

# GREENOVATE BOSTON

2014 CLIMATE ACTION PLAN UPDATE // SUMMARY REPORT



MAYOR MARTIN J. WALSH

## 2014 CLIMATE ACTION PLAN STEERING COMMITTEE MEMBERS

### **Vivien Li, Co-Chair**

The Boston Harbor Association, President

### **Brian Swett, Co-Chair**

City of Boston, Chief of Environment,  
Energy and Open Space

### **Andrew Kendall**

Henry P. Kendall Foundation, Executive Director

### **Anthony Janetos**

The Frederick S. Pardee Center for the Study of  
the Longer-Range Future, Director

### **Brian Doherty**

Building and Construction Trades Council

### **Bud Ris**

New England Aquarium, Former President and CEO

### **Christine Poff**

Boston Parks Advocates, Lead Organizer;  
Franklin Park Coalition, Executive Director

### **Crystal Johnson**

Integrative Sustainability and Environmental  
Solutions, Energy & Sustainability Strategist

### **Cynthia Loesch**

Codman Square Neighborhood Council,  
Vice President

### **Edward Glaeser**

Harvard University, Professor of Economics;  
Taubman Center for State and Local Government,  
Director; Rappaport Institute of Greater Boston,  
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### **Jacqueline Douglas**

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### **Jhana Senxian**

Sustainability Guild International, CEO

### **Kelly Saito**

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Maverick Association of Residents

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### **Nancy Kilburn**

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Presbyterian Church Social Impact Center, Director

### **Penn Loh**

Tufts University Masters of Public Policy Program  
and Community Practice, Director

### **Rick Dimino**

A Better City, President and CEO

### **Robbin Peach**

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### **Rosanne Foley**

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Northeastern University, Dukakis Center for  
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### **David Brewster**

EnerNOC, Inc, President

### **Tom McShane**

Dewey Square Group, Principal; Boston Harbor Island  
Alliance, Director City of Boston Representatives

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City of Boston, Chief of Economic Development

### **Sheila Dillon**

City of Boston, Chief of Housing

### **Felix Arroyo**

City of Boston, Chief of Health and Human Services

### **James Gillooly**

Boston Transportation Department,  
Interim Commissioner

### **Barbara Ferrer**

Boston Public Health Commission, Director

### **Michael Dennehy**

Public Works Department, Interim Commissioner



*Mayor Walsh announcing the 2014 Climate Action Plan Steering Committee in March 2014. He also announced that Boston joined the C40 Cities, an invitation-only global network of cities on the front line of preparing for and helping prevent climate change.*



## LETTER FROM MAYOR MARTIN J. WALSH

**DEAR NEIGHBORS,**

When I took office in January 2014, it was clear that climate and sustainability were top priorities for Boston. Hundreds of people showed up to the public forums on the environment and open space in January. Throughout the past year, I've been impressed by and grateful for your participation and engagement—from the Steering Committee, to the Greenovate Boston Community Summit, to the hundreds of ideas and comments submitted along the way. I am proud to launch the Greenovate Boston 2014 Climate Action Plan Update under my administration.

Boston has long been a leader on climate action, starting with the 2007 Executive Order on Climate Action. We knew then, and it has only become more clear, that Boston must both dramatically reduce its greenhouse gas emissions and prepare for the unavoidable impacts of climate change. Between 2007 and 2012, we made great progress, from green buildings to single-stream recycling. Then in the fall of 2012, Hurricane Sandy struck New York and New Jersey, causing unimaginable damage and heartache—73 Americans lost their lives and the storm caused \$68 billion dollars in damage.

Had the storm hit just five hours earlier, Boston could have experienced similar losses. We were not better prepared than New Jersey or New York—we were lucky, and luck is not a policy we can count on. The climate continues to change, resulting in rising sea levels and more extreme weather. Boston must focus its collective will on making sure we do everything possible to be ready, and we need to take the lead on reducing the well-documented human contribution to climate change.

Addressing climate change is challenging, but if we work together, the steps we take can do more than protect us; they can create good jobs while improving our health, our public space, and our civic life. And, with your input and support, plus consistent data to track our progress, that is exactly what this plan is designed to achieve.

Sincerely,

A handwritten signature in black ink, appearing to read "Martin J. Walsh". The signature is fluid and cursive, written over a white background.

Martin J. Walsh, Mayor of Boston



# EXECUTIVE SUMMARY

The Greenovate Boston 2014 Climate Action Plan Update builds upon seven years of work in reducing citywide greenhouse gas (GHG) emissions and preparing for the unavoidable impacts of climate change. Beginning with the 2007 Executive Order, the City of Boston set GHG reduction goals of 25 percent below 2005 levels by 2020 and 80 percent by 2050 for municipal operations, and requires the City to plan and prepare for the impacts of climate change. In 2011, the City released *A Climate of Progress*, Boston's first community-wide plan, which set the same GHG reduction goals for all of Boston, while continuing to prepare for the impacts of climate change.

