

Sparking Boston's Climate Revolution

Recommendations of the Climate Action Leadership Committee and Community Advisory Committee



APRIL
2010



Climate Action Leadership Committee

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The work of the Climate Action Leadership Committee and Community Advisory Committee was supported by generous grants from the Barr Foundation and The Boston Foundation.

Earth Day, 2010

Dear Mayor Menino,

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

When you first met with the Leadership Committee, you gave us a clear message: "Be bold!" Boston's municipal government, the Commonwealth, and the community at large have already taken many steps 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. To be bold is to push ahead even farther on the path that Boston has already taken.

The overwhelming evidence shows that climate change is real, that human activity is a major contributor to the problem, and that potential threats to Boston are significant. In the past month alone, Boston has experienced two "50-year" rain storms with extensive flood damage and then a day of record-setting heat. Although several days of weather cannot be directly tied to global warming, these events presage the types of patterns that climate change will bring in the coming years, the types of patterns we simultaneously need to attempt to avert and prepare for. The time to intensify our efforts is now.

In addition to protecting the city from the potentially disruptive effects of climate change, climate action will bring substantial economic benefits to Boston. Over the next ten years, climate mitigation can reduce our greenhouse gas emissions by 25 percent and produce net savings on energy bills of over \$2 billion for Boston residents and businesses. The demand for climate- and energy-related services and products will create thousands of jobs and many opportunities for businesses and creative entrepreneurs. Climate adaptation will ensure that the city's social and economic infrastructure remains strong.

The committees' recommendations for reducing greenhouse gas emissions and making Boston more resilient to climate impacts result from an intensive public process. Over the past year, leaders of the community and government came together for over 20 working meetings to develop recommendations on buildings, transportation, adaptation, and public engagement. Nearly 500 people participating in five community workshops contributed their voices to the committees' deliberations and overwhelmingly supported Boston's doing as much as possible to tackle climate change. The committees benefited from the advice of experts from local universities, businesses, institutions, and many departments and agencies of City government. Finally, the committees learned from and integrated research and analyses done for the Commonwealth's climate mitigation and adaptation committees.

Mayor Menino, we know that the delivery of this report is only one stage in Boston's ever-deepening commitment to climate action. As your administration turns the recommendations into the City's formal Climate Action Plan and implements them—a process that will require further public hearings and other forms of public participation—you can call on us for additional support and advice. Addressing climate change requires the commitment of every segment of the Boston community. We are ready to do our part.

Sincerely,



Mindy Lubber
Co-chair



James W. Hunt, III
Co-chair



Dear Committee Members,

I accept this report with a tremendous sense of gratitude and an even greater sense of urgency. I want to thank the Climate Action Leadership Committee and the Community Advisory Committee on Climate Action for their service. I am eager to explore all of the committees' recommendations to prepare Boston for a more sustainable future, because climate change demands our attention now.

Thankfully, Boston is in a strong position to further decrease our carbon footprint and create more jobs for our residents in the green economy. Many businesses, institutions, and community organizations, and many of our residents are already pushing the environmental envelope. In city government, we have been just as innovative. My administration has launched the largest public housing energy efficiency project in our country's history; our city is well on its way to planting 100,000 trees by 2020 to cool our neighborhoods; the Renew Boston program has started connecting residents and businesses with energy efficiency resources; and, this summer, we are preparing to kick off a model bike share program.

Boston is also fortunate to have generous philanthropic partners in climate action. I thank the Barr Foundation and The Boston Foundation for providing the financial resources that were essential for obtaining the facilitators, consultants, and logistical support that the committees' work required.

With all of this momentum, I am excited about the committees' recommendations to take our work citywide and engage all stakeholders—from government to businesses, from institutions to neighborhood groups—in our efforts to mitigate and adapt to climate change. That means more energy-efficient homes, healthier and cleaner neighborhoods, and wider economic opportunities for all.

I look forward to continuing our work with the committees and all parts of the Boston community to make sure that our city is at the forefront of climate action.

Sincerely,

A handwritten signature in black ink that reads "Thomas M. Menino". The signature is fluid and cursive, with the first name being the most prominent.

Thomas M. Menino
Mayor of Boston



Changing the climate, changing the city

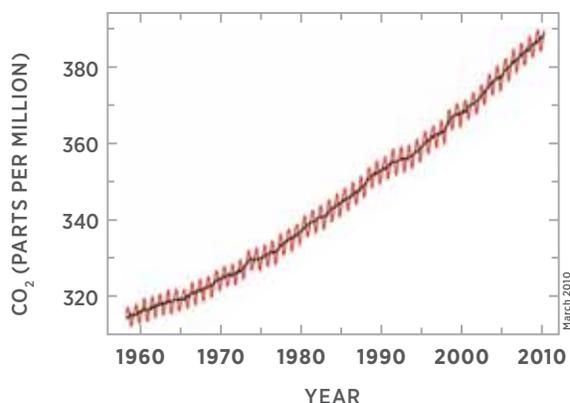
In the atmosphere, concentrations of carbon dioxide and other greenhouse gases are increasing. All over the Earth, temperatures are going up; sea levels are rising. This is global climate change. Everything that depends on air, earth, and water must adjust. This includes Boston.

If current trends continue, climate change within this century could be more radical than at any time in the last several hundred thousand years. In Boston, heat waves and smog alerts will become more frequent. Flooding from coastal storms will become more common and more extensive. These, in turn, will affect the health of residents and visitors, the safety of neighborhoods, the success of businesses and institutions, the viability of plants and animals in local parks, and the ability of the government to cope with short-term emergencies and longer-term stresses. Potential costs for medical care, property and infrastructure repair, and lost opportunity figure in the billions of dollars. There is uncertainty about the speed at which these things will occur, but they have started.

