

[front cover]

Recommendations of the Boston Climate Action Leadership Committee and the Community Advisory Committee on Climate Action

Summary Report

April 2010

[possible photos for cover: a Boston landmark; kids planting trees; workers installing PV or insulation]

[inside front cover]

Leadership Committee

[insert list of members and affiliations]

Community Advisory Committee

[insert list of members and neighborhoods]

Community Workshops

[insert list of dates and locations]

A letter from Mayor Menino [photo]

Dear Friends:

[to come]

Sincerely,

Thomas. M. Menino

Mayor of Boston

[letter from co-chairs]

Dear Mayor Menino,

On behalf of the Climate Action Leadership Committee and the Community Advisory Committee on Climate Action, we are honored to present to you the committees' consensus recommendations for ensuring that, despite the threat of climate change, Boston remains a safe, healthy, vital city into the next century.

When you met with the Leadership Committee the first time, you gave us a clear message, "Be bold!" We have had no choice but to follow this directive. For the past ten years, Boston's municipal government and the community at large have taken many steps, under your leadership, to build more efficient buildings, increase renewable energy sources, encourage walking, biking, and the use of public transit, raise recycling rates, and expand green jobs and green businesses. Boston's standing as a pioneer in climate action is recognized across the country. To be bold is to push ahead even farther on the path that Boston has already taken.

As you will see in this report, the committees have raised strong voices in support of climate action. The committee members remain convinced that the complete body of evidence shows that climate change is real, that human activity is very likely the major cause, and that potential threats to Boston are of great concern. And they feel that, as you said in the 2007 Climate Action Plan, Boston takes pride in

“confronting the biggest challenges by harnessing our competitive assets and dynamic population to produce significant advances not only for our city, but for the entire world.”

The committees’ recommendations address reducing our greenhouse gas emissions, preparing Boston for environmental changes that cannot be avoided, and engaging all segments of the community. They result from an intensive public process. Over the past year, the Leadership Committee met seven times and the Community Advisory Committee six times (including one joint meeting). Committee members attended each others’ meetings, and joined working groups on buildings, transportation, adaptation, and public engagement that developed detailed proposals. All presentations and documents were posted on the City’s Climate Action Web site. In February and March of this year, over 400 people participating in five community workshops contributed their voices to the committees’ deliberations. The committees also benefited from the advice of experts from local universities, businesses, institutions, and many departments and agencies of City government. Finally, the committees had fruitful consultations with colleagues and staff on Massachusetts’s climate mitigation and adaptation committees with the hope that the city’s and the state’s plans become mutually reinforcing.

Behind the many hours of voluntary work by committee and working group members and workshop participants, the financial support of the Barr Foundation and The Boston Foundation was essential for obtaining the committees’ excellent facilitators and the logistical resources that this process required. We are grateful for their assistance and support.

Mayor Menino, we know that the delivery of this report is only one stage in Boston’s ever-deepening commitment to climate action. As you and members of your administration turn the recommendations into the City’s official Climate Action Plan and implement them—a process that will require further public hearings and other forms of public participation—we are ready to provide additional support and advice. Beyond that, we stand as pledges that, whatever questions may arise about details, bold action on climate change has the strong backing of the Boston community.

Sincerely,
Mindy Lubber
Co-chair
James W. Hunt, III
Co-chair

We are changing the climate.

In the air, carbon dioxide and other greenhouse gas concentrations are going up. On the land, temperatures are increasing. In the ocean, water levels are rising. This is global climate change. Everything that depends on air, earth, and water must adjust. That includes Boston.
[graph showing projected CO2 levels]

In Boston, heat waves and smog alerts will become more frequent. Flooding from coastal storms will be more likely and more extensive. These in turn will affect the health of residents and visitors, the safety of neighborhoods, the success of businesses, the viability of plants and animals in our parks, and the ability of the government to cope with short-term emergencies and longer-term stresses. There is uncertainty about the speed at which these changes will occur, but we can see that they have started.
[UCS bar graph of 90+ and 100+ degree days. UCS flooding projection for Back Bay]

