South End

The South End is located to the southwest of Fort Point Channel, southeast of the Back Bay neighborhood, and north of Roxbury and Dorchester.

The South End was built on fill starting in 1849. Washington Street, which extends through the South End, was the original street connecting Boston (the Shawmut Peninsula) to Roxbury, along the narrow "Great Neck." The South End was designed to be a residential district for uppermiddle-class households, with brick row houses organized around small parks, to relieve housing pressures in Downtown and Beacon Hill. The majority of the construction occurred between 1850 and 1880. With the development of the Back Bay in the 1880s, the South End experienced new competition for upper-middle-class households. During the late nineteenth century and early twentieth century, the South End received an influx of working-class immigrants. In the early 1900s, the Washington Street Elevated rail line opened, running from Chinatown to Dudley Square and then ultimately to Forest Hills.

During the 1960s and 1970s, the area became subject to urban renewal efforts. The state acquired land along a 4.6-mile route in the South End, Roxbury, and Jamaica Plain, with the intent of building a new section of I-95 (the Southwest Expressway) into Downtown Boston along the former Penn Central/New Haven Railroad rightof-way. Community protests caused the project to be halted. From 1979 to 1987, the land was used to reroute the MBTA Orange Line, and the Southwest Corridor Park was constructed on top. The Washington Street Elevated rail line, the last remaining elevated section of the Orange Line, was subsequently removed. With the construction of the Prudential Center tower in 1964 and the Copley Place retail, office, and hotel complex in 1983, market pressures started to bleed over into the South End. The neighborhood experienced reinvestment from the 1970s onward, intensifying over time. Reflecting market pressures, the neighborhood has been the site of several innovative projects to preserve affordable housing. The Villa Victoria project, consisting of 435 low-income housing units, was completed during the 1970s, by the Inquilinos Boricuas en Acción community development corporation, using land provided by the Boston Redevelopment Authority. The Tent City project, consisting of 269 units of mixed-income housing, was completed in 1988, on land originally planned for a parking garage.



Today, the South End remains a primarily residential neighborhood. The housing stock consists of historic brick row houses, several public housing developments, and some infill, including the recent Ink Block project, a reuse of the Boston Herald site. The South End has main commercial corridors on Tremont Street, Columbus Avenue, and Washington Street, the last of which is a Main Streets district. The neighborhood has major employment hubs at the Boston Medical Center and Boston University School of Medicine and has experienced an expansion of biotech light manufacturing. The area is primarily served by the Orange Line, as well as the Silver Line, which opened in 2002 and runs along Washington Street and connects Downtown Crossing to Dudley Square.

FLOOD PROGRESSION

DEFINITIONS

Near term: Beginning 2030s, assumes 9 inches of sea level rise

Midterm: Beginning 2050s, assumes 21 inches of sea level rise

Long term: Beginning 2070s or later, assumes 36 inches of sea level rise

Exposure: Can refer to people, buildings, infrastructure, and other resources within areas likely to experience hazard impacts. Does not consider conditions that may prevent or limit impacts.

Vulnerability: Refers to how and why people or assets can be affected by a hazard. Requires site-specific information.

Consequence: Illustrates to what extent people or assets can be expected to be affected by a hazard, as a result of vulnerability and exposure. Consequences can often be communicated in terms of economic losses.

Annualized losses: The sum of the probability-weighted losses for all four flood frequencies analyzed for each sea level rise scenario. Probability-weighted losses are the losses for a single event times the probability of that event occurring in a given year.

*For a full list of definitions, refer to the Glossary in the Appendix.

The South End is exposed to climate change impacts including heat, increased precipitation and stormwater flooding, and sea level rise and coastal and riverine flooding. Exposure to heat and stormwater flooding are addressed in the Citywide Vulnerability Assessment (see p.12), while exposure and consequences to coastal and riverine flood risk are further discussed in this section.

The South End will have limited exposure to coastal flooding until the second half of the century, when very lowprobability coastal storms occur (0.1 percent annual chance event). Exposure to these storms and the 1 percent annual chance event later in the century is significant due to a flood pathway through Fort Point Channel. Flooding is expected to be severe enough to flood portions of Roxbury.