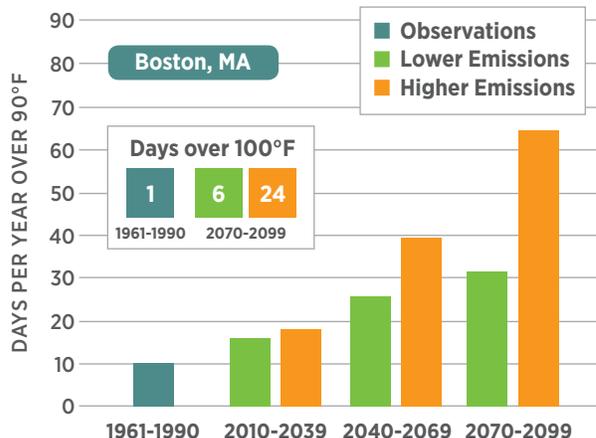
Cities are in a unique position to take climate action, to reduce future climate change and prepare for the changes that will come. They are small enough to see the threats concretely, nimble enough to move quickly, big enough to gather resources. City governments know their residents, businesses, and institutions individually, and can work with them as partners, hear their particular concerns, find creative solutions together. And some cities, including Boston, have been taking climate action for ten years or more: they understand the problems and have seen progress in addressing them.

Boston cannot stop climate change by itself nor eliminate all the risks. But Boston can—and must—take meaningful action.

Atmospheric Carbon Dioxide Levels



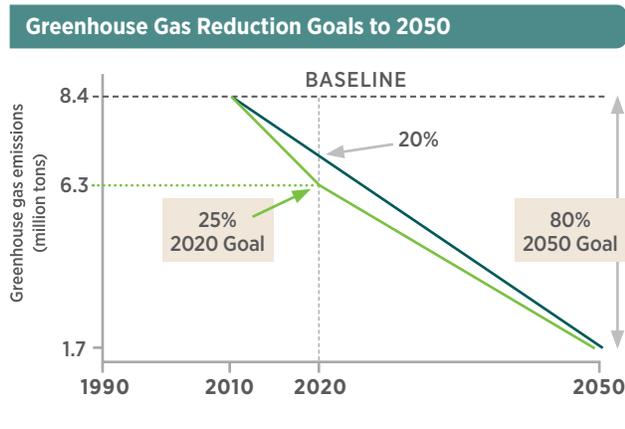
High-Degree Days—Projections



Ready for action

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

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



2 Climate adaptation: Boston City Government—with the participation of other levels of government—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.

3 Public engagement: Boston City Government must lead the effort to engage all segments of the Boston community—residents, businesses, institutions, and government—in working together and taking responsibility for reducing greenhouse gas emissions, participating in climate planning and policy development, and adopting a longer-range perspective that will help the city to adapt as knowledge of climate change grows.

4 Economic development: 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. By capitalizing on its inherent efficiencies and lower per person greenhouse gas emissions, Boston, as a regional focus for both residential and commercial growth, can contribute to the reduction of regional emissions.

5 Leadership: The Boston community must ensure that responsibility for climate action is clearly identified within City Government, that leaders in all segments of the Boston community step forward, and that sufficient public and private resources, both within City Government and in the community at large, are dedicated to these goals.



Benefits exceed costs

There are many benefits to climate action:

- Investments in energy efficiency save energy and lower costs for residents and businesses
- Decreases in travel by cars save fuel and money and reduce congestion
- Reductions in air pollution from burning fuels improve public health and reduce healthcare costs
- Demand for energy efficiency and renewable energy services creates jobs
- Long-range planning creates a safer, cleaner, more prosperous city
- Education and outreach produce an active, productive, supportive community

By 2020, implementation of the climate mitigation recommendations will produce total net savings to Boston citizens, businesses, and institutions worth an estimated two billion dollars, mostly from reduced spending on energy, though specific benefits will vary according to many individual factors. These numbers do not include other indirect benefits, such as reducing air pollution and its effects on health. Financial benefits will be split about evenly between residents (through residential efficiency and personal transportation savings), and businesses and institutions.

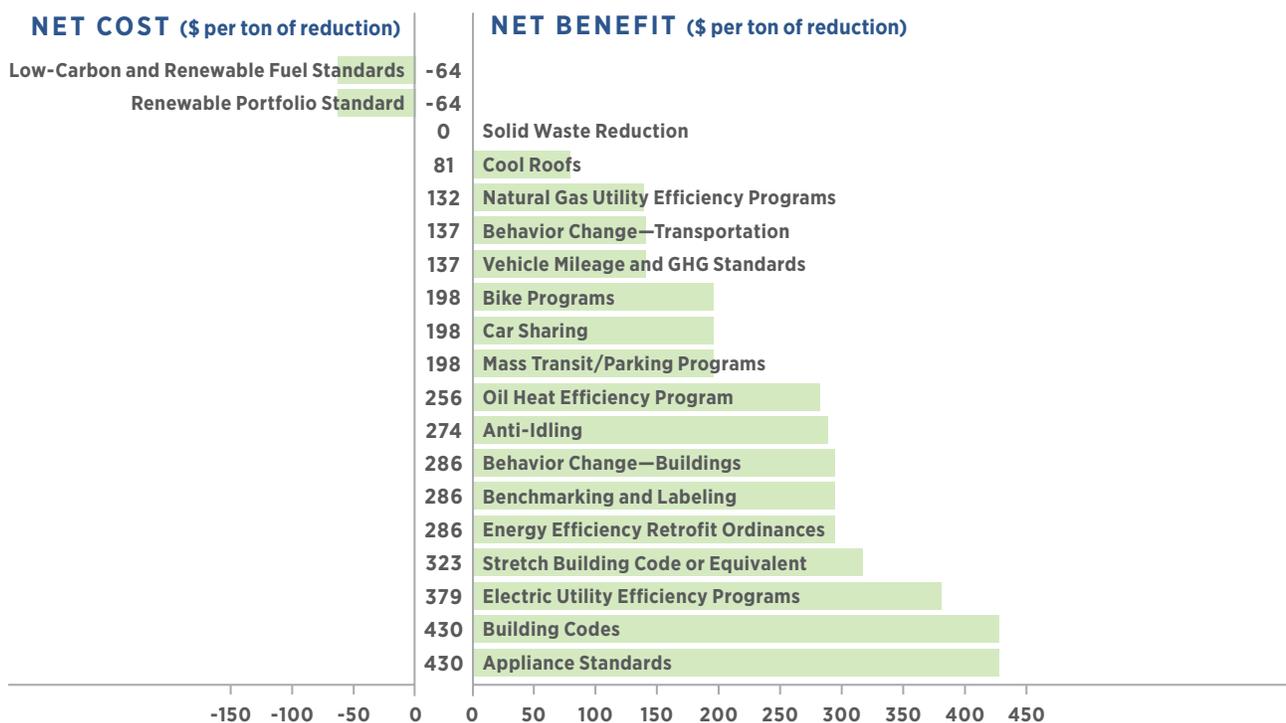
Climate action will create jobs in at least two ways. With reduced energy costs, residents and businesses will have more money to spend on investments, goods,