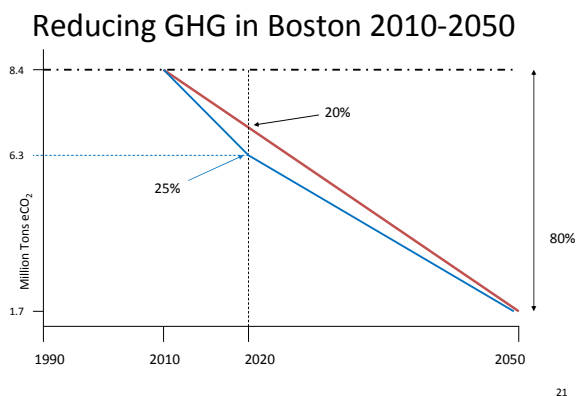
We cannot stop climate change by ourselves. We cannot eliminate all the risks. And we cannot do nothing: the costs in lives, health, and opportunities are too great.

We know what to do.

The Boston community is ready to address the challenge of climate change: to do our part to reduce the problem, to confront the risks, and to work together. The Climate Action Leadership Committee and the Community Advisory Committee on Climate Action offer five over-arching recommendations:

1. Climate mitigation: The Boston community must collectively reduce its emission of carbon dioxide and other greenhouse gases, the primary cause of recent climate change, by at least 25 percent by 2020, and then continue to reduce emissions 80 percent by 2050.

[graph of GHG reduction goals to 2050]



2. Climate adaptation: The Boston community must immediately incorporate projected changes in sea level, increases in extreme weather and other effects of climate change into all planning and operations for infrastructure, land use, emergency preparedness, economic development, public health, and other vital civic functions. [photo of BRA's model room?]
3. Public engagement: All segments of the Boston community—residents, businesses, and institutions—must take on these responsibilities: reducing greenhouse gases through improved energy efficiency of their buildings, reducing the use of private vehicles, and other measures; participating in climate planning and policy development; and adopting a longer-range perspective that helps the city adapt as our knowledge of climate change grows. Government and the community must work together. [photo from climate workshop?]
4. Green economy: The Boston community must take advantage of opportunities offered by climate action to develop innovative businesses and workforce skills to ensure the continued economic vitality of the city and the well-being of its residents. Boston should capitalize on its inherent efficiencies and lower per capita greenhouse gas emissions to be the regional focus for residential and commercial growth. [photo from worker training program?]
5. Resources: The Boston community must ensure that sufficient public and private resources, both within City Government and in the community at large, are dedicated to these goals, that

responsibility for climate action is clearly identified within City Government, and that leaders in all segments of the Boston community step forward.

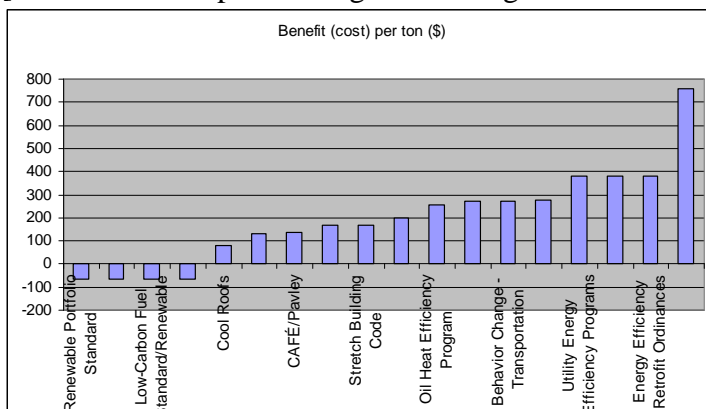
Benefits exceed costs.

- Investments in energy efficiency and decreases in the use of cars reduce energy and fuel costs.
- Reductions in air pollution from burning fuels improve public health.
- Demand for energy efficiency and renewable energy services creates jobs.
- Long-range planning creates a safer, cleaner, more prosperous city.
- Education and outreach produces an active, productive, supportive community.