Boston has made significant progress toward these goals. Citywide, GHG emissions are 17 percent lower than they were in 2005. Emissions from City government operations have been reduced by almost 25 percent since 2005. Meanwhile, it has become increasingly clear that Boston must also prepare for the unavoidable impacts of climate change. The 2014 Update builds upon the 2011 Plan in six key areas:

1. More comprehensive climate preparedness strategies;
2. Cross-cutting themes including social equity, economic development, and public health and safety;
3. More extensive and inclusive community engagement;
4. An updated, more rigorous greenhouse gas inventory and emission projections;
5. A look at Boston's 80 percent by 2050 GHG reduction goal (80x50);

6. A website that tracks implementation, performance measures, and lessons learned.

The 2014 Plan outlines specific strategies and actions across five sections, which comprises the body of the Plan:

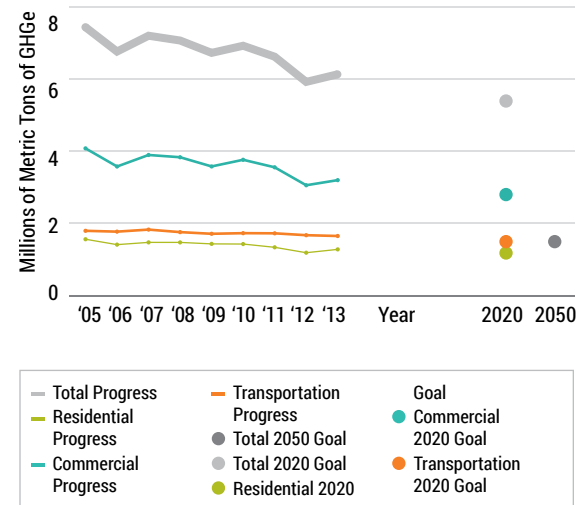
- Neighborhoods
- Large Buildings and Institutions
- Transportation
- Climate Preparedness
- 80x50

The strategies and actions in each of these sections work toward achieving the sector and the Plan's overarching goals. These goals, strategies, and actions were developed by a Steering Committee, five strategy subcommittees, active engagement of thousands of people through neighborhood meetings and events, and with support from City staff.

In early 2015, implementation plans for the action items will be developed with continued community input and regular progress updates will be included in the online version. The online version also includes a system of rigorous metrics and targets that connect the strategies to Boston's carbon footprint.

Equally important to reducing Boston's GHG emissions are the cross-cutting themes that are critical to creating a more sustainable city. As the City conducts education and outreach on climate change, Bostonians must understand how climate action addresses their near-term needs. The strategies and actions in the Plan address the importance of community engagement, social equity, public health and safety, and economic development.

FIGURE 1: GHG Progress and Goals by Sector, 2005–2013



Boston reduced GHG emissions by approximately 17% from 2005 through 2013. Most of these reductions were due to a cleaner electric grid. The next 8% of reductions needed to get to Boston's 2020 goal will be harder to achieve. Reaching the 2050 goal will require a transformation of our energy and transportation infrastructure.

The 2014 Climate Action Plan will ensure Boston's continued global leadership in reducing GHG emissions and preparing for climate change. With this Plan, Boston will continue to develop as a vibrant and sustainable city for current and future generations and champion the actions needed to meet the global challenges of climate change.

## PRIORITIES

### REDUCE GREENHOUSE GAS EMISSIONS BELOW 2005 LEVELS

- 25 percent by 2020 and 80 percent by 2050
- Expand energy efficiency programs through targeted outreach and new financing mechanisms.
- Increase local and low-carbon energy sources, including expanding district energy and co-generation.
- Re-envision Boston's transportation system to dramatically reduce emissions from this sector.

### PROMOTE HEALTHY AND EQUITABLE COMMUNITIES

- Encourage sustainable development that creates opportunities for current and future residents.
- Ensure equitable access to green jobs and facilitate job training.
- Implement Housing a Changing City, the 2015–2021 Open Space plans
- Promote equity in all policies and programs.

### MEASURE PROGRESS

- Track and publicly report on the Climate Action Plan's progress year-over-year.
- Use performance measurement, targets and goals to motivate climate action and behavior change.



### PREPARE BOSTON FOR THE IMPACTS OF CLIMATE CHANGE

- Work with regional and state agencies, and surrounding communities to align and accelerate regional preparedness planning.
- Incorporate climate preparedness into existing local planning and community engagement efforts.
- Ensure public- and private-sector developments and major capital projects are prepared for expected climate change over their projected life.

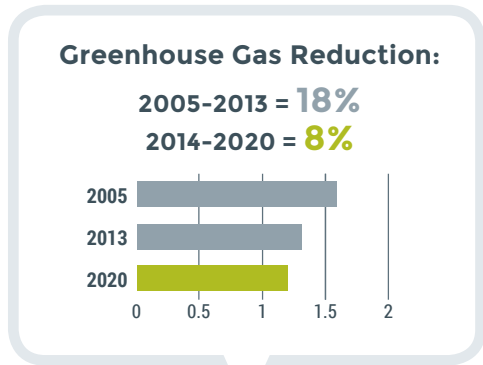
### INCREASE COMMUNITY ENGAGEMENT

- Support grassroots, community-driven climate action efforts.
- Incorporate sustainability into all aspects of education.

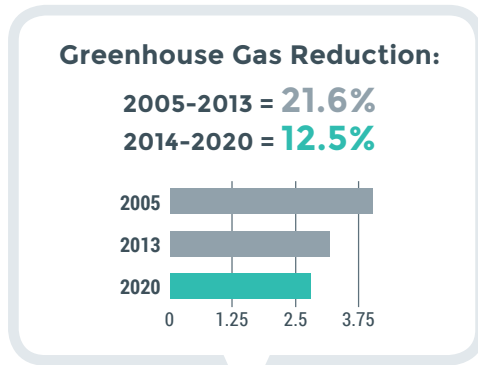


**EXECUTIVE SUMMARY** *continued*

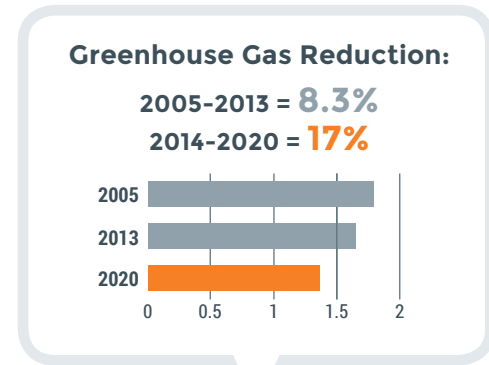
**FIGURE 2: Boston's GHG Goals and Targets by Sector**