	Cumulative GHG Reductions through 2020 (thousand tons)	Total Net Savings (\$ million)
Buildings	6,750	\$ 1,670
Transportation	3,130	\$ 410
Solid Waste	140	\$ 0
TOTAL	10,020	\$ 2,070

and services that will increase economic activity. More directly, the need for builders, electricians, carpenters, energy auditors, and other skilled workers to carry out energy efficiency and renewable energy work will produce local, well-paying jobs. Training programs are already underway to ensure that Boston residents and businesses are ready to take on this work.

Climate action has even broader economic implications. Living and working in cities is, on average, more efficient and sustainable than in less dense areas. 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 direct residential and commercial growth toward Boston and other major cities, and Boston should emphasize urban efficiency when working with state and regional planning authorities.

Net Savings from Greenhouse Gas Reduction Measures



Everyone must contribute

A commitment to climate action asks people and businesses to make investments—to buy better equipment, to pay energy contractors—though they will get a return in the form of lower utility and fuel bills.

And it asks them to change habits or develop new ones—to walk or bike instead of drive, to drive more slowly, to turn off a switch—and there are benefits here, too.

And it asks them to talk with their neighbors and co-workers, to change their neighborhoods and their workplaces.

Because the costs of inaction are high, because Boston has ambitious goals, effective climate action requires the help of every Bostonian.

Many residents, businesses, community groups, and institutions in Boston have already heard this message, are helping others to understand it, and are taking effective climate action. Boston City Government is setting an example by raising standards for its buildings, vehicles, and operations.

Now, everyone must be engaged through a public campaign that will unify the city in this effort.

That campaign should:

- Emphasize that all of Boston is 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 municipal employees as models for climate action and resources for the community

No person, business, or organization should be left out.



Everyone must benefit

Climate change will affect different parts of the city in different ways. Some areas will be more threatened by sea-level rise; others, by storm-swollen rivers. It will affect different people in different ways, some being more vulnerable to extreme heat and others to increased smog. In a similar way, the costs and benefits of climate action will not be the same for everyone. Residents and businesses who pay their own energy bills may see different financial results from utility efficiency programs than those who don't. 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 those with better public transit access or 9-to-5 jobs.

Climate action will benefit Boston collectively. To ensure that these 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



Summary of Boston Climate

Action	Status Existing, Expanded, Proposed	Jurisdiction Federal, Massachusetts, Boston	Share of 2020 Goal	Description
MITIGATION				
Buildings and Energy Sources — 67% of 2020 reduction goal				
Renew Boston and Electric Utility Efficiency Programs	Expanded	M, B	24%	Help residents and businesses access electric utility program resources for energy efficiency
Renewable Portfolio Standard	Existing	M	11%	Increase supply of electricity from new renewable sources
Renew Boston and Gas Utility Efficiency Programs	Expanded	M,B	7%	Help residents and businesses access natural gas utility program resources for energy efficiency
Appliance Standards	Existing	F	5%	Increase energy efficiency of appliances
Building Codes	Existing	M	2%	Raise energy standards for construction and renovation
Energy Efficiency Retrofit Ordinances	Proposed	B	7%	Require energy efficiency upgrades at time of sale
Behavior Change—Buildings	Proposed	B	3%	Motivate public to use buildings more efficiently
Oil Heat Efficiency Program	Proposed	B	3%	Establish energy efficiency program for heating oil and propane customers
Benchmarking and Labeling	Proposed	B	2%	Require publicly accessible energy efficiency ratings for buildings
Low-Carbon Standard for Heating Fuels	Proposed	M	2%	Reduce greenhouse gas from heating fuels
Stretch Code or equivalent	Proposed	M,B	1%	Raise energy standards for building construction above state base
Cool Roofs	Proposed	B	1%	Require light-colored or vegetated roofs
Transportation — 31% of 2020 reduction goal				
Federal/State Mileage and GHG Standards	Existing	F, M	14%	Increase fuel efficiency of vehicles
Vehicle Miles Traveled Reduction Strategies				Reduce vehicle use
Mass Transit/Parking	Expanded	M, B	5%	Encourage use of mass transit; raise parking costs
Car Sharing	Expanded	B	2%	Encourage use of car sharing
Bike Programs	Expanded	B	1%	Expand bicycle infrastructure
Behavior Change—Transportation	Expanded	B	4%	Motivate public to use vehicles more efficiently
Low-Carbon/Renewable Fuel Standards for Gasoline and Diesel	Proposed	F, M	5%	Reduce greenhouse gas from vehicle fuels
Anti-Idling	Expanded	B	<1%	Increase enforcement, expand education on idling
Solid Waste — 3% of 2020 reduction goal				
Commercial Solid Waste Reduction	Expanded	B	2%	Increase requirements and incentives for recycling
Residential Solid Waste Reduction	Expanded	B	1%	Increase requirements and incentives for recycling