	Cumulative GHG Reductions through 2020 (thousand tons)	Total Benefit (cost) (\$ million)
Buildings	6,747	\$ 1,676
Transportation	3,130	\$ 406
Other	145	\$ 0
Total	10,021	\$ 2,083

By 2020, implementation of the Leadership Committee's climate action recommendations will produce total net benefits to Boston citizens, businesses, and institutions worth about two billion dollars, mostly from reduced spending on energy, though specific benefits vary according to the action. There are also many non-financial benefits, such as reducing air pollution and its effects on health. Financial benefits will be split about evenly between residential efficiency and personal transportation on one hand, and businesses and institutions on the other.

[chart - Benefits per ton of greenhouse gas reduction - needs to be fixed]



Climate action will create jobs in at least two ways. With reduced energy costs, residents and businesses will have more money to spend on other things that will improve the economy. More directly the increased need for builders, electricians, carpenters, energy auditors, and other skilled workers to carry out the work of energy efficiency and renewable energy installations will produce local, good-paying

jobs. Training programs are already underway to ensure that Boston residents and businesses are ready to take on this work.

But climate action has even broader economic implications. Living and working in cities is, on average, more efficient than in other locations. For example, Boston emits about 14 tons of greenhouse gases per person; Massachusetts, about 16 tons—and Boston’s emissions include those caused by the hundreds of thousands of people who come into Boston everyday to work and study. Therefore, regional or state-level climate action should work to direct residential and commercial growth toward Boston and other major cities, and Boston should emphasize this in working with state and regional planning authorities.

Everyone must contribute.

We are asking people and businesses to spend money—to buy better equipment, to pay energy contractors—though they get that money back through lower utility bills.



And we are asking them to change habits or develop new ones—to walk or bike instead of drive, to drive more slowly, to turn off a switch—which may not be as hard as they think, and there are substantial benefits here, too.

And we asking them to talk with their neighbors, to change the ways of the neighborhood.

We are asking everybody. because we have ambitious goals and the Boston community cannot reach these goals without the participation of all parts of the community.

[photo: Green Business award presentation]

[copy of Mayor’s Climate Pledge]

**MAYOR MENINO’S
CLIMATE ACTION PLEDGE**

I Pledge To Take
These 10 Greenhouse Gas-Reducing Actions:

- ✓ Replace incandescent light bulbs with compact fluorescent bulbs.
- ✓ Use warm or cold water instead of hot for laundry.
- ✓ Plan car-free days. Walk, ride a bike, or take public transportation.
- ✓ Plant a tree: join Green Boston Greener.
- ✓ Turn the thermostat down in the winter and up in the summer, especially at night and while away from home.
- ✓ Recycle as much as possible, including newspapers, glass and plastic containers, and aluminum and steel cans.
- ✓ Unplug electronic equipment when not in use.
- ✓ Re-use paper and plastic bags; or better yet, bring a re-usable bag to stores.
- ✓ Buy locally grown food when available.
- ✓ Spread the word! Tell family and friends about climate action.

YOUR NAME: _____

EMAIL ADDRESS: _____

ADDRESS: _____

NEIGHBORHOOD: _____ ZIP: _____

TELEPHONE NUMBER: _____

WE RESPECT YOUR PRIVACY. YOUR INFORMATION WILL BE USED ONLY BY THE CITY OF BOSTON TO KEEP YOU UP TO DATE ON CLIMATE ACTION INITIATIVES AND ACTIVITIES. YOU CAN REMOVE YOUR NAME FROM OUR LIST AT ANY TIME.

Many residents, businesses, community groups, and institutions in Boston are already taking effective climate action. Boston City Government is setting an example by raising its standards for municipal buildings, vehicles, and operations. To reach the rest of the community, we need a public campaign that will:

- Emphasize that we are all in this together
- Connect climate issues to broader concerns about health, quality of life, and community well-being
- Utilize the expertise and community relationships of organizations across the city

- Encourage community involvement in policy development and implementation at city, state and national levels
 - Recruit all municipal employees as models of climate action and resources for the community
-

And everyone must benefit.