**NEIGHBORHOODS**



**LARGE BUILDINGS AND INSTITUTIONS (LBI)**



**TRANSPORTATION**

**PROGRESS TO DATE**

- 1 Completed 35,858 audits (2009 to 2013)
- 2 Completed ~18,000 weatherizations, heating replacements and other upgrades (2009 to 2013)

**2020 TARGETS**

**72,000** Completed Home Energy Audits



**36,000** Weatherizations, Heating System Replacements, or Other Significant Upgrades



**PROGRESS TO DATE**

- 1 LBI and institutions have decreased energy use by 4.1%
- 2 Steam provides roughly 10% of LBI use
- 3 Installed 14.3 MW of solar citywide

**2020 TARGETS**

Reduce energy consumption across all BERDO buildings:

- 60 million sq. ft. buildings **5%**
- 40 million sq. ft. buildings **12.5%**
- 20 million sq. ft. buildings **25%**

**15%** energy use from co-generation  
**10 MW** of commercial solar



**PROGRESS TO DATE**

- 1 Reduced VMTs 0.5% per capita 2005 to 2012
- 2 Residency rate increased from 35.2% to 37.8% between 2005 and 2012

**2020 TARGETS**

**Improved Fuel Economy**  
 Target TBD



**5.5% below 2005 VMT**  
 (Vehicle miles traveled)



# NEIGHBORHOODS

## Strategies and Actions

### COMMUNITY ENGAGEMENT

#### 1.1 EMPOWER RESIDENTS AND BUSINESSES TO TAKE CLIMATE ACTION IN THEIR NEIGHBORHOODS

##### 1.11 Create a neighborhood climate action network

Greenovate Boston will work with the community to determine the best structure to help facilitate communication between community members, as well as between the City and the community.



##### 1.12 Pilot neighborhood-level sustainability planning

Greenovate Boston will provide a framework for individuals and communities to set goals, complete projects and gain support for taking climate action in their neighborhoods.



##### 1.13 Create a one-stop shop for sustainability resources

Greenovate Boston will work across City departments to develop guides and resources that connect Bostonians with information on relevant city processes and tips for local sustainability.



##### 1.14 Expand messaging and communications

Work collaboratively with community groups to deliver multilingual messaging using a diverse set of channels and existing networks including: all City touch-points with the public, local weekly and foreign language newspapers, special events, and communities of faith and houses of worship.



##### 1.15 Create a performance measurement system

Create a comprehensive and communicable performance measurement system to track overall progress towards climate goals, increase transparency and accountability, and provide neighborhood-level data.



#### 1.2 EMPOWER AND EDUCATE YOUTH AND YOUTH-SERVING ADULTS TO TAKE ACTION ON CLIMATE CHANGE IN THEIR SCHOOLS AND NEIGHBORHOODS

##### 1.21 Establish Green Teams and Sustainability Champions at every school

Designated Sustainability Coordinators will lead student Green Teams at all schools in Boston.



##### 1.22 Integrate sustainability and climate change concepts throughout curriculum and youth programming

Sustainability must be a connected theme throughout the curriculum and programming of Boston Public Schools and other youth organizations and programs.



*Curley School students in Jamaica Plain clean up their outdoor classroom in celebration of the 2013 Green Apple Day of Service.*



## NEIGHBORHOODS *continued*



Mass Saves signs up Boston residents for their no-cost home energy assessment.

## BUILDINGS AND ENERGY

### 2.1 EXPAND AND ACCELERATE ENERGY EFFICIENCY AND RENEWABLE ENERGY PROGRAMS AND PARTICIPATION

#### 2.11 Expand energy efficiency programs for new participants

Create energy efficiency programs that enhance renter, low-income, and multi-family experiences and increase participation in energy efficiency programs.



#### 2.12 Accelerate residential solar

Continue to accelerate solar deployment by continuing Solarize program and tackling existing barriers in the multi-family and renter market.



#### 2.13 Support small businesses going green

Introduce a matchmaking service for small businesses that allows them to be paired with sustainability services.



#### 2.14 Accelerate participation and expand the scope of energy audits

Explore introducing an energy audit at the home point-of-sale or through the building permitting process, while making the audit an entry-point into all available efficiency products and services.



#### 2.15 Introduce new technology

Deploy residential technologies that start with enabling renters to participate in energy efficiency, such as Wi-Fi-enabled “smart” thermostats, while piloting new business models that tackle tenant-landlord split issues.



#### 2.16 Expand the Whole Building Incentive

Scale up and build on the Whole Building Incentive to encourage higher incentives for weatherizations that occur over the entire building, as well as better coordination among the landlord and building tenants.



#### 2.17 Promote programs in multiple languages

Enhance translation abilities of home performance contractors so that energy efficiency is accessible by all populations in Boston.



#### 2.18 Transition to low-carbon heating sources

Work with the Commonwealth to shift residential units and small businesses away from inefficient and carbon-intensive heating systems, including electrical resistance heat, oil heat, and inefficient natural gas heat.







## NEIGHBORHOODS *continued*

### WASTE AND CONSUMPTION

#### 3.1 MAKE PROGRESS TOWARD A WASTE- AND LITTER-FREE CITY

##### 3.11 Launch a zero waste planning process

A comprehensive planning process will identify strategies to move the city towards zero-waste.