Action Recommendations

Action	Description
ADAPTATION	
Give adaptation the same priority as mitigation	Develop an adaptation plan; focus on sea-level rise, heat waves, and extreme storms; engage all levels of government
Assess vulnerability	Conduct a vulnerability assessment; include a range of projections; give special attention to the most vulnerable; start considering potentially catastrophic, very long-term impacts
Remain flexible	Collect and analyze new data, establish an advisory group, revise plan triennially
Include climate change in all planning and review	Include in all formal development review and capital planning; identify “no-regrets”, “low-cost”, and “wait-and-see” strategies; begin adaptation planning case studies
Review impacts on existing programs and infrastructure	Require every municipal department and agency to undertake a formal review of consequences of climate change
ECONOMY	
Promote good, green jobs	Extend Boston Resident Jobs Policy to climate action; expand worker and contractor databases and training programs; ensure access
Promote economic equity	Ensure that costs and benefits of climate action are shared fairly throughout the community and do not exacerbate existing inequalities
COMMUNITY ENGAGEMENT	
Promote climate action at the neighborhood level	Partner with community organizations; develop local priorities; facilitate communication; acknowledge local work; create incentives for collective action
Collaborate with community in program development and implementation	Establish public commission; actively engage all segments of community in design and implementation of policies and programs
Support a citywide awareness campaign	Frame climate action in the context of broad community concerns; customize messages for subgroups; use traditional and new media
Equip individuals to take action	Develop accessible, interactive website; establish climate information centers; promote climate education in schools
Continue to lead by example	Raise standards for municipal buildings, vehicles, operations, and procurement; engage municipal employees as models of climate action
IMPLEMENTATION	
Secure sufficient human and financial resources	Draw on public, philanthropic, and private resources; designate official with climate action responsibility
Develop a detailed plan and monitor implementation	Specify priorities, sequencing, and responsibilities for climate action; develop indicators, targets, and metrics; gather data on effectiveness, difficulties, costs, and benefits



Reducing future climate change

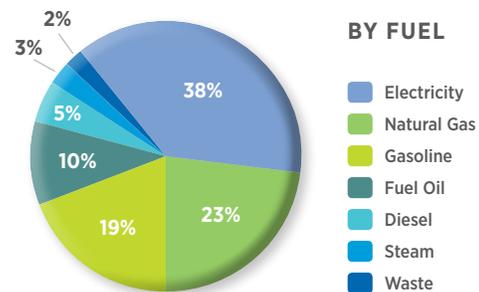
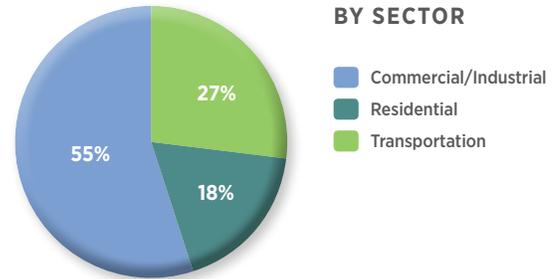
Human greenhouse gas emissions come primarily from the burning of fossil fuels—oil, gasoline, natural gas, coal. The general (though not unanimous) international understanding is that the world needs to reduce its total emissions by as much as 80 percent by 2050 to stabilize global climate.

The Boston community has already begun the process of reducing its emissions. Overall emissions have not changed much since 1990, despite an increase in the number of residents, businesses, and buildings. As a result of government policies, advances in technology, and concerted efforts of many members of the community, today Bostonians use energy more efficiently and rely on cleaner energy sources. And while there are more cars, Boston is still one of the least car-dependent cities in the country. To take the next step, to actually reduce greenhouse gas emissions, is going to require greater, more deliberate, and more sharply focused effort.

Boston can reduce its greenhouse gas emissions by 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 Reduction from 1990 Baseline
Buildings	17%
Transportation	7%
Solid waste and other	1%
TOTAL	25%

Boston's Current Greenhouse Gas Emissions



Making buildings more efficient

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

In the past few years, all levels of government have been establishing programs and policies to reduce energy use and greenhouse gas emissions from buildings.

Measures related to buildings 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 continue to wholeheartedly support these policies.

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. Over the next three years, Boston ratepayers will pay roughly \$145 million to fund utility energy efficiency programs, one-fourth from residential customers and three-fourths from commercial, industrial, government, and institutional customers. In 2009, Mayor Menino announced the Renew Boston program to ensure that Boston residents and business access their fair share of these resources and achieve the maximum benefit from the utility efficiency and state renewable energy programs. Renew Boston will provide guidance, coordination, monitoring of work quality, and verification of energy savings to Boston residents and businesses wanting to upgrade heating and cooling equipment, insulate walls, weatherize doors and windows, and take other efficiency steps. By 2020, assuming the utility programs continue as expected and the Boston community fully participates, Renew Boston and the utilities will help about 150,000 households (65 percent of total) and 30,000 businesses (70 percent) in Boston.

Renew Boston and Energy Efficiency

- 1 Outreach and Referral
- 2 Intake, Information, and Assistance
- 3 Financing Assistance
- 4 Job Creation and Contractor Support
- 5 Tracking and Strategy

Greater local incentives or requirements could ensure full participation in the utility programs and even help Boston's building owners to exceed those goals.

