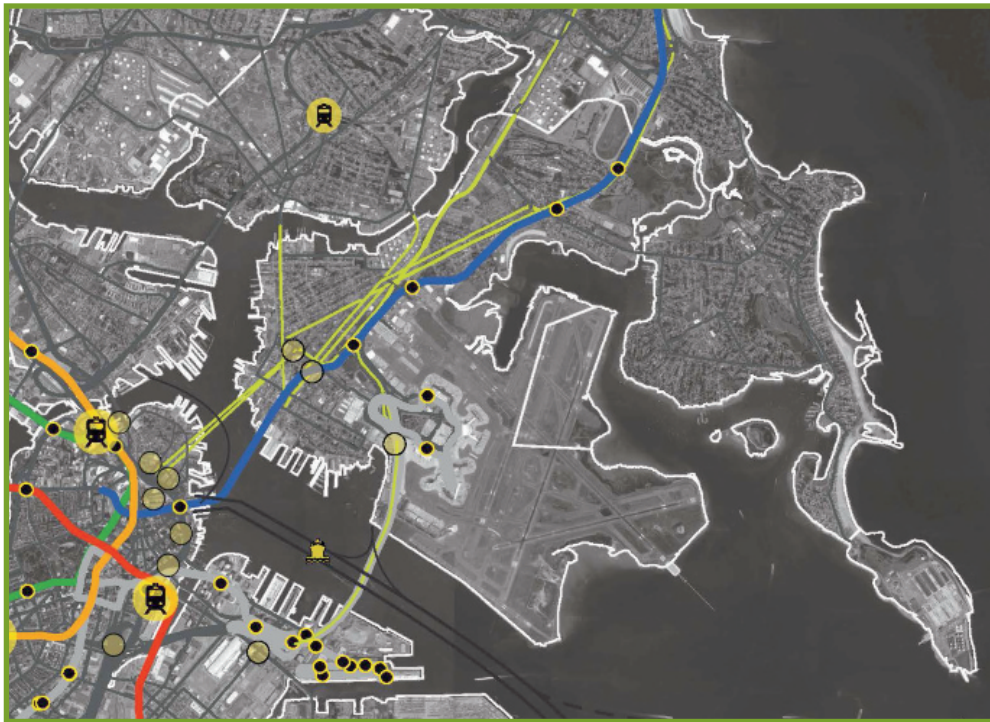
### C. JOB ACCESS








The winter of 2014-2015 wrought havoc on East Boston. Many residents were stranded and unable to get to work when public transport was shut down. As a result, many people lost their jobs for not showing up. In a low-income neighborhood where many residents work in service jobs with hourly, often minimum-wage pay, being off the job can have significant consequences. Therefore, plans must address job security so that residents do not face the threat of unemployment.

### D. FINANCING

There are two tiers to financing resiliency that residents should have information on. The first tier is educating community members about individual solutions that are affordable and cost-effective. The second tier is transparency about financing infrastructure improvements that are resilient. There is recognition that there are more creative ways to think about financing climate preparedness. Even if these options do not apply to individual actions, residents would like to play a part in deciding how to advocate for regional approaches to financing public infrastructure.





### Map of Transit – MBTA, Major Roads, Tunnel Entry/Exit



-  Tunnel Entry
-  Commuter Line Stop
-  Blue Line Train
-  Silver Line Bus
-  Roads
-  Evacuation Route
-  Ferry

### Map of Transit with 7 Feet of Flooding



-  Tunnel Entry
-  Commuter Line Stop
-  Blue Line Train
-  Silver Line Bus
-  Roads
-  Evacuation Route
-  Ferry
-  Flooding  
*2050+ Major Storm (7ft)*
-  Assets in Flood Plain
-  Floodwater Entry

# APPENDIX A

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The Changing Northeast Climate

Union of Concerned Scientists, 2006

Climate Adaptation Challenges for Boston's Water and Sewer Systems

Boston Water and Sewer Commission, October 2014

Climate Conservation Priority Areas

Trust for Public Land, March 2011

Enhancing Resiliency in Boston

A Better City, February 2015

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City of Boston, 2014

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Harvard Graduate School of Design, September 2014

Massachusetts Clean Energy and Climate Plan

Massachusetts Office of Energy and Environmental Affairs, December 2010

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September 2011

Metro Boston Regional Climate Change Adaptation Strategy Report

Metropolitan Area Planning Council, June 2014

North Atlantic Coast Comprehensive Study: Resilient Adaptation to Increasing Risk

U.S. Army Corps of Engineers, January 2015

# APPENDIX A

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Pragmatic Approach to Climate Change Adaptation  
Massachusetts Water Resources Authority, March 2014

Preparing for the Rising Tide  
Boston Harbor Association, February 2013

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