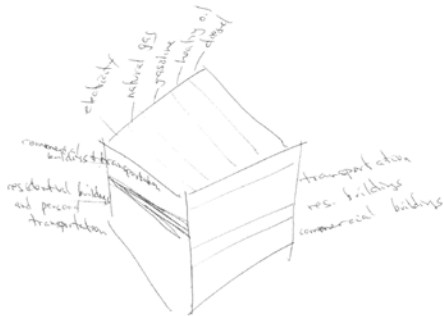
Climate change will affect different parts of the city in different ways, some areas being more threatened by sea-level rise and others by possible drought. And it will affect different people in different ways, some being more vulnerable to extreme heat and others to smog. In a similar way, the costs and benefits of climate action will not be the same for everyone. People who pay their own utility bills and those who don't may see different financial results from utility efficiency programs. People with less access to public transportation or with non-traditional working hours may not be able to give up their cars as easily as others with better public transit access or 9-to-5 jobs.

We know that climate action will benefit us collectively. We must ensure that those benefits are distributed as equitably as possible.

- Policies and programs must recognize the varied resources, motivations, and barriers of different groups.
 - Climate action should not exacerbate existing social and economic inequalities and, whenever possible, should contribute to reducing them, especially by ensuring fair access to all economic benefits.
-

We have to reduce future climate change.

[3-d graph of GHG inventory: side 1—GHG by C/I building. Res. building, Transportation, Water and waste; side 2—GHG by electricity, NG, etc.; side 3—GHG by C/I total v. Res.+personal transportation]



Human greenhouse gas emissions come primarily from the burning of fossil fuels—oil, gasoline, natural gas, coal—for energy. There is a general (though not unanimous) international understanding that the world needs to reduce its total greenhouse gas emissions as much as 80 percent by 2050 to stabilize global climate. The Boston community's overall greenhouse gas emissions have not changed much since 1990. This does not mean that nothing has changed. We have more buildings and more electronic equipment. But, as a result of government policies at federal, state, and municipal levels, and advances in technology, we use energy more efficiently and rely on cleaner sources. We have bigger, more powerful cars and trucks and drive more miles, but, overall, we get better gas mileage. And while we have more cars, Boston is still one of the least car-dependent cities in the country. This has kept us level. Actually reducing greenhouse gas emissions is going to take deliberate, focused effort.

Boston can reduce its greenhouse gas emissions 25 percent by 2020 through more efficient buildings and vehicles, lower-carbon fuels, reduced driving, more recycling, and other changes in behavior.

Sector	Greenhouse gas reductions from total baseline
Buildings	17%
Transportation	7%
Solid waste and other	1%
Total	25%

We can make our buildings more efficient.

In the past few years, all levels of government have been establishing programs and policies to reduce energy use and greenhouse gas emissions. For greenhouse gas emissions related to buildings, these measures include:

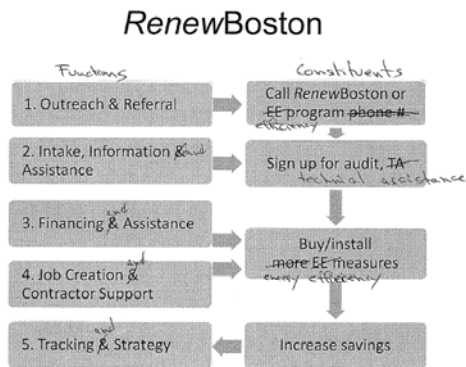
- Massachusetts's Renewable Portfolio Standard requiring more electricity from solar, wind, and other renewable sources
- Higher energy standards in the Massachusetts building code
- Federal efficiency requirements for major appliances
- Proposed regional standard to lower the carbon content of heating fuels

The City of Boston should whole-heartedly support these policies.

The most important step that Boston can take to reduce its greenhouse gas emissions is to improve the energy efficiency of existing buildings. This will enable us to achieve about half of our greenhouse gas goal.

In 2008, the Massachusetts Green Communities Act required electric and natural gas utilities to help their customers take all cost-effective measures for energy efficiency. To help Boston residents and businesses gain full access to the resources available through the utility efficiency and state renewable energy programs, Mayor Menino established Renew Boston in 2009. Renew Boston will provide guidance, coordination, monitoring, and verification to Boston businesses and residents wishing to upgrade heating and cooling equipment, insulate walls, weatherize doors and windows, and many other efficiency steps. If Boston receives its pro rata share, the utility programs should provide roughly \$60 million per year for Boston, with about one-fourth of that for residential customers and three-fourths for commercial, industrial, government, and institutional customers. Assuming the utility programs continue as expected, Renew Boston and the utilities will have helped about 150,000 households in Boston (65 percent) and 30,000 businesses (70 percent) by 2020.