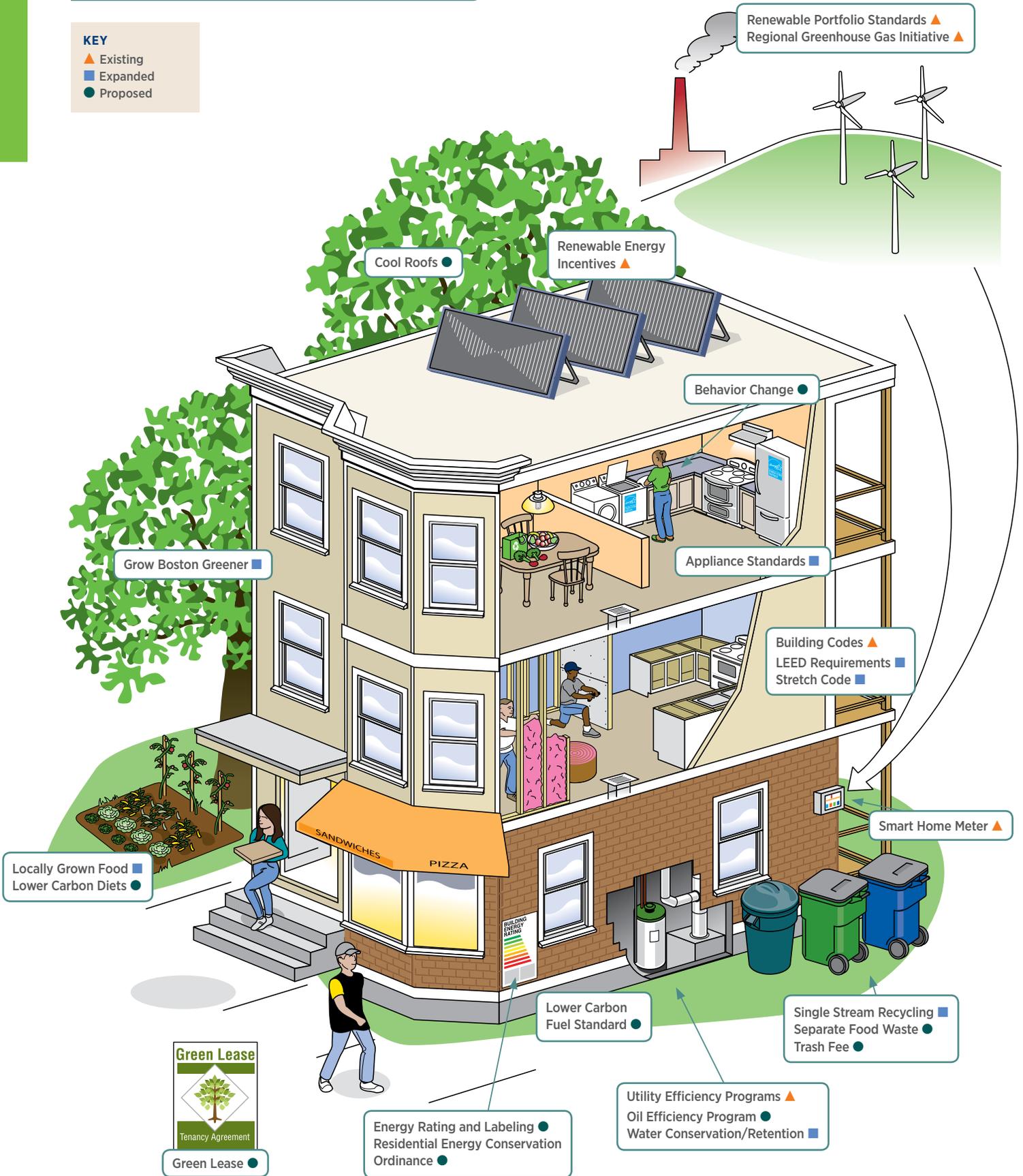
Boston City Government should:

- Require buildings to obtain labels that provide public information on energy performance and potential improvements (benchmarking and labeling)
- Require 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
- Encourage energy-conscious behavior changes in building use (for example, changing thermostat and water heater settings)

Climate Mitigation Policies and Programs for Buildings

KEY

- ▲ Existing
- Expanded
- Proposed



In the long term, it is just as important to continually raise the standards for new buildings as to upgrade existing ones. Boston'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, Boston City Government should take three additional steps:

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

As zoning code amendments and other measures go through their required public hearing processes, it will be important to hear from stakeholders to ensure that new measures do not create economic barriers to new development or give rise to social or economic inequities.

Not all measures should be implemented immediately. In some cases, voluntary action should be encouraged—perhaps by offering incentives—before imposing requirements. In other cases, a progression of mandated steps may be necessary.



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

Driving less

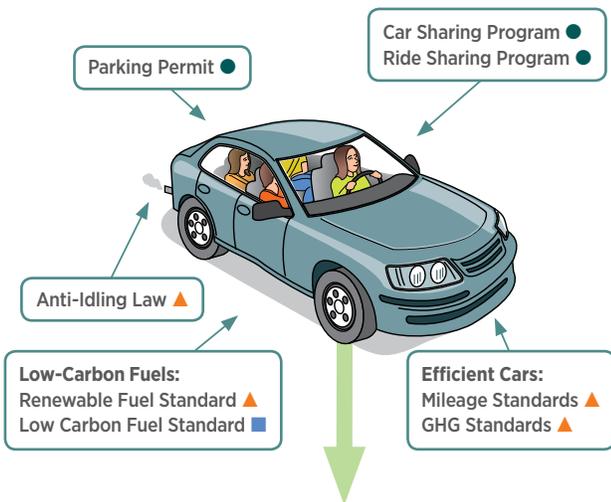
Most of the rest of Boston's emissions reduction goal can be achieved through changes in transportation. Some of the most important measures are already on the books. These are federal and state standards that require better fuel mileage for vehicles (CAFE standards) and directly lower their greenhouse 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.