36 INCHES SEA LEVEL RISE

LEGEND

| | Highest Monthly High Tide |
|-------------------|---------------------------------|
| | 10% Storm Flooding |
| | 1% Storm Flooding |
| | Roads |
| | Major Roads |
| | Major Tunnels |
| | Evacuation Route |
| $\gamma = \gamma$ | Evacuation Route Tunnels |
| | Parks |
| | MBTA Silver Line Station |
| (\mathbf{T}) | MBTA Station |
| VV | I-93 North Tunnel Entrance |
| 12 | I-93 North Tunnel Entrance |
| | College or University |
| | School |
| H | Hospital |
| HC | Health Care Facility |
| | Pump Station/Electric Substatio |
| | Grove Hall Community Center |
| 2 | Shelburne Community Center |
| 3 | Vine St Community Center |
| 4 | Blackstone Community Center |
| 5 | Cooper Community Center |
| 0 | BHA Public Housing |
| Õ | Senior Housing |
| Õ | Longterm Care Facility |
| | |

Until the middle of the century, the South End is expected to have limited exposure to coastal flooding. Flooding originates from the coast through relatively narrow and few penetration points. Nevertheless, a topographic threshold is expected to be breached as a result of coastal storms later in the century. In this case, the topographic threshold refers to the point at which water overtops grade and descends into lower topography to inundate a large area of typically dry land. This threshold exists at the railroad crossing on the western side of Fort Point Channel¹ and will expose vast areas of the South End and some northern reaches of Roxbury as soon as the 2070s. Over 70 percent (450 acres) of the South End neighborhood alone will be exposed to lowprobability flood events during this time period.

Though not as significant of a flood pathway as Fort Point Channel, there is some potential for flooding from Dorchester Bay through Joseph Moakley Park as soon as the 2070s. The topography around Joseph Moakley Park and I-93 is continuously low lying, potentially allowing floodwaters to propagate inland to the South End and Roxbury for coastal storm events with lower probability of occurrence (1 percent annual chance). This is particularly the case for longduration events, like nor'easters.

Resilience planning must consider that the primary flood pathway for the South End is through Fort Point Channel. Opportunities may exist for flood protections that defend the South End and Roxbury, while also benefiting South Boston and Downtown.

Of all Boston focus areas, the South End has the greatest percentage of land area per neighborhood exposed to low-probability storms expected by the end of the century.

SOUT ASSET

TRANSPORTATION

MBTA E. Berkeley Street Union Park Street Newton Street Worcester Square Massachusetts Ave TUNNELS I-93 North Tunnel Entrance MBTA Albany Street Garage EMERGENCY RESPONSE

> EMS Headquarters eng HOSPITALS

Blackstone Community Center (4)

McKinley South End Academy and H

Boston Medical Center (H

South End Community Health Center (HC)

POLICE & FIRE STATIONS

BPD District-4 Back Bay/South End 🍞

Engine 3 🕚

Engine 22 🕧

UTILITIES WATER & SEWER

Union Park Pump Station 🔎

Public Alley Station

MassDOT Electrical Substation

OTHER FACILITIES

SCHOOLS, COLLEGES AND UNIVERSITIES Boston Adult Technical Academy

Cathedral High School

Hurley k-8

Josiah Quincy Upper School 🛄

¹MassDOT FHWA Report citation: Bosma, Kirk, et. al. "MassDOT-FHWA Pilot Project Report: Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery." Jun. 2015, https://www.massdot.state.ma.us/Portals/8/docs/ environmental/SustainabilityEMS/Pilot_Project_Report_MassDOT_FHWA.pdf.

SOUTH END ASSET EXPOSURE

SEA LEVEL RISE SCENARIO

| 9" | 21" | 36" |
|----|-----|----------------------------|
| | | |
| | | |
| | | $\bigcirc \bullet \bullet$ |
| | | |
| | | |
| | | |
| | | |

EXPOSURE POPULATION & INFRASTRUCTURE

SOUTH END POPULATION EXPOSURE



POPULATION AND SOCIAL VULNERABILITY

The South End is home to 38,600 people. While the South End boasts high residential real estate values and is generally considered an affluent area, it is home to more than 11,600 low-to no-income residents, 30 percent of the neighborhood population (higher than Boston's 28 percent average). Vulnerable populations in the South End are mostly concentrated in its more than 3,300 units of subsidized and public housing developments. The following public housing developments in the South End have at least some portion exposed to low-probability flood impacts later in the century: Cathedral, Torre Unidad, West Newton, Rutland, Frederick Douglas, Washington Manor, Hampton House, Camden, and Lenox. Together, they make up almost half of the South End's public housing stock.