##### 3.12 Increase recycling in public places

The City's Department of Public Works, Parks and Recreation Department and Property management will work to expand recycling in public places.



#### 3.2 EXPAND ACCESS TO HEALTHY AND LOCAL FOOD

##### 3.21 Transform vacant lots into urban farms or community garden plots

The Department of Neighborhood Development will continue to explore the transformation of vacant lots into urban agriculture or community garden plots.



##### 3.22 Increase healthy food education

The Office of Food Initiatives will expand programs to educate residents about healthy food options, in particular simple and easy ways to prepare and serve healthy foods.



##### 3.23 Expand the healthy corner store initiative

Expand BPHC's Healthy Corner Store Initiative to additional neighborhoods and increase citywide participation.



##### 3.24 Complete a citywide food resilience study

With funding from the Kendall Foundation, the City has recently commissioned a team to complete a citywide food resilience study.



##### 3.25 Increase education around and access to local healthy food in Boston Public Schools

Expand Boston Public School's Farm to School and Fresh Fruit and Vegetable programs and increase on-site production of food to supplement food served at breakfast and lunch.



Compost drop-off at Egleston Farmer's Market.



Fresh produce at Back Bay Station.



## TREES AND OPEN SPACE

### 4.1 PROTECT AND EXPAND GREEN SPACES AND THE URBAN FOREST IN ALL NEIGHBORHOODS

#### 4.11 Create a tree canopy plan

Create a clear, actionable tree canopy plan to reach target to increase tree canopy coverage 35% by 2030.



#### 4.12 Create an open space plan

Create and implement the 2015-2021 open space plan for maintaining and enhancing Boston's green spaces.



*Airport Park offers green space in East Boston.*



# LARGE BUILDINGS AND INSTITUTIONS

## Strategies and Actions

### BUILDINGS AND ENERGY

#### 1.1 MAINTAIN AND EXPAND ENERGY EFFICIENCY PROGRAMS

##### 1.11 Expand engagement for targeted efficiency

Work with third-party organizations to engage building owners with opportunities for energy efficiency, and communicate to utilities when permits are issued for building renovations.



##### 1.12 Support financing for energy efficiency

Assess and address LBI energy efficiency financing needs, and, at the state level, support on-bill utility financing and C-PACE programs.



##### 1.13 Facilitate equipment upgrades

Work with utilities to incentivize replacement of inefficient equipment before end-of-life, and facilitate the bulk purchasing of efficient equipment.



##### 1.14 Develop tenant fit-out incentives

Work with utilities to identify efficiency incentives for the fit-out of commercial tenant space.



##### 1.15 Develop oil heat efficiency program

Work with the Commonwealth to develop a program for more efficient oil systems and transitions to lower-carbon sources, including, for example, a fuel oil surcharge to provide funding.



*E Positive (E+) Highland Park homes in Roxbury generate more energy than they use annually.*



## LARGE BUILDINGS AND INSTITUTIONS *continued*



On May 31, 2014, Mayor Martin J. Walsh showcased inaugural members of the Mayor's Carbon Cup: Massachusetts General Hospital-Partners HealthCare, Brigham and Women's Hospital-Partners HealthCare, Harvard University, and Boston University.

### 1.2 ENGAGE AND FACILITATE VOLUNTARY ENERGY EFFICIENCY ACTIONS

#### 1.21 Expand recognition of deep reductions

Use programs like the Mayor's Carbon Cup to recognize organizations that achieve deep GHG reduction goals, including those that adopt Boston's climate goals as their own.



#### 1.22 Engage tenant efficiency

Encourage and recognize efficiency in tenant spaces.



#### 1.23 Expand engagement for voluntary efficiency actions

Encourage energy-efficient actions, such as purchasing high-efficiency equipment and nightly lighting shut-off.



#### 1.24 Facilitate peer-to-peer learning

Enable institutions within each sector to learn about successful efficiency work, through pilots, workshops, and case studies.



#### 1.25 Identify incentives for load shifting

Work with utilities to develop incentives for thermal and battery storage, to shift peak-hour demand.



#### 1.26 Conduct audit outreach

Work with LBI organizations to encourage their staff and students to perform home energy audits.



#### 1.27 Lead by example on carbon reduction

Explore raising the 2020 municipal GHG reduction goal, and accelerate installation of efficient street lighting and building energy efficiency projects.



### 1.3 PILOT HIGH-PERFORMANCE BUILDINGS

#### 1.31 Pilot net-zero buildings

Utilize incentives, vacant City land, and current programs for pilots of net-zero buildings across different sectors.



#### 1.32 Explore climate model districts

Examine the potential for districts with comprehensive high performance and preparedness requirements for new buildings.





## LARGE BUILDINGS AND INSTITUTIONS *continued*

### 1.4 FACILITATE INNOVATION IN ENERGY EFFICIENCY

#### 1.41 Pilot new building technologies

Work with utilities to incentivize pilots of building technologies, and engage with Boston-area institutions on research.



#### 1.42 Explore green leasing

Work with LBI stakeholders to examine innovative green leasing strategies.



#### 1.43 Explore incentives for cool and green roofs

Explore incentives for cool roofs and green roofs on new and existing buildings in order to mitigate urban heat islands.



### 1.5 IMPLEMENT ENERGY CODES AND REPORTING REQUIREMENTS FOR EXISTING BUILDINGS

#### 1.51 Ensure implementation of energy codes

Improve enforcement of current codes through training of inspectors.



#### 1.52 Work with the Commonwealth on the new Stretch Energy Code

Ensure that stretch code includes standards for building renovation and tenant fit-out.



