

**Boston Climate Action Plan
Mitigation Measures: Savings, Descriptions, and
Recommendation Language
February 3, 2010**

Table 1: 2020 Savings by Measure

Mitigation Measures	2020 Percent Reduction in GHG
Buildings (total)	16.9%
Renewable Portfolio Standard	2.9%
Utility Energy Efficiency Programs (Electric)	6.1%
Utility Energy Efficiency Programs (Gas)	1.8%
Building Codes	0.3%
Appliance Standards	1.3%
RGGI*	
Proposed Laws and Programs:	
Stretch Building Code	0.1%
Benchmarking and Labeling	0.5%
Energy Efficiency Retrofit Ordinances	1.6%
Oil Heat Efficiency Program	0.8%
Cool Roofs	0.2%
LCFS For Heating Fuels	0.5%
Behavior Change (buildings)	0.8%
Transportation (total)	7.6%
CAFÉ/Pavley	3.4%
Proposed or Expanded Laws and Programs:	
Low-Carbon Fuel Standard/Renewable Fuel Standard (gasoline)	1.0%
LCFS/RFS (diesel)	0.2%
Vehicle Mile Traveled Reduction Strategies	
Bike Programs	0.2%
Car Sharing	0.5%
Other Programs--Mass Transit/Parking	1.2%
Anti-Idling	0.04%
Behavior Change (transportation)	1.1%
Other (total)	0.7%
Residential Solid Waste Reduction	0.2%
Commercial Solid Waste Reduction	0.5%
Total	25.2%

Table 2 Mitigation Measures by Status, Jurisdiction, and Fuel Type

Mitigation Measures	Status		Jurisdiction			Fuel				
	Approved	Proposed	Boston	MA	Federal	Electricity	Natural Gas	Fuel Oil	Gasoline	Diesel
Buildings (total)										
Renewable Portfolio Standard	X			X		X				
Utility Energy Efficiency Programs (Electric)	X			X		X				
Utility Energy Efficiency Programs (Gas)	X			X			X			
Building Codes	X			X		X	X			
Appliance Standards	X				X	X	X			
RGGI*	X			X		X				
Stretch Building Code		X	X			X	X			
Benchmarking and Labeling		X	X			X	X			
Energy Efficiency Retrofit Ordinances		X	X			X	X			
Oil Heat Efficiency Program		X	X					X		
Cool Roofs		X	X			X	X			
LCFS For Heating Fuels		X		X				X		
Transportation (total)										
CAFÉ/Pavley	X			X	X				X	
Low-Carbon Fuel Standard/Renewable Fuel Standard (gasoline)		X		X	X				X	
LCFS/RFS (diesel)										X
Vehicle Mile Traveled Reduction Strategies										
Bike Programs		X	X						X	
Car Sharing		X	X						X	
Other Programs--Mass Transit/Parking		X	X						X	
Anti-Idling		X	X						X	X
Other (total)										
Residential Solid Waste Reduction		X	X			X				
Commercial Solid Waste Reduction		X	X			X				

This document lists all existing mitigation measures—federal, state, and local—and Leadership Committee recommendations that will enable Boston to reach its mitigation goals. The measures are listed in roughly the order in tables 1 and 2. Each item includes a description of the measure, the relevant Leadership Committee recommendations, and an estimate of the measure’s percentage reduction of total Boston community greenhouse gas (GHG) emissions in 2020. Some measures described below are not included in the tables above because they are essentially sub-components of other measures or produced relatively small GHG reductions (though they might still be important for other reasons).

The calculations and assumptions behind the GHG reductions are included in the accompanying spreadsheet.

Buildings (2020 GHG Reductions: 16.1%)

Renewable Portfolio Standard

2020 GHG Reduction: 2.9%

State Renewable Portfolio Standard [existing measure]

The Renewable Portfolio Standard (RPS) requires that electricity suppliers provide a certain percentage of energy from new renewable sources. The RPS, revised as part of the Commonwealth’s Green Communities Act, now increases the required percentage of renewable energy by 1% per year through 2020, by which time 15% of electricity sales must come from renewables. In addition, the state adopted an Alternative Energy Portfolio Standard that will result in an additional 5% of electricity sales to come from combined heat and power and other alternative energy sources. This will result in a total of 20% of electricity sales coming from renewable and alternative energy sources by 2020.