The way that people 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 gasoline consumption, vehicle operating costs, and greenhouse gas emissions.

In addition to these steps, Boston must also reduce its reliance on cars. One of the major reasons that urban residents produce, on average, lower greenhouse gas emissions than those who live elsewhere is that they can more easily walk, bike, or take public transit to work, school, or almost anywhere they please.



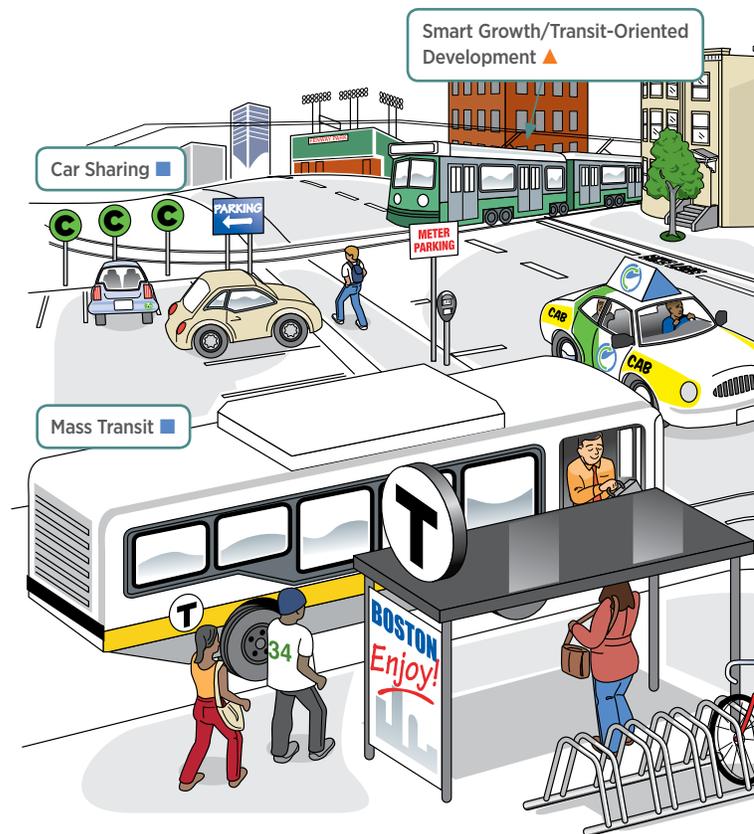
Climate Mitigation Policies and Programs for Personal Automobiles



Promote Alternative Transportation Modes



Climate Mitigation Policies and Programs for Transportation



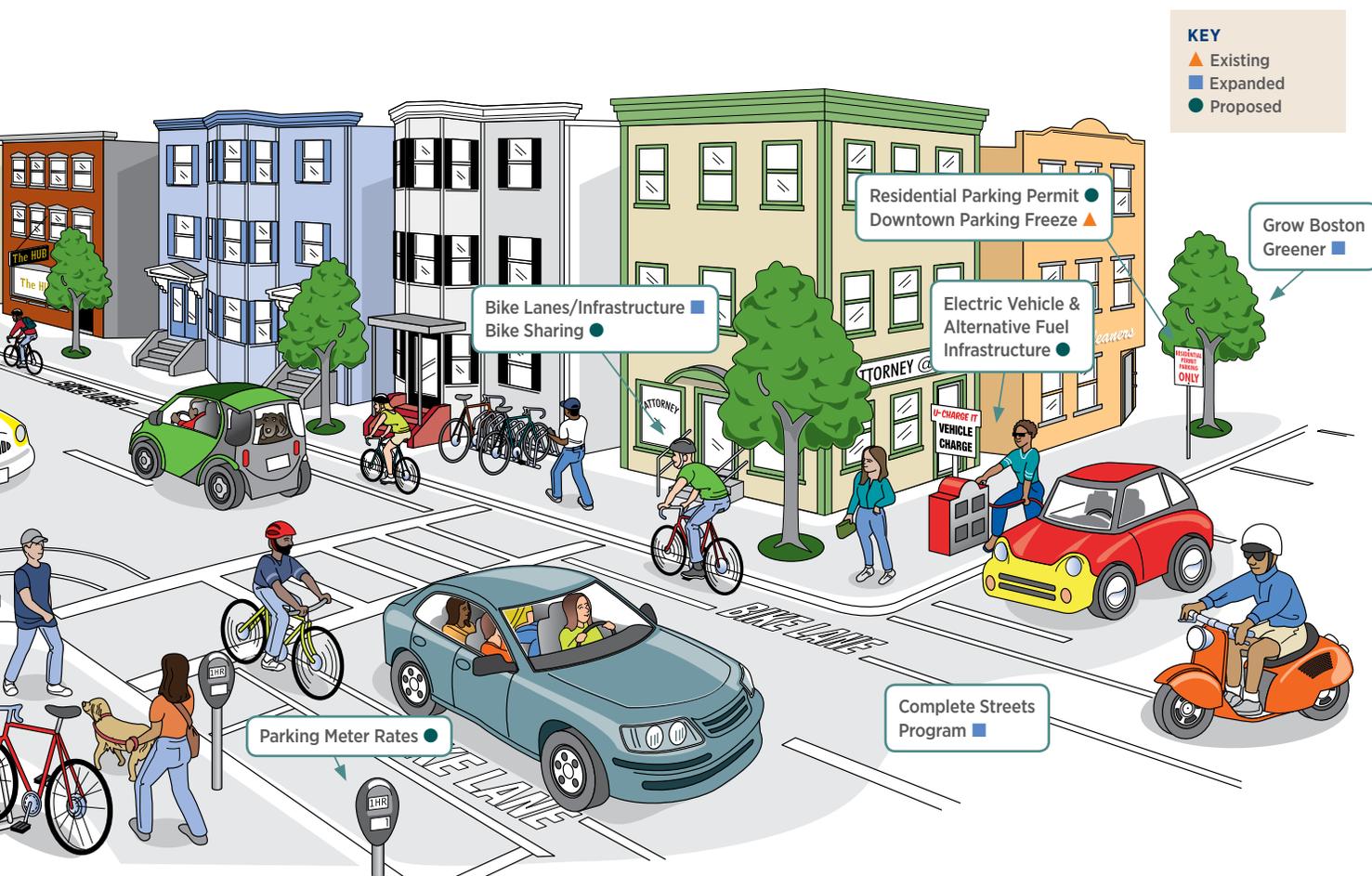
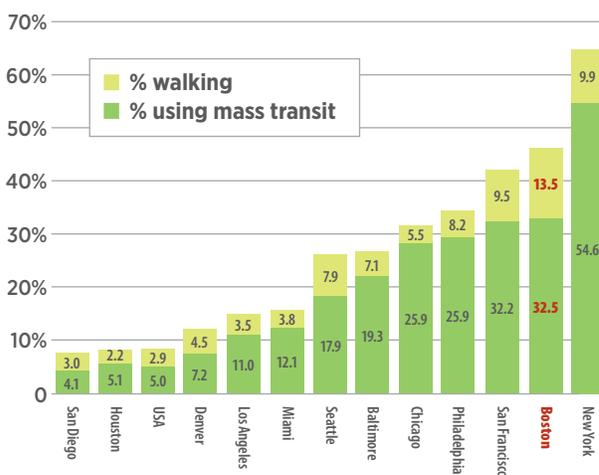
Vehicle travel is growing far more slowly in Boston than in the state and the region—with increases projected at only 0.25 percent a year; but Boston will not achieve its greenhouse gas reduction goals unless it can enhance the essential features of urban life and reverse this growth in vehicle travel. By favoring walking, biking, public transit and transit-oriented development, Boston should be able to reduce the amount of driving in the city by about seven and a half percent by 2020.