[RB functions chart]



[insert large-scale illustration of measures for buildings shown at meetings]

Renew Boston and the utility programs have aggressive targets for energy and greenhouse gas reductions. The City of Boston can create incentives or requirements that could ensure full participation in the utility programs and even help Boston’s building owners exceed those goals. The City of Boston should:

- Require buildings to obtain an energy-efficiency label that provides public information on building performance and potential improvements (benchmarking and labeling)
- Require all buildings to meet a minimum level of energy performance at time of sale (energy efficiency retrofit ordinance)
- Work with the Commonwealth to develop efficiency programs for oil and propane users
- Require reflective or green roofs to lower summertime energy demand [photo of new green roof at Roosevelt School]
- Encourage energy-conscious behavior changes in building use (for example, changing thermostat and water heater settings)
- Encourage “green” leases that allow landlords and tenants to share the costs and benefits of energy improvements
- Ensure that both energy efficiency and historic preservation goals can be achieved

Although the major task in the near term is to increase the efficiency of existing buildings, in the long term it is just as important to continually raise the standards for new buildings. The City’s 2007 adoption of the U.S. Green Building Council’s LEED (Leadership in Energy and Environmental Design) standards for large projects was an excellent step. The Commonwealth’s new building code was another. Now the City should take three additional steps:

- Amend Boston’s zoning code to reduce the project size at which LEED standards apply
- Ensure that all buildings minimize life-cycle costs through energy efficiency
- Provide additional incentives for building owners and developers to exceed codes and standards

Amending the zoning code and some other measures will require a public hearing process. It will be important to ensure that they do not create economic barriers to new development, especially affordable housing—but because the energy efficiency investments for these measures usually pay off in the long run, this should be achievable.

Not all measures should be established immediately. In some cases, we should try to encourage voluntary action—perhaps motivated by incentives—before imposing requirements. In other cases, a progression of mandated steps may be necessary.

[update chart with latest figures]

Building Mitigation Measures	Proportion of 2020 reduction goal
Existing and Expanded Laws and Programs	
Renewable Portfolio Standard	11%
Renew Boston and Electric Utility Efficiency Programs	24%
Renew Boston and Gas Utility Efficiency Programs	7%
Building Codes	2%
Appliance Standards	5%
Proposed Laws and Programs	
Stretch Code (or equivalent)	1%
Benchmarking and Labeling	2%
Energy Efficiency Retrofit Ordinances	7%
Oil Heat Efficiency Program	3%
Cool Roofs	<1%
Low-Carbon Standard For Heating Fuels	2%
Behavior Change—Buildings	3%
Total	67%

We can diversify our travel.

Most of the rest of our emissions reduction goal will be achieved through changes in transportation. As with reducing greenhouse gases from buildings, some of the most important measures that will reduce greenhouse gases from transportation in Boston are already on the books. These are federal and state standards that will require better fuel mileage for vehicles (CAFE standards) and directly lower their greenhouse gas emissions. Next come possible regional standards for lower-carbon transportation fuels (including biofuels, natural gas, and electricity), which ten northeastern states, including Massachusetts, are now developing.

[photo of a car-charging station]

Beyond what car design and fuel composition can do, the way that we drive and care for vehicles is important. Regular engine maintenance, proper tire inflation, conformance with the speed limit, and elimination of unnecessary idling are effective ways to reduce fuel consumption, fuel bills, and greenhouse gas emissions.

[insert 2 large-scale illustrations on transportation measures shown at meetings]

In the long run, it is even more important that we continue to reduce reliance on cars. One of the major reasons that people living in a city produce, on the average, less greenhouse gas emissions than those who live elsewhere is that we can more easily walk, bike, or take public transit to work, school, or almost anywhere we please. [photo of people walking in Boston] We must do everything we can to enhance that essential feature of urban life and combat trends in the opposite direction.