LC RPS Recommendation:

- Continue to support state efforts to fully implement and enhance the RPS.
- Continue its efforts related to the development of renewable energy resources inside the City including: Solar Boston, the program to encourage widespread adoption of solar energy in Boston and increase solar capacity to 25 MW by 2015; and Zoning Code Article 88, the wind zoning rule.
- Develop requirements for all newly constructed roofs with solar access to be “solar ready” for potential future retrofit of solar PV, solar DHW, or both

Renew Boston and Utility Energy Efficiency Programs (Electricity and Natural Gas)

2020 GHG Reduction: 7.9%

Utility efficiency programs and least-cost procurement [expanded measure]

The Green Communities Act mandates that utilities procure power at the least-cost option, which includes energy efficiency. As such, utility spending on energy efficiency is expected to triple over the next several years, and will benefit residential and commercial customers in the form of rebates and other programs to assist with efficiency improvements. (Estimated to be roughly \$80 million per year for Boston by 2012 – split approximately 20-25% for residential customers and 75-80% for commercial, industrial, municipal and institutional customers.)

Renew Boston (energy-efficiency and renewable energy strategy) [new measure]

Renew Boston is developing a comprehensive strategy to increase the participation of all elements of the Boston community—residents, businesses and institutions, and government—in efficiency and renewable energy programs offered by the City of Boston, utilities, and the State and federal governments. This program will benefit from ARRA funding via Energy Efficiency Community Block Grants and the increased funding to utility programs, including the state-wide energy efficiency and renewable energy System Benefit Charges.

LC Utility Program and Renew Boston Recommendations:

- Support the efforts of Renew Boston and the utilities to ensure that Boston residents, businesses, and institutions fully participate in available utility efficiency programs, including outreach and educational strategies for harder-to-reach low income residents, renters, and small businesses.

Building Codes

2020 GHG Reduction: 0.44%

Building Codes (normal updates on 3-year cycle) [existing measure]

In accordance with the Green Communities Act, the Commonwealth adopted in 2009 the most recent International Energy Conservation Code (IECC), and will adopt the IECC's regular three-year updates within one year of its promulgation.. The state code includes a more efficient "stretch code" that cities may opt into.

LC Building Codes Recommendations:

- Continue code enforcement to ensure new construction compliance with regular building and energy code updates
- Support the regular update of the building code and continue to ensure enforcement as well as adequate training for contractors and inspectors
- Evaluate potential conflicts between the energy code and Boston's requirements for historic preservation and other requirements for aesthetic, historical, and cultural purposes. Design measures to resolve these conflicts
- Work with the State to adopt the stretch code in Boston
- Work with the State to eliminate disparities in energy standards for construction in new and existing buildings

Programs that mandate LEED Standards [existing measure]

Boston has several programs that require certain building types to achieve standards based on the LEED rating system. These include the Green Affordable Housing Program, under which the Department of Neighborhood Development requires projects that it funds to meet the LEED Silver standard, and Zoning Article 37, which requires large private projects (over 50,000 square feet) to be "LEED Certifiable under the most appropriate LEED building rating system."

The City has other tools that might be useful in creating stepped incentives (and disincentives) that could lead developers and builders to exceed energy and LEED requirements. These include property tax abatements, tax credits, grants, and height and density development criteria.

LC LEED Requirements Recommendation:

- Continue to support LEED requirements while reducing the project size threshold that triggers the requirements
- Design and implement performance incentives to achieve energy efficiency levels beyond code and City LEED requirements.

Appliance Standards

2020 GHG Reduction: 1.3%

Appliance standards (Utility appliance rebate programs) [expanded measure]

The federal government issues minimum efficiency standards for appliances and also coordinates the Energy Star program to promote the most efficient appliances. Although states can also issue standards for appliances not covered or otherwise preempted by federal standards, most major appliances are already covered by the federal standards or will be in the next few years.

LC Appliance Standards Recommendations:

- Actively support adoption of federal and state appliance standards
- Provide outreach and education to residents through Renew Boston to encourage the purchase of high efficiency appliances
- Encourage residents to work through Renew Boston to use utility rebates and other financial incentives when procuring new appliances

The Regional Greenhouse Gas Initiative (RGGI)

RGGI is a mandatory GHG cap-and-trade program for the electric power sector in ten northeastern states, including Massachusetts. The cap will gradually decrease to provide a 10-percent emissions reduction in the electric power sector by 2018. (GHG reductions are not shown separately for RGGI, because GHG savings from all other electricity-focused programs included here are implicitly part of RGGI. Adding RGGI savings would result in double-counting.)

LC RGGI Recommendation:

- Continue to support state efforts to fully implement and enhance RGGI

Benchmarking and Labeling

2020 GHG Reduction: 0.5%

More tools are becoming available that can provide a summary of a building's overall energy performance and, often, detailed recommendations for improvements. (For example, HERS, ASHRAE, Energy Star Portfolio Manager; also see recent benchmarking/reporting programs adopted by Washington, DC and New York City.) Such programs provide information to owners, residents, and prospective buyers and tenants that, through education and the operations of the market, create incentives to participate in energy efficiency programs.