As soon as the 2070s, almost 70 percent of the South End's population, 27,000 residents, will be exposed to flooding under low-probability events (1 percent annual chance).

Over 4,700 South End residents are expected to require shelter for this scenario. Current shelter capacity in the South End is 250 people. The South End's shelter capacity is likely to be further reduced in the case of a flood event. In the late century, the Blackstone Community Center and McKinley Elementary School, which serve as emergency shelters for the neighborhood, will be exposed to flooding from high-probability events, potentially reducing the neighborhood's current shelter capacity by more than 60 percent. There are two emergency shelters in the northern portion of Roxbury, which are not expected to be exposed to flood impacts and may be able to shelter residents from South End and South Boston, as needed.

INFRASTRUCTURE

Late in the century, the South End's major roads and evacuation routes, in addition to the Orange and Silver Line routes in the neighborhood, will be exposed to flooding, potentially compromising connectivity between Downtown and inland neighborhoods.

As soon as the 2050s, portions of the Orange Line routes through the South End will be exposed to the century. flooding from low-probability events (1 percent Throughout the South End, the EMS Headquarters, annual chance); high-probability events expected one Boston Police station, and two of three fire later in the century (10 percent annual chance) will stations will be exposed to high-probability flood expose large sections of the Silver Line that run events as soon as the 2070s (10 percent annual through the South End. The MBTA's Albany Street chance). Widespread exposure in the area will also Garage is also exposed to flood impacts from lowimpact roads and complicate traveling for response probability events expected later in the century, vehicles, as described above. which may affect the bus fleet that serves local Some of the area's top economic routes, Mass Pike Express routes, and crosstown industries, the Boston Medical Center and routes. These potential transportation impacts Boston University Medical Campus, will be could hinder evacuation and disaster response exposed to late-century flooding. operations in not only the South End but also in Downtown and South Boston. In the longer term, In the late century, the entire Boston Medical extended repairs to these systems could disrupt Center and Boston University Medical campus commutes back into these two economic centers.

Furthermore, important transportation corridors in the South End, including Tremont Street, Massachusetts Avenue, Albany Street, I-93 South, and Melnea Cass Boulevard at the border with Roxbury, all will have some portion exposed to flood impacts from high-probability flood events (10 percent annual chance) later in the century.

Boston Water and Sewer Commission operations depend upon uninterrupted power service in the South End and northern Roxbury areas.

In the South End, the Union Park pump station also may be exposed to high-probability flood impacts later in the century (10 percent annual chance event). The pump station is a combined sewer facility and has redundant pumps and generators in place to cover both mechanical and electrical failures, should they occur.

The South End may experience reduced emergency response capacity later in

could be exposed to flood impacts, including the Menino Pavilion. The emergency room at the Menino Pavilion has the greatest volume of any trauma program in the Northeast, with more than 100,000 patients treated each year.² Full or partial service interruption at Boston Medical Center will likely have an effect on the nearest emergency medical facilities, including New England Baptist Hospital (which has announced that it is planning to relocate) or the VA Hospital, both in Mission Hill, as they endure the surge of relocated and redirected patients.3

² Source: Boston University, "The Menino Pavilion – Boston Medical Center," Website. Accessed August 2016. http://www.bumc.bu.edu/ surgery/miscellani/bmc-menino-pavilion/

³ A site-specific review of the Boston Medical Center is necessary.

EXPOSURE AND CONSEQUENCES

BUILDINGS AND ECONOMY

RISK TO BUILDINGS

Residential buildings located along Chandler Street are mostly split-level, three-story row houses and could experience significant flooding once waters are high enough to reach above grade.

In the near term, approximately 50 buildings in the South End are at risk to very low-probability, yet severe, coastal storms (0.1 percent annual chance event). The first structures expected to be impacted are located along Chandler Street, east of Clarendon, as well as just north of the Massachusetts Turnpike adjacent to Frieda Garcia Park. As soon as the 2050s, broad swaths of the South End neighborhood can be expected to be exposed to coastal flooding for the same event scenario.

The South End is in the top three exposed focus areas in Boston toward the end of the century, with close to \$200 million in annualized structure damage and related losses possible.

As soon as the 2070s, high-probability coastal flood events (10 percent annual chance) may impact over 3,000 structures in the South End. The South End is also expected to experience the highest average flood depth inside structures citywide for the 1 percent annual chance flood event in the late century. The scale of loss to coastal flood impacts could potentially be mitigated through relatively inexpensive and focused projects to cut off flooding into the low-lying areas of the community.