#### 1.53 Connect energy reporting with efficiency programs

Continue to implement the Building Energy Reporting and Disclosure Ordinance, and connect reporting buildings with Renew Boston and other efficiency programs.



#### 1.54 Evaluate effectiveness of BERDO-required assessments

Study results of the first five years of BERDO-required assessments to evaluate ways to increase energy efficiency.



#### 1.55 Retrofit municipal buildings

Implement all cost-effective energy efficiency measures in municipal building projects.



*By making use of harvested rainwater, Boston Properties' Atlantic Wharf building is designed to use 15% less water in building HVAC systems compared to a typical building. This illustration shows the flow of harvested water through the building.*





## LARGE BUILDINGS AND INSTITUTIONS *continued*



*The George Robert White Environmental Conservation Center (GRWECC) is a LEED Platinum certified building. It consumes 30% less energy than a conventional building, uses fewer natural resources, and creates a safer, healthier space for occupants.*

### 1.6 INCREASE REQUIREMENTS FOR NEW BUILDINGS

#### 1.61 Study expansion of Article 37 LEED requirements

Examine lowering building size threshold for Article 37 compliance, raising LEED standard to Silver, or both.



#### 1.62 Evaluate performance-based standards for net-zero goals

Explore the role of energy-use intensity standards, with goal of net-zero new buildings by 2030 in most sectors.



#### 1.63 Require new buildings to be solar-ready

Develop specific standards requiring that new buildings be able to accommodate solar installation, with flexibility for site suitability.



#### 1.64 Explore increased municipal LEED requirements

Explore requiring new municipal buildings to achieve LEED Gold.



#### 1.65 Require new large buildings to facilitate low-carbon transportation choices

Develop requirements for new buildings to foster biking, transit, walking, and car-sharing options for workers.



### 1.7 EXPAND ON-SITE RENEWABLE ENERGY, DISTRICT ENERGY, AND COMBINED HEAT AND POWER

#### 1.71 Address grid issues

Work with utilities and state to address problems of interconnecting renewables into the grid, focusing on downtown grid.



#### 1.72 Promote on-site combined heat and power and renewables

Encourage commercial CHP, solar, and ground-source heat pumps.



#### 1.73 Facilitate expansion of district energy

Expand district heating, cooling, and microgrids, through district-level planning and a potential requirement for new large buildings to study costs and benefits of connection.



#### 1.74 Expand municipal installation of renewables, CHP, and district energy connections

Evaluate feasibility for all municipal buildings, and install solar where possible.





## LARGE BUILDINGS AND INSTITUTIONS *continued*

### 1.8 TRANSITION TO CLEANER, LOW-CARBON FUEL SOURCES

#### 1.81 Support regional transition to low-carbon fuels

Work with the Commonwealth to develop a low-carbon fuel standard and increase the supply of carbon-free energy in the region.



#### 1.82 Promote green power purchasing

Promote renewable energy purchasing, including buildings that have linked off-site renewable projects.



#### 1.83 Study solutions to prevent natural gas spikes

Support technical or regulatory solutions, to preserve the fuel-switching that has happened.



#### 1.84 Work to expedite gas leak repair

Work with utilities and the state to expedite the replacement of leak-prone pipes.



#### 1.85 Increase municipal green power purchases

Expand renewable energy purchasing and use of electricity and renewable fuels for the municipal vehicle fleet.



#### 1.86 Study policies on carbon fees in other cities

Evaluate the potential for a municipal or regional carbon tax or fee.



### 2.1 EXPAND ORGANIC WASTE DIVERSION

#### 2.11 Develop organics diversion program

Establish organic diversion programs for residential and commercial buildings.



#### 2.12 Explore requiring new buildings to provide organic waste separation

Explore requiring large new buildings to provide facilities for disposing organics.



#### 2.13 Implement organics diversion program in municipal buildings.

City departments, especially Boston Public Schools, should lead by example and pilot organics diversion composting program.



*In 2012, the City of Boston installed solar panel arrays on the roof of the City Public Works Facility to apply green technologies to power the emergency operation of traffic control systems at 18 intersections along the City of Boston's evacuation route.*



## LARGE BUILDINGS AND INSTITUTIONS *continued*



*The City of Boston undertook a pilot program in 2013 that allowed Boston residents to drop off compostable food scraps for free at three farmers' markets: Harvard-Allston, Egleston Square, and Bowdoin-Geneva.*

### 2.2 EXPAND COMMERCIAL RECYCLING

#### 2.21 Explore requirements for recycling and organic waste collection

Examine requirements for residential buildings, commercial buildings, and public events.



#### 2.22 Promote recycling at LBI facilities

Conduct outreach in partnership with businesses, tenants, universities, and the MBTA.



#### 2.23 Ensure all municipal buildings provide recycling

Provide recycling in schools, City buildings, public housing, and public spaces.



#### 2.24 Examine requirements for recycling construction waste

Explore a requirement that all waste be recycled or salvaged at large construction sites.



### 2.3 PRODUCER RESPONSIBILITY

#### 2.31 Expand municipal green purchasing

Update the City's green purchasing policy.





# TRANSPORTATION Strategies

## FUEL ECONOMY

### 1.1 ESTABLISH A FUEL ECONOMY TARGET AND A STRATEGY TO ACHIEVE IT

New federal fuel economy standards will increase fuel economy of new cars by more than 40 percent. Boston aims to do more. Raising fuel economy, even by a small percentage, results in significant carbon reductions. Go Boston 2030 will establish a fuel economy target that allows for transportation to reach its GHG targets and will devise a strategy to target specific groups and technologies for education and outreach. A marketing campaign about hybrids, for example, or a stakeholder group around efficient freight trucks can significantly push up fleetwide fuel economy.