[Graph: Motor Vehicle Registrations, City of Boston, Metro Boston, and Massachusetts, 1990-2008. from Boston Indicators report, Boston Foundation]

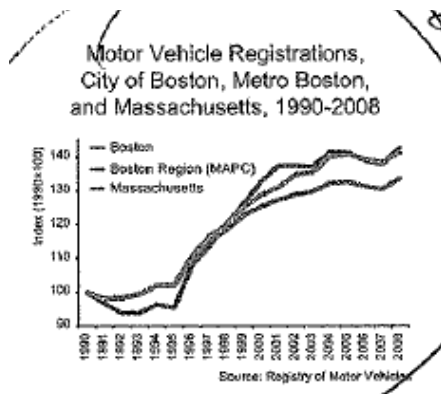
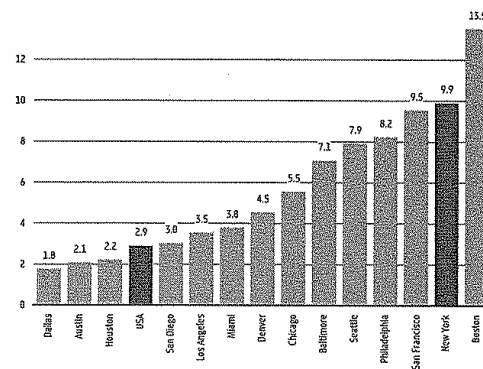


Figure 5: Percentage of Commuters Walking to Work



By favoring walking, biking, public transit and transit-oriented development, Boston should be able to reduce the amount of driving in the city about 10 percent by 2020. To do this, the city of Boston should:

- Accelerate the construction of bike lanes, the planned bike-sharing program, and other bike infrastructure [bike photo of some sort]
- Support, promote, and expand car-sharing throughout the city.
- Raise parking meter rates and extend parking meter hours
- Impose a fee for and limit the number of residential parking permits
- Impose a fee for all parking freeze permits, expand Traffic Demand Management (TDM) programs, and use planning requirements more aggressively to reduce commuter driving and downtown commercial parking
- Create more pedestrian-friendly and bike-friendly streets through the Complete Streets design process

Figure 3: Percentage of Commuters Using Mass Transit

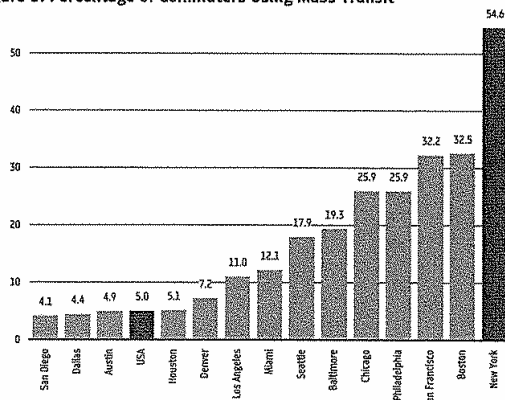
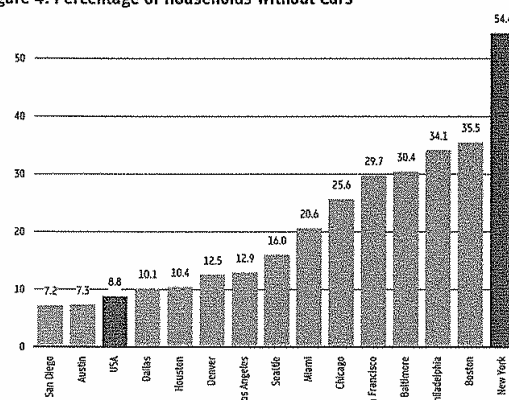


Figure 4: Percentage of Households Without Cars



A key component necessary to make all the other programs work is a well functioning public transit system. Boston is fortunate to have an extensive public transit system, which, despite its well publicized difficulties, has relatively high ridership compared to other similarly sized cities. All segments of the Boston community must remain forceful advocates for the upkeep, expansion, and sound financial standing of all MBTA transportation options, including commuter rail, and the continued development of passenger rail, especially high-speed rail, to other major cities.
[photo of T headhouse?]

