



**A Plan to Protect and Improve Boston's
Environment**

August 7, 2013

Introduction

We borrow the earth from our children and we must all play a role in improving our environment and creating more sustainable communities for future generations. Greening our city and implementing a long-term approach to addressing climate change encourages economic growth and helps improve our public health and our overall quality of life. The safety and cleanliness of your environment should not be determined by your race, nationality or income level. By committing to these goals, we can make sure that we give our children a better city than we have today.

In the past several years, Boston has seen a renewed focus on reducing greenhouse gas emissions and combating climate change. Much of the renewed focus on the environment is the result of mounting evidence about the negative, long-term effects of climate change, including coastal flooding, higher temperatures, and more extreme weather; however, we must also work to improve our environment in ways that will make people happier and healthier, such as promoting urban agriculture and ensuring that every Boston resident has access to clean water, air, and green space.

The administration of Mayor Menino, along with community organizations, businesses, and residents, have introduced numerous programs to promote energy conservation, encourage Bostonians to use public transit or other alternative transportation, support “green” construction, reduce waste, and protect our natural resources. However, despite all the strides that have been made, there is tremendous work still to do. In Boston, we still rely far too heavily on fossil fuels. We have some of the highest levels of air pollution in the country and we recycle at rates far lower than other major cities. Mayor Menino, through the Climate Action Leadership Committee and the Community Advisory Committee, has established aggressive and detailed environmental goals for the next decade and beyond in Boston. These goals are achievable, but they will require tremendous collective effort on the part of city and state leaders, community organizations, businesses, and individual residents.

Protecting and improving our environment is also a matter of basic equity and fairness for our city’s residents. Research has shown that “communities of color and low-income neighborhoods – in Boston and statewide – shoulder a disproportionate share of environmental and environmental health burdens.”¹ As we work to decrease pollution and increase access to clean air, water, and green space, we must make sure that we are not simply redistributing the burden of detrimental environmental practices to our most vulnerable communities.

The next Mayor must have the vision and determination to take the lead in addressing Boston’s environmental challenges on a number of fronts, from creating new sources of clean, sustainable energy and ensuring residents have access to recycling and composting, to promoting green construction and ensuring environmental equity across the city.

The Current Picture

In order to develop an accurate picture of the health of Boston’s environment, it is necessary to take into account a wide range of indicators, from the level of greenhouse gas emissions in the city, to the rate of recycling among city residents, to the amount and condition of public green space. Only by considering such a range can we meaningfully evaluate the dual goals of conservation, lessening our impact on the environment and improving the health of all of our citizens.

Boston remains particularly vulnerable to the predicted effects of climate change, especially rising sea levels, because much of the city’s infrastructure is low-lying,² but Boston has made noticeable progress on reducing its overall greenhouse gas emissions, according to the most recent publication from the city regarding its Climate Action Plan. Overall GHG emissions dropped by nearly 750,000 metric tons between 2005 and 2011, a decrease of nearly 11%.³ The bulk of this decrease has taken place in the commercial/industrial sector and can be attributed to a number of factors, including Boston’s Renewable

¹ [“Environment & Energy: Trends and Challenges,”](#) The Boston Foundation

² [“Environment & Energy: Trends and Challenges,”](#) The Boston Foundation

³ “Boston Community Greenhouse Gas Inventories,” City of Boston, revised May 2013

Portfolio Standard, which requires energy utilities to acquire a portion of their electricity from renewable resources, and Renew Boston, which provides residents and businesses with financial incentives and support to make their homes and buildings more energy efficient. In fact, Boston has exceeded the goal of 7% reduction in GHG emissions by 2012 that was set by Mayor Menino in 2007.⁴ This is positive news but Boston continues to lag on other indicators of environmental impact.