## REDUCE VEHICLE MILES TRAVELED

### 2.1 REDUCE VMTs 5.5 PERCENT BELOW 2010 LEVELS BY 2020

The 2011 Climate Action Plan set a target of reducing VMTs by 7.5 percent under 2010 levels by 2020. From new data, the City, through Go Boston 2020, will aim to decrease VMTs by 5.5 percent below 2005 levels and importantly detail how travel mode share (percent of people driving, biking, walking and taking public transit) must change for this goal to be met. A draft analysis using data from the Census, for example, estimates that Boston must shift about 15,000 drivers (four percent of those that currently drive alone to work) to other modes of transportation.



### 2.2 CREATE POLICIES THAT PUT ALTERNATIVE TRANSPORTATION OPTIONS ON AN EQUAL FOOTING WITH DRIVING

Many strategies from the 2011 CAP continue to be implemented, such as the parking freezes in Downtown, and South Boston, and transportation access plan agreements (TAPAs) for development projects greater than 50,000 square feet. Go Boston 2030 will detail actions that continue the progress made in the past few years and reflect the complete social costs of driving a car.



### 2.3 ENCOURAGE MORE BIKING AND WALKING

The 2011 Climate Action Plan set a ten percent mode share target for cycling by 2020. Through efforts by Boston Bikes, Boston Transportation Department, Department of Public Works, cycling advocacy groups and other community partners, biking in the City has increased from less than one percent to roughly a two percent commuter mode share for Boston residents in 2012. The Boston Bike Network Plan details actions to reach nearly 200 miles of bike lanes by 2020 while reducing the number of accidents by 50 percent. Hubway is also rapidly expanding into the neighborhoods, bringing access to bike sharing to more and more Bostonians. Complete Streets design guidelines have also been published, providing principles for building safer environments for both walking and biking.



2013 Bike Week kickoff event.



## TRANSPORTATION *continued*



*Go Boston 2030 solicits community input about improving Boston's transportation future.*



*Ad campaign designed to help reduce fuel wasted from idling vehicles.*

### 2.4 CONTINUE TO EXPAND PUBLIC TRANSPORTATION COVERAGE AND SERVICE

Public transit is the backbone of the transportation system in Greater Boston, serving 1.3 million riders on a daily basis. The Greater Boston area has one of the highest rates of transit ridership in the country. To reach Boston's targets, the City must work with the MBTA to ensure that it develops a world-class level of service for current and future riders over the next five years, and is able to increase its mode share through increasing network coverage and service.



### 2.5 INCREASE OPPORTUNITIES FOR CARPOOLING, RIDESHARING, AND CARSHARING

Public transit is the backbone of the transportation system in Greater Boston, serving 1.3 million riders on a daily basis. The Greater Boston area has one of the highest rates of transit ridership in the country. To reach Boston's targets, the City must work with the MBTA to ensure that it develops a world-class level of service for current and future riders over the next five years, and is able to increase its mode share through increasing network coverage and service.



## DEVELOPMENT, ZONING, AND LAND USE

### 3.1 REGIONAL PLANNING

Much of Boston's VMTs are generated by drivers whose trips originate outside of Boston. If we can reduce these commutes by only a few miles each week, we can achieve vast congestion and carbon reductions. To accomplish this, Boston and the surrounding region need a long-term strategy to provide more housing near jobs and public transportation. Boston can take the lead in supporting the Metropolitan Area Planning Council's (MAPC) regional planning efforts, and further encourage mixed-use zoning and transit-oriented development in and around Boston.







## TRANSPORTATION *continued*

### 3.2 ADOPT A RESIDENCY RATE TARGET OF 45 PERCENT

Transportation systems are intricately tied to land use patterns and where people live and work. Bostonians who live and work in Boston, for example, are twice as likely to not drive to work as those who work and live elsewhere in the Greater Boston area. By attracting additional jobs and residents to Boston and raising the “residency rate”—the proportion of workers in Boston who also live in Boston— transportation carbon emissions can be reduced substantially. In 2010, Boston’s residency rate was at 39 percent. Increasing the rate means both providing more jobs for residents who currently live in the City, and providing housing to those who work in the City, while ensuring continued housing affordability and accessibility for current Boston residents. Neighborhood gentrification, for example, will have mixed and possibly negative effects on the residency rate because smaller, wealthier households generally tend to replace larger households in gentrification.



## DATA AND TRACKING SYSTEMS

### 4.1 IMPLEMENT TECHNOLOGY AND DATA SYSTEMS THAT ENHANCE OUR UNDERSTANDING OF TRAFFIC AND VEHICLE TRAVEL IN THE CITY

The City’s means of tracking fuel economy, commuter mode share, and vehicle miles traveled is limited. Much of the analytical work done for the Climate Action Plan used estimates and modeled data. Without clear measures that can be tracked year-over-year, progress towards the Climate Action Plan goals is impossible to track. Go Boston 2030 will work to create better and more regular data systems.



*As of 2014, Fleet Hub, the City of Boston’s shared vehicle fleet, is home to its first plug-in hybrid.*



# CLIMATE PREPAREDNESS

## Strategies and Actions



An artists depiction of future sea-level rise along the East Boston waterfront.

### PLANNING AND INFRASTRUCTURE

#### 1.1 INTEGRATE PREPAREDNESS INTO ALL ASPECTS OF CITY PLANNING, REVIEW, AND REGULATION

##### 1.11 Coordinate and prioritize citywide preparedness efforts

Raise the priority of climate preparedness as a key component of all City planning and ensure citywide coordination.