Home Energy Rating and Labeling [new measure]

LC Residential Rating and Labeling Recommendations:

- By 2012, create a labeling program (or adopt an existing one) for all Boston residential properties
- Require that labeling information be available for all prospective owners or tenants
- Link this program with formal, certified energy audits and actionable reports through Renew Boston to utility incentive programs

Benchmarking and Labeling of Existing Commercial Buildings [new measure]

LC Commercial Benchmarking and Labeling Recommendation:

- By 2012, implement an energy benchmarking/labeling program based on Energy Star Portfolio Manager (or a similar tool) for all commercial buildings over 100,000 square feet.
- Phased in this program for all commercial buildings over 5,000 square feet by 2015.
- Require annual updating of benchmarking data and ensure that it will be publicly available
- Work with utilities to develop protocols for automatically transferring utility consumption and billing data to Portfolio Manager

Energy Efficiency Retrofit Ordinances

2020 GHG Reduction: 1.6%

The benchmarking and labeling program is designed to provide a strong motivation for building owners and tenants to participate voluntarily in energy efficiency programs. However, the exigency of greenhouse gas reduction will likely require, at some point, that participation be mandatory. A program that some other municipalities (e.g., San Francisco) have adopted that requires efficiency improvements—if not previously implemented—at the time of sale looks promising. The required measures should be tied to the same energy evaluations used for the benchmarking and labeling program. Required improvements can be capped by an absolute dollar amount or tied to a percentage of the sale price. As with all other building efficiency measures, this program should also be tied to Renew Boston.

Residential Energy Conservation Ordinance (RECO) [new measure]

LC RECO Recommendation:

- Adopt a Boston RECO that includes all owner-occupied, rental housing, and condominiums by 2015

Commercial Energy Conservation Ordinance (CECO) [new measure]

LC CECO Recommendation:

- Adopt a Boston CECO by 2016 that includes all commercial property over 5,000 square feet

Oil Heat Efficiency Program

2020 GHG Reduction: 0.8%

Oil energy efficiency (including fuel switching) [new measure]

About a quarter of the residences of Boston get their heat from fuel oil. Although some of the utility efficiency programs—particularly those run by electricity utilities—may provide efficiency measures for low-income heating oil customers, there is no specific program targeted at heating oil customers, and many of them will be unaware of what is available.

LC Oil Efficiency Recommendations:

- Develop an aggressive oil related energy efficiency program that is comparable to efficiency programs for gas and electric (utility programs).
- Promote fuel switching to less carbon intensive fuels (e.g. bio-diesel, biomass pellets, natural gas, solar), potentially in conjunction with a state/regional low-carbon fuel standard (see below).
- Consider a surcharge on oil sales comparable to the current electric and gas system benefit charge, or other funding sources

Green Lease [new measure]

One of the problems of building efficiency programs is the “split incentive.” For example, the owner of a multi-unit residential building has little incentive to insulate the entire building, if the building is separately metered and the tenants pay their own heating bills,. A “green lease”—and they exist in many forms—is a lease agreement that allows tenants and owners to share, in some way, both the cost of efficiency improvements and its the benefits

LC Green Lease Recommendation:

- Develop a model green lease and make it available to both residential and commercial tenants/owners
- Design incentives and educational material to encourage use of the green leases

Low-Carbon Fuel Standard/ for Heating Fuels

2020 GHG Reduction: 0.5%

Low Carbon Fuel Standard [new measure]

The Commonwealth is working with 10 other northeastern states to develop and implement a regional fuel standard that will reduce the carbon intensity of transportation fuels 10 percent by 2020. The states are considering including a similar standard for heating fuels.

LC LCFS Heating Fuel Recommendation:

- Encourage MA to include a regional low-carbon fuel standard for heating fuels as well as transportation fuels

Cool Roofs

2020 GHG Reduction: 0.2%

Residential and Commercial Cool/Green Roofs [new measure]

Cool roofs are light-colored roofs that reduce summer cooling requirements by reflecting more of the sun's energy than dark roofs. Vegetated roofs increase insulation and on-site water retention, and can have benefits in both cold and hot weather; however, because of the greater cost and greater weight of a vegetated roof, it is less often a feasible alternative. With a requirement for roof replacements, this beneficial measure can slowly spread over the city. However, there will likely need to be clear exceptions for landmarks and historical preservation districts.

LC Cool/Green Roofs recommendations:

- Develop requirements for cool roofs for all new residential and commercial construction, and for roof replacements. Also develop requirements that allow for green roofs where feasible.

Behavior Changes

Behavior changes measures require actions by individuals and businesses to 1) change HVAC air filters; 2) tune up air conditioners; 3) adjust temperatures for space and water heating, and laundry; and 4) use clotheslines for drying clothes.