Boston still has some of the worst air pollution in the country, our patterns of housing and economic development are having an overly negative impact, we still rely too heavily on fossil fuels, and we do not dispose of the majority of our waste in a sustainable manner. In 2011, "Suffolk County [had] more diesel pollution - 300 times the amount considered acceptable by the federal government - than 99 percent of the nation's counties," according to the Boston Globe.⁵ It currently ranks as the third most diesel polluted county in the country. While power plants and other industrial sources have actually decreased their emission of air pollutants over the past two decades, emissions from cars and other motor vehicles (including construction equipment) is now increasing.⁶ Overall, New England is one of the "most energy dependent regions on Earth," and Massachusetts is almost 90% dependent on fossil fuels for energy, compared with 60% for the nation as a whole.⁷ In addition, our patterns of residential and economic development are putting further strain on our environment. "Developers seeking to build transit-oriented mixed-use developments face a daunting array of local land use and other regulatory requirements," and "Greater Boston's use of land, energy and water is disproportionate to population growth, driven by an expanding number of smaller households occupying larger homes, more vehicles and more vehicle miles driven per person, and a spatial mismatch between population and job centers."⁸ Finally, we recycle less than 20% of our residential waste, well below the level of other major cities. All of these statistics illustrate the immensity of the remaining challenges in mitigating Boston's environmental impact.

The long term effects of climate change are serious for Boston. Indicators from across the city show that sea levels are projected to rise by between two and six feet by the end of the century, carbon dioxide concentrations in Allston are routinely higher than the global average, and the average temperature at the Blue Hills Observatory has increased by more than three degrees over the past century. If these trends are allowed to continue, Boston will experience widespread coastal flooding, more days like this summer's heat wave, and more extreme weather. The next Mayor must commit to building on the progress that was made during the Menino administration, and expanding Boston's environmental conservation efforts.

In addition to taking steps to protect and repair Boston's environment, the next Mayor must also work to ensure environmental justice for every city resident. Meta-analysis by the Boston Foundation showed that, in Boston, potentially environmentally hazardous sites were concentrated in communities of color and that residents of color have "higher rates of health problems that reflect environmental conditions such as lead poisoning and asthma."⁹

Between 2009 and 2011, black and Hispanic children in Boston were diagnosed with asthma at rates nearly 10 percent higher than white children.¹⁰ While Boston ranks fairly highly among other major cities in terms of the amount of green space in the city, that space is not evenly distributed and some communities, like Dorchester and Roxbury, have far less green space than other neighborhoods. While we strive to repair and protect our city's environment, we must also commit to ensuring that everyone benefits equally from improvements in building practices, decreasing pollution, and increased access to green space and public transportation.

6-Point Action Plan

1) Combat climate change by reducing reliance on fossil fuels and promoting renewable alternatives, working towards a goal of 100 Megawatts of wind power 50 Megawatts of solar installed in Boston by 2020.

⁴ ["Environment & Energy: Trends and Challenges,"](#) The Boston Foundation

⁵ "Boston is asked to tackle diesel pollution," Boston Globe, 12/19/2011

⁶ ["Environment & Energy: Trends and Challenges,"](#) The Boston Foundation

⁷ ["Environment & Energy: Trends and Challenges,"](#) The Boston Foundation

⁸ ["Environment & Energy: Trends and Challenges,"](#) The Boston Foundation

⁹ ["Environment & Energy: Trends and Challenges,"](#) The Boston Foundation

¹⁰ ["Environment & Energy: Trends and Challenges,"](#) The Boston Foundation

As we confront the growing reality of climate change, one of the most pressing challenges is to reduce our reliance on fossil fuels. We can do this by making meaningful investment in alternative energy sources, such as wind and solar. Despite the investments that have already been made in expanding sources of renewable energy, in 2011, the percentage of Massachusetts' energy consumption that came from wind and solar power was negligible.¹¹

In April 2010, the Mayor's Climate Action Leadership Committee released a detailed report regarding climate change and the environment in Boston. According to the report, in 2008, Boston was responsible "for the emission of about eight and a half million tons of greenhouse gas [GHG], about 14 tons per resident (per capita)." The majority of these emissions, a total of more than 80%, were related to commercial/industrial and transportation activities within the city. In terms of fuel type, the most GHG emissions were associated with electricity (which itself uses fossil fuels including coal, natural gas and oil), followed closely by natural gas and gasoline.¹² In its most recent assessment report, the Intergovernmental Panel on Climate Change (IPCC) concluded that global warming caused by the emission of fossil fuels will have a number of negative effects, including coastal flooding, increasing pollution, and adverse health effects related to heat, pollution, and weather events.¹³ There are several steps we can take to combat the impending effects of climate change:

- Divest from fossil fuels. Our investments should reflect our values. We should invest in renewable energy and not in an industry that is destructive to our environment and contributes to climate change. Over the past few years, we have seen other major cities, including Seattle and Providence, along with a number of colleges, religious organizations, and other groups pull their investments out of the fossil fuel industry. As we seek to decrease our reliance on fossil fuels as a city, state, and nation, we should not use our city's resources to support those companies that perpetuate that dependence.
- Provide support for wind energy projects. Over the past several years, the City of Boston has taken a number of steps to increase the level of wind energy produced, from installing wind turbines at Logan Airport¹⁴ to passing new zoning regulations for siting wind energy facilities.¹⁵ Despite these efforts, wind energy production in Boston, and throughout the Commonwealth, remains well below its potential. Currently, Massachusetts produces only 103 MW of wind energy annually, according to American Wind Energy Association. Combining onshore and offshore wind energy production, Massachusetts has the capacity to produce more than 200,000 MW of wind energy, or more than 12 times the state's current energy needs.¹⁶ As we seek to decrease our dependence on fossil fuels, the next Mayor must make it a priority to work with businesses and residents to tap into the immense potential of wind energy.
- Promote the widespread use of solar energy. Massachusetts currently ranks seventh in the nation in the amount of solar capacity installed per capita, a result of lower costs, tax breaks and other incentives, and new financing options that have made solar energy accessible to small-scale homeowners.¹⁷ Boston currently operates the Renew Boston Solar initiative, which aims to increase the solar energy capacity in Boston to 25 MW by 2015. The next Mayor must build upon this momentum and work with businesses and residents to expand the solar energy base, through untapped opportunities, like installing solar panels on the roof of the Boston Convention and Exhibition Center.¹⁸ In addition, the next Mayor should support research designed to make solar energy production more efficient, so that Boston can glean more energy from its existing solar infrastructure.

¹¹ ["Massachusetts: State Profile and Energy Estimates,"](#) US Energy Information Administration

¹² "Sparking Boston's Climate Revolution," Climate Action Leadership Committee/Community Advisory Committee (report), April 2010

¹³ "Climate Change 2007: Impacts, Adaptation, and Vulnerability: North America," IPCC, 2007

¹⁴ ["Wind Energy,"](#) City of Boston website

¹⁵ "A Climate of Progress: City of Boston Climate Action Plan Update 2011," CALC/CAC (report), April 2011

¹⁶ ["State wind energy statistics: Massachusetts,"](#) American Wind Energy Association

¹⁷ ["The sun state,"](#) Boston Globe, 7/27/2013

¹⁸ ["Convention Center needs to follow through on solar promise,"](#) Boston Globe (column), 9/1/2012

- Expand energy production through other renewable sources. In addition to wind and solar, Massachusetts also produces a substantial amount of energy through alternative, renewable sources, including hydroelectricity, wood waste, and municipal solid waste.¹⁹ The next Mayor should explore how Boston can take advantage of these other renewable resources as part of the overall effort to lessen our dependence on fossil fuels.

2) Promote green construction and deep energy retrofitting of older buildings.

As a city with a substantial amount of older infrastructure, Boston faces the dual challenge of incorporating green building practices into new construction while also retrofitting existing buildings to reflect advances in energy conservation practices. The next Mayor must work with stakeholders at the federal, state, and city level, as well as private parties, to successfully implement strategies designed to lessen GHG emissions from Boston's commercial, industrial, and residential buildings.

"In 2009, energy use in Boston buildings produced about 5.6 million tons eCO₂, approximately two-thirds of total community GHG emissions. Of those emissions, three-fourths came from commercial, industrial, and institutional properties, and one-fourth from residences," according to the city's 2011 Climate Action Plan update.²⁰ The 2011 update projects that energy efficiency improvements in buildings could account for more than half of the reductions in the effort to reach Boston's goal of reducing overall GHG emissions 25% by 2020. There are a number of steps the next Mayor can take to make this vision a reality:

- Continue to expand the innovative Renew Boston program. Renew Boston is a program that provides homeowners and businesspeople with low-hassle, no-cost energy assessments and provides financial support and incentives for residents and business owners to improve the energy efficiency of their homes and businesses. The vast majority of Boston's GHG emissions come from businesses and private residences; this program is an essential step in promoting common sense improvements that can help us reduce our GHG emissions.
- Continue to reform the city's zoning ordinances. The city's complicated and outdated regulatory environment continues to present challenges to creating sustainable, transit-oriented development in Boston. Mayor Menino has taken steps to promote green building practices through the city's zoning ordinances and the next Mayor must continue to integrate the city's sustainability and GHG emissions goals into the ordinances, as well as making it easier for developers to construct sustainable neighborhoods.
- Continue to expand and educate residents about smaller scale programs to conserve energy in businesses and private homes. Educating residents and business owners about the benefits of programs like LED streetlights and Lights Out Boston will help generate community buy-in that can create significant positive change in the amount of energy used by our residential and commercial buildings.

3) Ensure access to single-stream recycling at our public buildings, public parks and other public spaces and kickoff a curbside composting program that will divert organic wastes out of landfills and turn it into fertilizer for the city's community gardens.

In 2009, Mayor Menino announced the beginning of citywide, single stream recycling and distributed more than 55,000 recycling bins to households and apartment buildings throughout the city.²¹ Recycling keeps thousands of tons of waste out of landfills every year and, in addition to being good for the environment, is fiscally responsible; it cost \$40 less to recycle a ton of waste than it does to send that same ton to a landfill. However, despite the positive environmental and economic impacts of recycling, Boston lags behind other major cities in the percentage of waste that gets recycled.

Thanks to the city's efforts to promote and streamline recycling, Boston has succeeded in nearly doubling its residential recycling rate over the past five years. However, fewer than 1 in 5 pieces of household waste

¹⁹ ["Massachusetts: State Profile and Energy Estimates,"](#) US Energy Information Administration

²⁰ "A Climate of Progress: City of Boston Climate Action Plan Update 2011," CALC/CAC (report), April 2011

²¹ ["Mayor Menino announces citywide, single-stream recycling,"](#) Office of Mayor Thomas Menino (press release), 6/23/2009

gets recycled, accounting for only 19% of all residential garbage in the city in 2011. By comparison, cities like Seattle, San Francisco, and San Jose reported recycling rates upwards of 50% and others, like Memphis, Austin, and Jacksonville reported rates above 30%.²² There are many more steps we can take to ensure that less of the waste we create ends up in landfills:

- Ensure access to single-stream recycling in public buildings and parks. While the city has distributed tens of thousands of recycling bins to private residences throughout Boston, there is less consistent access to recycling on our public streets and in our government buildings and green spaces. The next Mayor must ensure that, next to every city trash can, there is a recycling bin.
- Introduce curbside composting to divert organic waste out of landfills. Another reason Boston lags behind in the rate of recycling is because most Boston residents do not have the opportunity to recycle their food and other organic scraps. In 2012, Hamilton and Wenham became the first communities east of the Mississippi to embrace organic curbside recycling. In addition to providing fertilizer for community gardens and farms, and cutting down the amount of waste in landfills, organic curbside recycling also costs less. In HW, the tipping fee for organic waste is \$30 less per ton than for solid waste.²³ The next Mayor should work to pilot an organic curbside recycling program and study the feasibility of expanding the program citywide.
- Improve education about the effects and availability of recycling. One of the reasons recycling advocates cite for Boston's lagging recycling numbers is the city's high number of immigrants, who may not be familiar with the concept of recycling or have access to educational materials in their language. In addition, the high turnover rate of students who may not know about Boston's recycling practices drags down our city's recycling numbers.²⁴ The next Mayor must make an effort to reach out to these groups and get them invested in Boston's recycling program.

4) Implement Diesel Emission Reduction Ordinance (DERO) to make our city air healthier and cleaner.

The next Mayor must take immediate steps to curb the level of diesel pollution in Boston. Air pollution as a result of diesel emissions has deleterious effects on human health, animal life, urban agriculture, personal property, and limits citizen activities out in the community; in addition, it is one of the primary causes of the asthma epidemic throughout Boston. In 2011, I proposed a city ordinance that would combat diesel pollution and I believe we can, and must, do more to address this long-running problem.