##### 1.12 Establish a long-term planning framework

Start planning for the end-of-century effects of climate change.



##### 1.13 Incorporate preparedness into all project and permit reviews

Continue to integrate climate preparedness into zoning, all project and permit review and licensing, and the regulations and guidelines that govern these processes. Review and improve waterfront development zoning.



#### 1.2 COORDINATE PREPAREDNESS EFFORTS REGIONALLY AND WITH STATE AND FEDERAL GOVERNMENTS

##### 1.21 Convene a regional climate preparedness summit

Work with metro-Boston cities and towns, the Commonwealth, and regional authorities to align and accelerate regional preparedness planning, development of regulatory requirements, infrastructure investment, and other programs and policies.



##### 1.22 Develop city-university research partnerships

Develop a partnership with research universities to develop, analyze, test, and implement new climate-preparedness strategies; create a pipeline of green education and workforce opportunities for students.



#### 1.3 LEAD BY EXAMPLE

##### 1.31 Address municipal vulnerabilities

Address municipal building, infrastructure, and operational vulnerabilities identified in the 2013 assessment, and report on progress annually.



##### 1.32 Pilot preparedness solutions

Use City-owned facilities and land to provide climate-preparedness examples and pilot innovative solutions.





## CLIMATE PREPAREDNESS *continued*

### COMMUNITY ENGAGEMENT

#### 2.1 USE CLIMATE PREPAREDNESS TO SPUR ECONOMIC DEVELOPMENT AND CREATE JOBS

##### 2.11 Focus on neighborhood-level strategies

Work with community leaders, community development agencies, and others to create neighborhood-based programs and projects that increase climate preparedness for vulnerable populations while supporting job training and job creation.



##### 2.12 Invest locally

Invest in smaller-scale resiliency interventions and pilots in particularly vulnerable areas and environmental justice communities.



#### 2.2 TARGET ASSISTANCE TO LOW-INCOME RESIDENTS, SMALL BUSINESSES, AND OTHER VULNERABLE POPULATIONS AND ENTITIES

##### 2.21 Collaborate with public health

Add climate preparedness elements to public health programs already aimed at vulnerable populations and low-income households.



##### 2.22 Identify potential resources

Explore opportunities to provide financial and technical assistance to vulnerable populations and low-income households in reducing current vulnerabilities.



##### 2.23 Support the resiliency of small businesses

Work with Main Street programs and other stakeholders to assist small businesses in increasing preparedness and developing business continuity plans.



##### 2.24 Protect outdoor and manual workers

Work with unions, businesses, the Commonwealth, and other stakeholders to protect workers in extreme weather.



*Rendering of a community garden and solar array atop a proposed Energy Positive development in Mission Hill.*



## CLIMATE PREPAREDNESS *continued*



As part of the Massachusetts Arborists Association's annual Arbor Day of Service, Boston Parks and Recreation Department and the Friends of the Public Garden dedicate a tree to Henry Davis (pictured) for his lifetime of work towards the preservation of trees on the Boston Common.

### 2.3 PROVIDE INFORMATION THAT ENABLES COMMUNITIES TO TAKE ACTION AND INFLUENCE PROGRAMS AND POLICIES

#### 2.31 Provide accessible climate data and projections

Ensure that all municipal offices and the community have up-to-date climate change projections and planning levels (scenarios) in sufficient detail to support neighborhood-level planning and design.



#### 2.32 Establish preparedness indicators

Develop a set of indicators to provide quantitative measures of the preparedness of the Boston community, set goals in terms of these indicators, and report on them annually.



#### 2.33 Improve and expand neighborhood engagement

Expand public outreach to neighborhood groups to inform and motivate all sectors of the community around preparedness, and better understand neighborhood needs and priorities.



### 2.4 SUPPORT PROPERTY AND BUILDING OWNERS AND INSTITUTIONS IN TAKING PREPAREDNESS ACTION

#### 2.41 Provide preparedness information

Work with property owners, neighborhood groups, and other stakeholders to establish building preparedness priorities, best practices, guidelines for implementation, and cost/benefit information.



#### 2.42 Increase awareness of vulnerabilities and actions

Ensure that all property owners and tenants are specifically aware of their climate-change vulnerabilities.



#### 2.43 Expand resources

Explore mechanisms to provide property owners financial and technical support for increasing climate preparedness.



#### 2.44 Align insurance policies

Work with the Commonwealth, the insurance and finance sectors, and property owners to identify modifications to building codes in accordance with, and align insurance policies and incentives and loan underwriting with best practices in building resiliency.



#### 2.45 Assess vulnerabilities of hazardous materials and sites

Determine the vulnerability of sites with inventoried toxic/hazardous materials and other sites that may create greater vulnerability to the community and ways to increase their preparedness.





## CLIMATE PREPAREDNESS *continued*

### TREES AND OPEN SPACE

#### 3.1 EXPAND GREEN INFRASTRUCTURE AND ECOSYSTEM-BASED APPROACHES TO ADDRESS CLIMATE VULNERABILITIES

##### 3.11 Expand green infrastructure requirements

Explore legislative and regulatory means of expanding requirements for green infrastructure and coastal protection, such as through a local wetlands ordinance.



##### 3.12 Grow the urban tree canopy

Develop and implement a clear plan for significantly increasing tree-canopy cover.



##### 3.13 Explore community-wide stormwater fee

This fee can be based on a property's permeable surface area and stormwater management efforts.



##### 3.14 Accelerate neighborhood stormwater management actions

Explore a pavement-to-parks/water absorption plan for neighborhoods.



##### 3.15 Increase support and space for urban agriculture

Expand urban agriculture and study the resilience of Boston's regional food system.