SOUTH END BUILDING EXPOSURE



SOUTH END MARKET VALUE EXPOSURE





RISK TO ECONOMY

The South End alone currently contributes over 20,000 jobs and \$3.6 billion in output to the city's annual economy. Healthcare is the top industry in terms of both employment and output. Economic impacts to the communities are expected to be light until later in the century, when the topographic threshold described above is breached. As soon as the 2070s, unmitigated flood impacts could yield annualized output loss in excess of \$60 million and annualized job loss around 330. The top affected industries at that point are expected to be real estate (due to the large areas of residential property impacted), hospitals, and restaurants. Restaurants are expected to experience the largest job impacts as a result of flooding late in the century.

Though flooding originates from the coast through relatively narrow and few penetration points, a topographic threshold is expected to be breached sometime mid- to late century as a result of coastal storms. This would lead to over \$200 million in annualized expected direct physical damage to structures and their contents late in the century.

ECONOMIC RISK ASSUMPTIONS

Job and output loss includes direct, indirect, and induced consequences of flood impacts. Direct results are impacts felt within a neighborhood, while indirect and induced results are those expected to be felt throughout Suffolk County as a result of changes in spending patterns. Results for both job and output losses are the sum of annualized values for the four flood frequencies analyzed for each sea level rise scenario. This represents a lower-bound estimate for several reasons. First, not all probabilistic events are considered. Second, the analysis assumes that all impacted businesses eventually reopen, though FEMA estimates that almost 40 percent of small businesses—and up to 25 percent of all businesses—never reopen after experiencing flood impacts. Third, only building areas directly impacted by floodwater are assumed to experience business interruption. This does not consider interruptions of businesses due to loss of power or utility functions. Finally, the analysis only considers existing populations, businesses, and buildings and does not include projections for future growth. Refer to the Appendix for a more detailed explanation of the exposure and consequence analysis.

| INDUSTRY | ANNUALIZED LOSS OF ECONOMIC OUTPUT |
|--|---------------------------------------|
| Real estate | \$12,100,000 |
| Restaurants | \$5,800,000 |
| Hospitals and other medical facilities | \$7,600,000 |
| Wholesale trade and retail | \$1,700,000 |
| All other industries | \$36,100,000 |
| Total | \$61,600,000 |



SOUTH END ANNUALIZED LOSSES



South End could experience the deepest average flood depth to flooded structures late in the century if flood risk goes unmitigated (1 percent annual chance flood event).



SOUTH END APPLICATION OF RESILIENCE INITIATIVES

PROTECTED SHORES

PRIORITIZE AND STUDY THE FEASIBILITY OF DISTRICT-SCALE FLOOD PROTECTION To reduce the risk of coastal flooding at major inundation points, the City should study the feasibility of constructing district-scale flood protection at the primary flood entry points for the South End (see Potential Flood Protection Locations below for a preliminary identification of locations and potential benefits). As described below, flood protection systems that would benefit the South End would likely be located outside of the South End, in South Boston, Dorchester, and by the New Charles River Dam.

These feasibility studies should feature engagement with local community stakeholders, coordination with infrastructure adaptation, and considerations of how flood protection would impact or be impacted by neighborhood character and growth. Examples of prioritization criteria include the timing of flood risk, consequences for people and economy, social equity, financial feasibility, and potential for additional benefits beyond flood risk reduction.

POTENTIAL DISTRICT-SCALE FLOOD PROTECTION LOCATIONS⁴

See District-Scale Flood Protection Systems section for a citywide perspective on district-scale flood protection. District-scale flood protection is only one piece of a multi-layered solution that includes prepared and connected communities, resilient infrastructure, and adapted buildings.

⁴These preliminary coastal flood protection concepts are based on a high-level analysis of existing topography, rights-of-way, and urban and environmental conditions. Important additional factors, including existing drainage systems, underground transportation and utility structures, soil conditions, zoning, as well as any potential external impacts as a result of the project have not been studied in detail. As described in Initiatives 5-2 and 5-3, detailed feasibility studies, including appropriate public and stakeholder engagement, are required in order to better understand the costs and benefits of flood protection in each location.

In the near term, coastal flood risk in the South End is modest and likely does not require district-scale flood protection.