To do this, Boston City Government should:

- Accelerate the construction of bike lanes, the planned bike-sharing program, and other bike infrastructure
- 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
- Strengthen the downtown parking freeze

- Expand programs that help businesses reduce commuting by car by encouraging ridesharing, mass transit, and walking
- Use planning requirements more aggressively to reduce commuter driving and downtown commercial parking and create more pedestrian-friendly and bike-friendly streets

Getting to Work in Metropolitan Areas



The foundation necessary to make all the other programs work is a well functioning public transit system that serves as many of Boston's homes, businesses, and travel destinations as possible. Boston is fortunate to have an extensive public transit system with 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 (buses, rapid transit, and commuter rail) as well as the continued development of passenger rail, especially high-speed rail, between Boston and other major cities.

With these steps, Boston can become a city where many more individuals and families can live comfortably and conveniently without owning a car.

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



Lightening the 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. Even so, reducing greenhouse gas emissions from these services is necessary to meeting our goals and will also provide many additional environmental and economic benefits.

Reducing solid waste lowers disposal costs and reduces greenhouse gas emissions that arise 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 this refuse 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 to recycle.



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 recycling without sorting (single-stream)
- Establish mandatory residential and commercial recycling policies
- Charge a fee for trash pickup
- Develop a year-round composting program for all residential and commercial organic waste (food and garden waste)

Climate Mitigation Measures for Solid Waste	Proportion of 2020 reduction goal
Commercial Solid Waste Reduction	2%
Residential Solid Waste Reduction	1%
TOTAL	3%