The message—and the reality—should be that many more individuals and families can live comfortably and conveniently in Boston without owning a car.

Transportation Mitigation Measures	Proportion of 2020 reduction goal
Existing and Expanded Laws and Programs	
Federal/State Mileage and GHG Standards	14%
Proposed or Expanded Laws and Programs	
Low-Carbon/Renewable Fuel Standard for Gasoline	4%
Low-Carbon/Renewable Fuel Standard for Diesel	1%
Vehicle Miles Traveled Reduction Strategies	
Bike Programs	1%
Car Sharing	2%
Other Programs—Mass Transit/Parking	5%
Anti-Idling	<1%
Behavior Change—Transportation	4%
Total	31%

We can lighten our trash load.

The disposal of solid waste, the delivery of clean water, and the treatment of sewage account for less than three percent of Boston’s greenhouse gas emissions.

Some water conservation measures are included in the energy utilities’ efficiency programs, because reducing the use of hot water reduces the need for energy to heat it. Boston also has other programs to encourage water conservation at homes and businesses and to manage sewage and stormwater, though reducing greenhouse gases is not their primary purpose.

[photo of trash truck]

[graph of diversion rate]

[photo of composting]

Reducing solid waste lowers disposal costs and reduces greenhouse gas emissions that come from landfills and other disposal methods. Boston residents currently recycle only about one-seventh of the trash that they produce (including yard waste and Christmas trees), but more than half of it is actually recyclable. The commercial recycling rate is higher, but can still be improved. A stronger recycling program would establish norms and expectations throughout the community that Boston is a city that actively cares for its appearance, environment, and health. Many people have entered the world of climate and environmental action by starting with recycling.

[photo of single-stream recycling bin]

To establish the highest possible standard for itself, the Boston community should adopt a long-term goal of zero waste. Achieving this goal will take time. To move us toward it, Boston City Government should:

- Complete, as soon as possible, the full city-wide rollout of single-stream
- Establish a mandatory recycling policy, followed by financial incentives for recycling
- Develop a year-round composting program for all residential and commercial organic waste (food and garden waste)

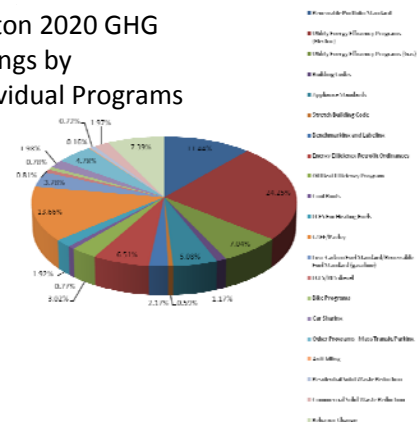
- Create requirements to increase commercial recycling rates

Solid Waste Reduction	Proportion of 2020 reduction goal
Residential Solid Waste Reduction	1%
Commercial Solid Waste Reduction	2%
Total	3%

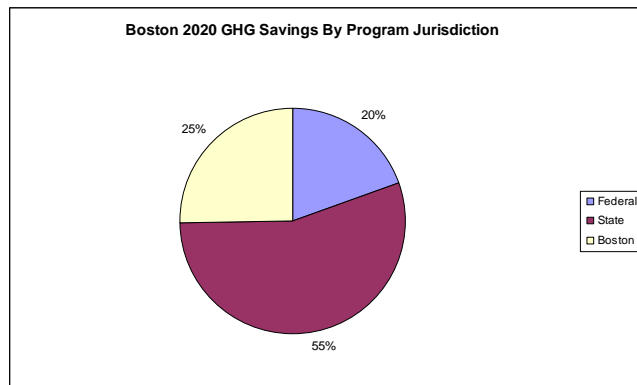
We have to do everything.

Reducing our greenhouse gas emissions 25 percent by 2020 is an ambitious, yet attainable goal that will bring large economic and health benefits to the Boston community. It does not require unknown advances in technology. To the contrary: it relies primarily on the adoption of practices, technologies, and techniques that many people and businesses are already using. Still, reaching that goal requires commitment; the participation of all sectors of the community; coordination among all levels of government; and partnerships between government and residents, businesses, neighborhood groups, and institutions. It also requires that the community work in many areas simultaneously.