Later in the century, the South End will be exposed to flooding from Fort Point Channel and other inland flood pathways, so combined flood protection at multiple locations will be critical:

- At Dorchester Bay, addressing inland flood pathways originating from the Old Harbor and Savin Hill Cove.
- At the South Boston Waterfront, addressing inland flood pathways originating from Fort Point Channel, Boston Harbor, and the Reserve Channel
- At the New Charles River Dam, addressing potential overtopping or flanking of the dam.

1% Annual Chance Flood with 9" SLR
1% Annual Chance Flood with 21" SLR
1% Annual Chance Flood with 36" SLR
Local Flood Defense District

| SLR SCENARIO | DISTRICT SCALE FLOOD PROTECTION FOR 1% ANNUAL CHANCE FLOOD ⁵ |
|-----------------------------|---|
| 9" SLR (2030s–2050s) | None⁴ |
| 21" SLR (2050s–2100s) | The South Boston Waterfront and Dorchester Bay locations combined |
| 36" SLR (2070s or later) | The New Charles River Dam, South Boston Waterfront, and Dorchester Bay locations combined |

⁵Additional flood protection may be required for flood events more severe than the 1 percent annual chance flood. See Appendix for more detailed information on expected effectiveness of flood protection systems, including analysis of additional flood protection locations and flood frequencies.

⁶Benefits of district-scale flood protection would be modest.



LOCATIONS

- The South Boston Waterfront location. described in the South Boston focus area (see p.282), addresses flood entry points along the edge of the district. As an alternative to flood protection for the entire South Boston Waterfront, *a flood protection system along the southwestern* portion of the Fort Point Channel could provide flood protection benefits for parts of South Boston, as well as other areas, from Fort Point Channel flooding. However, since protection for the entire South Boston Waterfront would provide much greater benefit in both the near term and the long term, this Fort Point Channel alternative is unlikely to be necessary. Flood entry points from the southwestern portion of the Fort Point Channel should still be considered among planning and redevelopment projects in the area and potentially addressed in order to provide multiple lines of flood protection for inland areas.
- The Dorchester Bay location, described in the Dorchester focus area (see p.194), addresses flood pathways from the Old Harbor and Savin Hill Cove.
- The New Charles River Dam location, described in the Charles River and Downtown focus areas (see pp. 174, 216), addresses potential overtopping or flanking of the dam.

DETAILED CONSIDERATIONS

 Multiple locations required to address flood risk: For very low-probability events (0.1 percent annual chance) in the near term and into the second half of the century, flood exposure from both Fort Point Channel and Dorchester Bay are expected to impact portions of the South End, requiring district-scale flood protection solutions. Later in the century, flood protection solutions at the South Boston Waterfront and Dorchester Bay may not be independently effective for the 1 percent annual chance event and events with lower probability of occurrence, requiring interventions at the New Charles River Dam to impede flooding from the Charles River. While investments at all three locations may be significant, losses avoided are expected to be substantial because an integrated system could protect Downtown, South Boston, Dorchester, the South End, Roxbury, and neighborhoods along the Charles River.

PREPARED & CONNECTED COMMUNITIES

CONDUCT AN OUTREACH CAMPAIGN TO PRIVATE FACILITIES THAT SERVE VULNERABLE POPULATIONS TO ENSURE THAT THEY ENGAGE IN EMERGENCY PREPAREDNESS AND ADAPTATION PLANNING In the long term, the City should conduct outreach to managers of facilities in the South End that serve significant concentrations of vulnerable populations and are not required to have operational preparedness and evacuation plans under current regulations. Targeted facilities will include affordable housing complexes, substance abuse treatment centers, daycare facilities, food pantries, small nonprofit offices, and others. The City should conduct outreach in the long term because widespread flooding in the neighborhood is not expected for the 1 percent annual chance flood event until later in the century, meaning that the South End focus area has a longer adaptation window. Illustrative examples of the types of facilities to which the City might conduct outreach include the Ellis Memorial Early Education and Care Program, Eagle's Nest Learning Center, and Pine Village Preschool. These facilities will be exposed to longterm damage from sea level rise and coastal flooding or can expect access issues related to stormwater flooding in the same time frame.

⁷The City did not review the extent of existing preparedness planning as part of this study.