In 2011, "Suffolk County [had] more diesel pollution - 300 times the amount considered acceptable by the federal government - than 99 percent of the nation's counties," according to the Boston Globe.²⁵ It currently ranks as the third most diesel polluted county in the country, and over one-third of Boston's diesel pollution comes from construction equipment. According to the same Globe article, officials at the Boston Public Health Commission reported that at least 1 in 10 children in Boston suffers from asthma, which can be caused by exposure to diesel exhaust. Exposure can also be a factor in a range of illnesses, including cancer, stroke, and heart attack. There are several steps we can take to address this pressing issue:

- Set stringent standards for the maintenance and operation of vehicles owned and operated by the city. By ensuring that all diesel-powered vehicles owned and operated by the City of Boston use ultra-low-sulfur diesel fuel, limiting unnecessary idling to five minutes, and meeting EPA standards for emissions from post-2007 or have filters that remove at least 20% of diesel particulates from exhaust, we can cut down significantly on the amount of harmful diesel particulates in Boston's air.
- Apply similarly stringent standards to contractors seeking to do work with the city. In addition to retrofitting Boston's own fleet of diesel vehicles, the city must also ensure that contractors working on city projects adhere to similar standards. Contractor vehicles should be subject to the same standards as city-owned vehicles when it comes to diesel emissions. Unlike city vehicles,

²² ["Despite gains, city lags in recycling,"](#) Boston Globe, 6/19/2012

²³ ["Recycling organic material a next step,"](#) Boston Globe, 4/29/2012

²⁴ ["Despite gains, city lags in recycling,"](#) Boston Globe, 6/19/2012

²⁵ ["Boston is asked to tackle diesel pollution,"](#) Boston Globe, 12/19/2011

however, contractor vehicles should be required to meet post-2007 EPA standards or have filters that remove at least 85% of particulates.

- Educate and inform city officials, contractors, and residents about the harmful effects of diesel exhaust and create programs to assist in the transition to more environmentally friendly vehicles. Securing buy-in from contractors and residents is essential in the fight against diesel pollution; the city should provide educational materials that describe the negative health and environmental effects of air pollution. In addition, the Air Pollution Control Commission should consider instituting grant programs to help contractors defray the cost of retrofitting equipment.

5) Improve public and sustainable modes of transportation

Emphasizing and expanding our public and alternative transportation infrastructure is a key to reducing Boston's negative environmental impact. Thousands of riders take advantage of the MBTA's commuter rail, subway, and buses every day, but we can do better. We must make sure that mass transit remains easy and affordable for every resident, and we must ensure residents have practical, inexpensive, and sustainable transportation alternatives to driving alone: biking, walking, and car sharing.

If we are serious about limiting our carbon footprint and making Boston a more sustainable city, we must become a city that will promote and prioritize all active and affordable forms of transportation so Bostonians can get around the city safely. All Bostonians' quality of life will be improved by safer, easier, more affordable, and more enjoyable commutes. The next Mayor must:

- Work to ensure adequate funding for the MBTA. After a 23% fare increase in 2012, the first in half a decade, MBTA officials warned that if there is not new state funding, the agency might be forced to increase fares even more.²⁶ The next Mayor must pressure state leaders to provide adequate funding for the MBTA to address its maintenance backlog and extend service to underserved communities. Ensuring that public transportation remains an accessible and financially feasible option for every metro Boston resident must be a priority of the next administration.
- Increase bicycle safety and improve bicycling infrastructure. Thanks in large part to the BRA's Boston Bikes program, bicycle ridership has more than doubled since 2007. We can continue to ride the momentum, towards a goal of a 10% mode share for cycling by 2020. Continued infrastructure improvements must include more physically separated bike lanes - cycletracks - linking neighborhoods with the "Bike Network Plan." Forward thinking street design in tandem with safety education efforts, data collection, and collaboration can make Boston a model bike city. We will expand the city's successful community outreach programs as "Roll it Forward" and "Bike to Market," helping young people in public schools ride safely on two wheels and offering free repairs at farmers markets in low-income neighborhoods.
- Support and expand Hubway bike-sharing program. Hubway exceeded expectations since its inception in July, 2011; the program has grown from 600 bikes and 60 stations to more than 1,000 bikes and 100 stations throughout Boston and surrounding communities. By May, 2013, Boston had more than 60 miles of dedicated bike lanes.²⁷ Moving forward, the next Mayor must continue to work with Boston Bikes and residents to make bicycle travel in Boston safer and more accessible by adding more bikes and stations to the Hubway system and extending Boston's network of bike facilities.
- Encourage walking and increase pedestrian safety. Pedestrians will benefit from more crosswalks and considerations at our most dangerous intersections, snow removal from paths and sidewalks, and traffic calming. A reduced citywide speed limit, speed bumps, and innovative signage are simple cues for drivers to travel more slowly through our neighborhoods that can be inexpensive and very effective. Economic development results from "complete streets" as pedestrians and bicyclists are likely to stop and shop in stores they pass on their routes.