### BUILDINGS AND ENERGY

#### 4.1 EXPAND ENERGY EFFICIENCY, SOLAR AND OTHER TYPES OF DISTRIBUTED ENERGY AS A RESILIENCE MEASURE

##### 4.11 Expand distributed energy systems

Expand district energy, combined heat and power, and other types of distributed energy and storage, particularly in districts with vulnerable populations and critical facilities.



##### 4.12 Expand and align outreach to residents

Include climate preparedness as a consideration in Renew Boston's energy programs and its outreach activities.



*Ceremonial opening of Green Alley, a joint project between Boston Architectural College (BAC) and Halvorson Design Partnership. Since its opening in October 2013, the Green Alley has captured almost all of the stormwater to recharge groundwater supply.*





# 80X50

## Core Objectives and Long-term Strategies



Thousands of Boston residents attended the People's Climate March in New York City on September 21, 2014.



Through Go Boston 2030, Bostonians consider what the city's transportation system will look like in 2030.

### CARBON-NEUTRAL AND RESILIENT VISIONING

#### De-carbonizing the Grid

In the next ten years, the City will explore the following:

- A carbon-neutral district energy system;
- The feasibility of district cooling, particularly through the use of ocean water;
- Expanded funding mechanisms for district energy;
- District heating and cooling for municipally owned facilities.

The City will also work with the Commonwealth and other government bodies and stakeholders to explore:

- Removal of any legal and regulatory impediments to district energy and renewables;
- Standardized rules, minimal fees, and an adequate feed-in tariff for grid interconnection;
- Continued lowering of the cap on greenhouse gas emissions through RGGI;
- Measures to ensure that PV owners can interconnect to the grid with standardized rules, minimized fees, and reasonable feed-in tariffs;
- More aggressive state-wide clean energy goals, and the use of those goals to evaluate proposals for energy infrastructure;
- A citywide or regional carbon tax.

#### Low-carbon Transportation

In the next ten years, the City will explore the following:

- Expanded public and private infrastructure to support electric vehicles;
- A zero-carbon municipal vehicle fleet by 2030;
- Additional public transit measures (for example, a City-run bus or shuttle fleet) to supplement the MBTA system;
- Other zero-carbon vehicles (for example, hydrogen-powered) and associated infrastructure to support them.

The City will also work with the Commonwealth and other government bodies and stakeholders to explore:

- City of Boston representation on the board overseeing the MBTA;
- A tax-and-invest program in public transit alongside a state carbon tax;
- The transition of the MBTA to net-zero carbon energy sources.

#### Intergovernmental Coordination

In the next ten years, the City will explore the following:

- Create a formal mechanism for coordination and alignment of state, regional, and city climate planning.



## 80X50 *continued*

### INTERIM CARBON TARGET

In the next ten years, the City will explore the following:

- The use of indicators of success beyond traditional measures of economic growth;
- A consumption-based greenhouse gas inventory that accounts for emissions associated with things we buy and consume;
- A focus on carbon neutrality by 2050, and the integration of this goal into all planning activities;
- Developing 80x50 sector goals;
- Zero-carbon standards for new development.

### ONGOING RESEARCH AND LEARNING

In the next ten years, the City will explore the following:

- Research partnerships to solve climate mitigation and adaptation challenges;
- Supporting innovative business models and startups;
- Smart investments and new financing models to support large-scale neighborhood sustainability;
- Creating the educational base, green-STEM job skills and pipelines, businesses, and economic structures.

### A TRANSFORMATION OF THE ENVIRONMENTAL AWARENESS OF ALL BOSTONIANS

In the next ten years, the City will explore the following:

- New ways to involve the community in sustainability and climate preparedness decision-making, implementation, and evaluation;
- Explore the creation of self-sustaining and climate resilient eco-districts;
- A fully-integrated sustainability curriculum;
- Community-scale waste-to-energy pilots.



*Mayor Walsh is joined by U.S. Senator Ed Markey, U.S. Department of Energy Secretary, Dr. Ernest Moniz and U.S. EPA Administrator, Gina McCarthy to talk with New England Aquarium's ClimaTeens on Earth Day 2014.*



*New England Aquarium ClimaTeens talk about the impacts of climate change to Boston Harbor's marine life on Earth Day 2014.*

## CREDITS

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### CITY OF BOSTON STAFF

*Office of Environment, Energy and Open Space*  
Brian Swett  
Austin Blackmon  
Van Du  
Leah Bamberger  
Charles Zhu  
Bradford Swing  
Lourdes Lopez

### *Environment Department*

Nancy Girard  
Carl Spector  
Nikhil Nadkarni  
Maura Zlody  
Mia Goldwasser (intern, MIT)

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### DESIGN CREDITS

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*Website:* Rudi Seitz and Cedric Ruiz

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p.9 Egleston Farmer's Market photo by Mike Steinhoff

p.9 Fresh Produce photo by Kelly E.

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*Children help plant trees on Arbor Day.*



community  
composting

CEREAL  
PASTRY  
compostable  
plastics/bags

**rice**  
pasta  
bread



Mayor Martin J. Walsh  
Contact: [oscar@boston.gov](mailto:oscar@boston.gov)  
617-635-3850  
#compostbos

vegetables  
coffee  
GROUNDS

**fruits**

cut /dry  
flowers

**EGG**  
shells



GREENOVATE  
BOSTON





**GREENOVATE BOSTON** is the City's initiative to reduce greenhouse gas emissions 25% by 2020 and 80% by 2050 and prepare for the impacts of climate change. It is a community-wide movement that seeks to engage all Bostonians in achieving these goals, while continuing to make Boston a thriving, healthy, and innovative city.




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