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

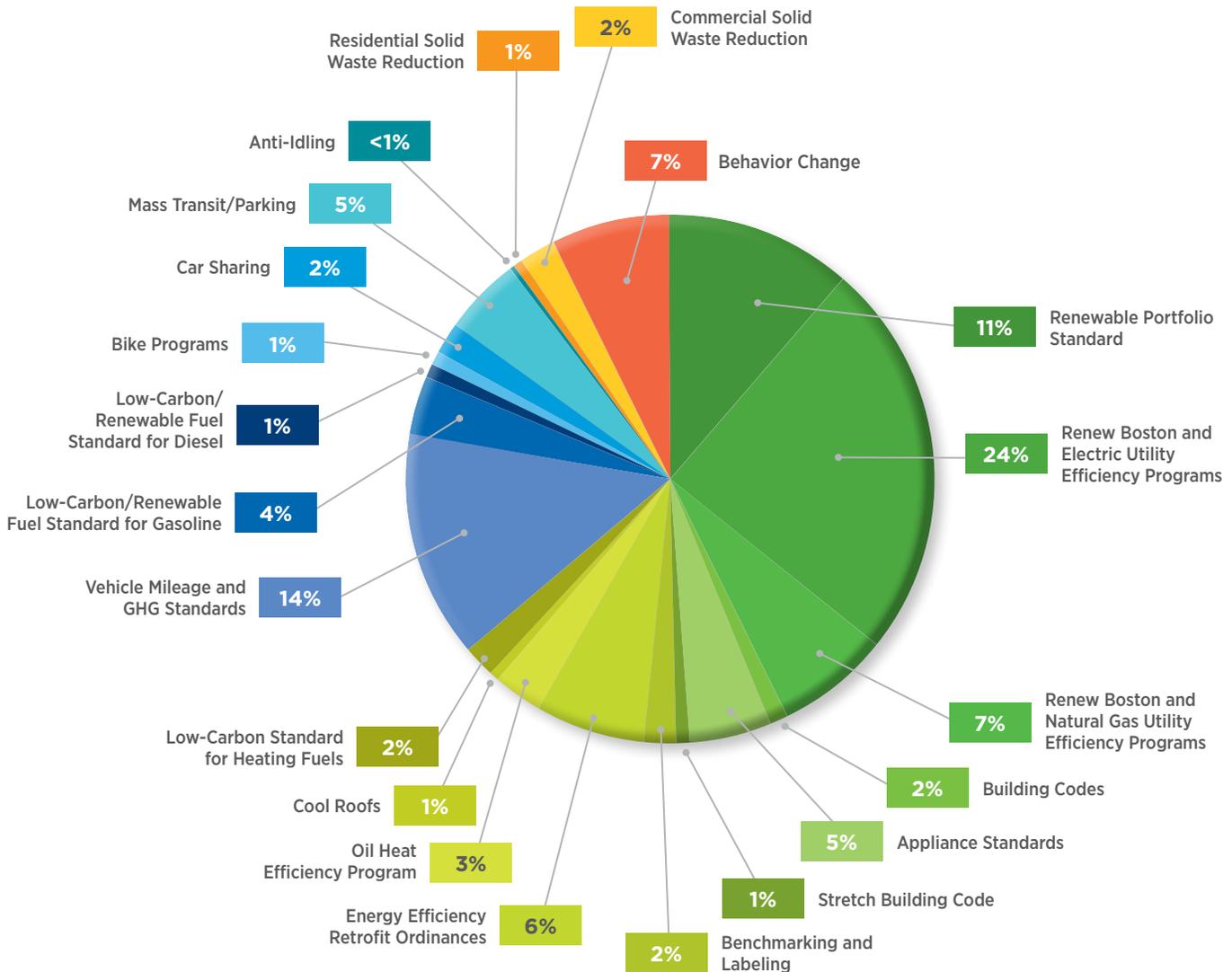


No single solution, no time to waste

Reducing greenhouse gas emissions 25 percent by 2020 is an ambitious, yet attainable goal that will bring economic, environmental, and health benefits to Boston. Reducing emissions can begin today with practices, technologies, and techniques that many people and businesses are already using. And we cannot afford to wait. Reaching the goal of 25-percent emissions

reduction requires commitment; the participation of all sectors of the community; coordination among all levels of government; and partnerships among government and residents, businesses, neighborhood groups, and institutions. It also requires that the community work in many areas simultaneously.

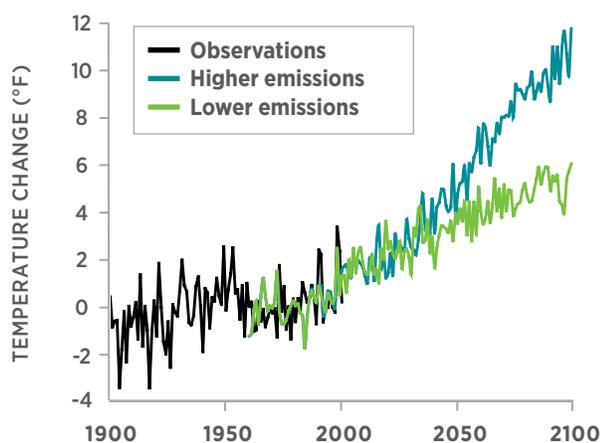
Boston 2020 Greenhouse Gas Reductions by Program — Shares of 2020 Goal



Preparing for change

The climate will continue to change even as greenhouse gas emissions come down. Lowering emissions now will bring significant returns in 20 to 30 years—and will achieve major results by the end of the century—in the form of lower than expected temperature and sea-level rise, and a reduction in other disruptive outcomes of climate change.

Projected Temperature Change in the Northeast



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

Climate adaptation is more multifaceted than mitigation, which centers on the overarching strategy of using less fossil fuel. For adaptation, 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, making streets and buildings more resistant to flood damage and rising sea levels—but some will require regional solutions—for example, actions to assure the viability of Boston Harbor or the Deer Island Sewage Treatment Plant.

Adaptation responses will also occur over varying time frames. Boston 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 initiative, Grow Boston Greener, in 2007, which will bring cooling and other benefits to the city; and new development in vulnerable areas can be designed with changing conditions in mind. Other responses may take years of planning and even more years of implementation, for example, long-term adjustments to the city's sewer system.

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

- Focus on three critical, near-term aspects of climate changes: sea-level rise, increased frequency and intensity of heat waves, and increased intensity of storms, and the economic and social impacts associated with them
- Assess Boston's vulnerability to climate change 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



Sparking the climate revolution...



There is much to do. The Boston community and its government will need to prioritize actions, establish benchmarks of progress and methods of measurement, prepare as well as possible, re-evaluate costs and benefits, and adjust programs and policies, while keeping long-term goals firmly in mind. As the public expression of that vision, a commission that brings together leaders from all segments of the community should be established to provide a regular forum for the discussion of progress, obstacles, and new ideas, for the evaluation and coordination of public and private

efforts, and for the energizing and re-energizing of a process that needs to engage every home, business, and organization in the city.

With eagerness to learn, flexibility to respond, concern for this generation and those to come, and willingness to share the burdens and benefits of climate action, Boston can—and should—grow, lead, and prosper. In the urgency of this moment—as at other tumultuous and historic times—Boston stands ready to act.



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Mayor's Office of Emergency Preparedness
Boston Public Works Department
Massachusetts Executive Office for Energy and Environmental Affairs
Massachusetts Department of Energy Resources
Massachusetts Department of Environmental Protection
Boston Region Metropolitan Planning Organization
Metropolitan Area Planning Council

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