Boston 2020 GHG Savings by Individual Programs

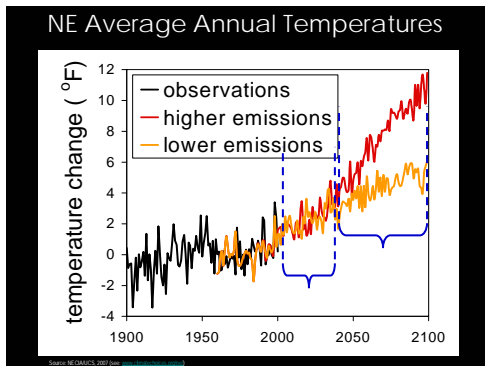


Boston 2020 GHG Savings By Program Jurisdiction



We have to prepare for change.

The climate will continue to change even as we move aggressively to reduce our greenhouse gas emissions. Lowering emissions now will have significant benefits in 20 to 30 years—and major benefits by the end of the century—by reducing temperature and sea-level rise, and other disruptive changes. [temperature graph]



But we need to adapt to the changes that we can already foresee. For this reason, climate adaptation must immediately become an essential part of the Boston community's response to climate change, and must become a foundation of all planning within the city. Adaptation should be just as prominent as mitigation in our climate agenda.

Climate adaptation is more multifaceted than mitigation, which, in most cases, centers on the simple strategy of using less fossil fuel. For adaptation, on the other hand, the necessary actions depend on the physical, social, and economic details of every neighborhood, street, and lot. As with mitigation, some measures can be taken locally—for example, planting more trees to cool streets, sidewalks, and buildings—but some will require regional solutions—for example, actions to assure the viability of Boston Harbor, Logan Airport, or the Deer Island Sewage Treatment Plant.

Adaptation responses will also occur over varying time frames. We can take some actions immediately, with benefits to the city, even if the climate changes very slowly. For instance, Mayor Menino announced the tree-planting project, Grow Boston Greener, in 2007. It will bring benefits to the city. Other responses may take years of planning and even more years of implementation, for example, long-term adjustments to the city's sewer system. Another set of responses could be contingent on the speed of climate change, for example, not starting some actions until sea level rise reaches a certain mark.

As part of its adaptation plan, Boston City Government should:

- Focus on three critical aspects of climate changes: sea-level rise, increased frequency and intensity of heat waves, and increased intensity of summer and winter storms
- Conduct a climate change vulnerability assessment and regularly re-evaluate it in the light of new data and scientific understandings.
- Give special attention to segments of the Boston community that are more vulnerable because of lack of resources, poor health, age, or other reasons.
- Incorporate climate adaptation into all planning and review processes for both public and private activities.
- Formally review the possible consequences of climate change on all on-going programs and infrastructure.

We know what to do, but...

...the climate will change, and so will our understanding of it.
 ...technology, society, the economy, and politics will change.
 ...many things we try will work, some won't.
 ...we'll meet some of our goals, exceed a few, and sometimes fall short.

...even when we reduce emissions 25 percent by 2020, we'll have to do more and do it better to get to 80 percent by 2050.

So, we must prioritize actions, establish benchmarks of progress and measure what we can, re-evaluate costs and benefits, formalize regular and rigorous public oversight, and adjust programs and policies, while keeping our goals firmly in mind. Beyond that, we must prepare ourselves with eagerness to learn, flexibility to respond, concern for ourselves and for our city, and willingness to share the burdens and the benefits of taking action. With that, Boston can thrive, lead, and prosper.

Additional resources

[insert list and links]

[inside back cover]

Members of the Climate Action Leadership Committee and Community Advisory Committee on Climate Action are grateful to the many participants of several working groups who helped to prepare material for the committees' consideration and to the committees' facilitators and City staff who ensured their productive deliberations. They also thank the many partner organizations (listed in the full report) who recruited participants, facilitators, and volunteers for the five community workshops.

[insert list of facilitators, staff, etc.]