²⁶ ["MBTA budget calls for fare hikes if no new state aid,"](#) Boston Globe, 3/28/2013

²⁷ ["State of the Hub: Boston Bikes 2012 Update,"](#) Boston Bikes, May 2013

- Incorporate multi-modal transportation into new developments and redevelopment of existing residential areas. Promoting “smart growth” development will help ensure that Boston’s burgeoning business and residential districts provide residents and visitors with multiple transportation options, including mass transit, bikes, and walking. Making our city’s hubs complete, compact, and accessible while encouraging alternative methods of transportation is essential to decreasing the number of cars on Boston’s road at the same time as improving air quality and livability.

6) Protect Boston’s green spaces and support urban agriculture

Boston is blessed to have a wealth of natural spaces, from the Charles River to the Emerald Necklace. These open spaces provide Boston’s residents with a place to play, relax, and escape the general congestion of city life. Protecting and improving these natural resources is essential to guaranteeing equitable environmental health for all of Boston’s residents. There are a number of steps that the next Mayor can take to ensure each resident has access to vibrant green space and healthy, locally grown, organic food:

- Work to preserve and expand Boston’s open spaces. According to the Trust for Public Land, Boston “ranks 5th among high-density cities in parkland as a percent of total land area (16.3%), 2nd in acres per residents (8.3), and 9th in playgrounds per 10,000 residents (3.6).” This wealth of green space is one of Boston’s greatest assets and the next Mayor must make sure our urban wild places are maintained in safe and pleasant condition and are universally accessible.
- Support article 89, which will dramatically expand urban agriculture in our city. Earlier this year, the Mayor’s Urban Agriculture Working Group and the BRA drafted a new section of the zoning code to address the interest in urban agriculture. The next Mayor should support the pilot program suggested by the working group’s proposal, followed by the citywide rollout of rezoning initiatives that support urban agriculture; these steps will give many Boston residents access to locally-sourced, fresh, and healthy, organic food that they might not otherwise have access to.²⁸
- Support the Grow Boston Greener initiative. Grow Boston Greener is a program with the goal of planting an additional 100,000 trees in Boston by 2020. These additional trees will make the city cooler overall, absorb air pollution, improve the aesthetic appearance of the city, and add to overall quality of life. Supporting this program is a simple step the next Mayor can take to improve Boston’s environment for all of the city’s residents.

Conclusion

Boston has made important strides towards mitigating our environmental impact and ensuring a healthy living and working environment for all of our residents, but tremendous challenges remain. Protecting our environment and ensuring universal access to clean air, water, and green space is essential to guaranteeing the health of our people and economy for this and future generations. It is also a matter of basic fairness. It is one of the primary responsibilities of government to ensure that everyone, regardless of race or income, has a healthy environment in which to live, work, and raise a family. Over the past few years, Boston has laid down a solid foundation for protecting our environment and has established ambitious goals for lessening future impacts and greening our city. We can, and must, achieve these goals, but it will take the focused and patient effort of a broad-based coalition of state and city leaders, community organizations, business leaders, and everyday residents. The next Mayor must take the lead in forming this coalition and pursuing the steps that will allow us to hand down a sustainable city, state, and country to our children and grandchildren.

²⁸ [“Urban agriculture rezoning,”](#) BRA, May 2013