PREPARED & CONNECTED COMMUNITIES

EXPAND BOSTON'S SMALL BUSINESS PREPAREDNESS PROGRAM

The City should reach out to small businesses in South Boston exposed to stormwater flooding risk in the near term to help them develop business continuity plans, evaluate additional insurance coverage needs, and identify low-cost physical adaptations. In the South End, there are approximately 30 commercial buildings and 180 mixeduse buildings that could host small businesses exposed to stormwater flooding in the near term. It is important to note that, in the near term, Tremont Street and Massachusetts Avenue, which are both key commercial corridors, will be exposed to stormwater flooding. The Washington Gateway Main Street District will also have portions exposed to stormwater flooding in the near term and will be exposed to coastal storm and sea level rise impacts during highprobability storms later in the century.

RESILIENT **INFRASTRUCTURE**

ESTABLISH INFRASTRUCTURE COORDINATION COMMITTEE

PROVIDE GUIDANCE ON PRIORITY EVACUATION AND SERVICE ROAD **INFRASTRUCTURE TO THE ICC**

CONDUCT FEASIBILITY STUDIES FOR COMMUNITY ENERGY SOLUTIONS

flooding.

The Infrastructure Coordination Committee (ICC) should support coordinated adaptation planning for the South End's key infrastructure systems, including transportation, water and sewer, energy, telecommunications, and environmental assets. In the near term, the City should support the MBTA in conducting a full asset-level vulnerability assessment of its system.

The Office of Emergency Management should work with the Boston Transportation Department, Department of Public Works, and private utilities to provide guidance on critical roads to prioritize for adaptation planning, including evacuation routes and roads required to restore or maintain critical services. With 21 inches of sea level rise, under the 1 percent annual chance flood event, portions of I-93 near Tremont Street, Arlington Street, and Berkeley Street will be exposed to coastal and riverine

The 2016 Boston Community Energy Study identified three potential locations for Energy Justice or emergency microgrids: along Massachusetts Avenue, along Tremont Street, and at Public Alley 706. The Environment Department should work with local stakeholders and utility providers to explore these locations. All three locations have significant exposure to flooding under the 1 percent annual chance event with 36 inches of SLR.

ADAPTED BUILDINGS

PROMOTE CLIMATE READINESS FOR PROJECTS IN THE DEVELOPMENT PIPELINE

INCORPORATE FUTURE CLIMATE CONDITIONS INTO AREA PLANS AND ZONING AMENDMENTS

ESTABLISH A CLIMATE READY BUILDINGS EDUCATION PROGRAM FOR PROPERTY OWNERS AND ESTABLISH A RESILIENCE AUDIT PROGRAM

Upon amending the zoning code to support climate readiness (see Initiative 9-2, p.135), the Boston Planning and Development Agency (BPDA) should immediately notify all developers with projects in the development pipeline in the future floodplain that they may alter their plans in a manner consistent with the zoning amendments (e.g., elevating their first-floor ceilings without violating building height limits), without needing to restart the BPDA permitting process.

The Boston Planning and Development Agency should incorporate future climate considerations (long-term projections for extreme heat, stormwater flooding, and coastal and riverine flooding) into major planning efforts in the South End.

The City should develop and run a Climate Ready Buildings Education Program and a resilience audit program to inform property owners about their current and future climate risks and actions they can undertake to address these risks. A resilience audit should help property owners identify cost-effective, building-specific improvements to reduce flood risk, such as backflow preventers, elevation of critical equipment, and deployable flood barriers; promote interventions that address stormwater runoff or the urban heat island effect, such as green roofs or "cool roofs" that reflect heat; and encourage owners to develop operational preparedness plans and secure appropriate insurance coverage. The resilience audit program should include a combination of mandatory and voluntary, market-based and subsidized elements.

PREPARE MUNICIPAL FACILITIES FOR CLIMATE CHANGE

The Office of Budget Management should work with City departments to prioritize upgrades to municipal facilities in South End that demonstrate high levels of vulnerability (in terms of the timing and extent of exposure),

consequences of partial or full failure, and criticality (with highest priority for impacts on life and safety) from coastal flooding in the near term. Later in the century, there are a number of Boston Housing Authority developments that are expected to be exposed to coastal flooding, as well as access issues related to stormwater flooding. These sites include Camden, Cathedral, Frederick Douglas, Hampton House, Lenox, Rutland/West Newton, Torre Unidad, and Washington Manor. The City will also prioritize adding backup power to emergency shelters that do not yet have power system redundancies. By later in the century, there will be a strong need for shelter capacity in the South End unless flood risk is mitigated, which will require all existing shelters to be prepared.