Behavior Change recommendation:

- City should partner with other entities (e.g., utilities) to provide on-going education on the environmental and economic benefits of behavior change related to energy use in buildings.

Transportation (2020 GHG Reductions: 6.5%)

There are four complementary approaches to reducing GHG emissions from transportation, most of which come from fuel combustion of on-road vehicles: reduce the carbon intensity of fuels, increase the efficiency of vehicles; reduce the amount that vehicles are used, and improve vehicle operation and maintenance practices.

CAFÉ/Pavley

2020 GHG Reduction: 3.4%

Federal CAFÉ standards and CA GHG Standards (aka Pavley) (previously adopted by MA) [existing measure]

Massachusetts adopted California's GHG emission standards for vehicles in 2006. These standards would lead to a 30-percent reduction on average in new vehicle greenhouse gas emissions from 2002 levels by 2016. These standards were initially rejected by EPA, but following a federal lawsuit and EPA reconsideration under the new federal administration, these standards can now be implemented. However, new federal CAFÉ standards—5-percent efficiency improvements per year until fleet averages for new cars increase to 35.5 mpg by 2016—will effectively preempt the state standards from

2012 to 2016. Massachusetts can still join California and other states in implementing Pavley to obtain additional GHG reductions primarily beyond 2016.

LC CAFÉ/Pavley recommendations:

- Support state and federal legislation and rules that improve vehicle fuel efficiency and mitigate the emissions associated with personal vehicles
- Specifically support Massachusetts joining California and other states in adopting and implementing Pavley requirements

Low-Carbon Fuel Standard/Renewable Fuel Standard

2020 GHG Reduction: 1.2%

Low Carbon Fuel Standard [new measure]

The Commonwealth is working with 10 other northeastern states to develop and implement a regional low-carbon fuel standard to reduce the carbon intensity of transportation 10 percent by 2020. This would include the federal Renewable Fuel Standard, which will increase the volume of renewable fuel required to be blended nation-wide into gasoline from 9 billion gallons in 2008 to 36 billion gallons by 2022 (estimated to provide 3% of the contemplated 10% LCFS requirements by 2020)

LC LCFS Transportation Recommendation:

- Support state efforts to adopt a regional low-carbon fuel standard for transportation fuels (gasoline and diesel)
- Support the implementation of a federal renewable fuel standard that works in conjunction with the regional LCFS

Vehicle Mile Traveled Reduction Strategies

Reducing vehicle miles traveled (VMTs) will require multiple approaches, including facilitating and incentivizing the use of feet, bicycles, and public transit, and directly discouraging the use of private vehicles.

VMT Reduction -- Bike Programs

2020 GHG Reduction: 0.2%

The Mayor's 2008 appointment of a "bike czar" symbolized the energetic expansion of the City's bicycle program, which now includes the installation of about 10 miles of new bicycle lanes per year, the installation of new bike racks around Boston, the development of a public bike-sharing program, and requirements for bicycle facilities in new developments.

Bicycle infrastructure improvements (lanes, racks) [expanded measure]

LC Bike Infrastructure Recommendations:

- Continue to support and finance the installation of bike lanes and bicycle infrastructure improvements
- Require bicycle access to all commercial buildings, via freight elevators or to a dedicated, secure storage area
- Evaluate opportunities to use existing shower and storage facilities at YMCAs and other athletic facilities for bicycle commuters
- Evaluate the potential to increase bicycle parking/storage in existing private parking lots
- Increase the number of available bike cab permits

Bicycle sharing program [new measure]

LC Bike Sharing Recommendations:

- Support the rollout of this program with education and outreach
- Ensure full Boston build-out of 3000 bikes by 2020, and a total of 5000 bikes regionally (i.e. including Cambridge and Alston/Brighton)
- Evaluate the feasibility of locating bike share stations in existing private parking lots near MBTA stops (e.g. Prudential Center)

VMT Reduction -- Car Sharing

2020 GHG Reduction: 0.5%

Car Sharing Expansion and Increased Distribution [expanded measure]

Car sharing is a program that distributes cars around a city or region and allows members to reserve vehicles for hourly use. The Boston-based company Zipcar already has more than 18,000 members and 450 cars in Boston, and other car rental companies are developing similar services. According to Zipcar, members of the car-sharing company, on average, drive 2,500 miles per year less than they did before joining.

LC Car Sharing Recommendations:

- Work with car sharing companies to ensure that every Boston resident lives within ¼ mile of a shared car by 2020. This may require:
 - If necessary, revising zoning laws to allow for shared car placement throughout the city
 - Creating opportunities for shared car placement on municipal property
 - Actively promoting shared cars through a partnership with one or more shared-car companies
 - Working with community-based organizations to promote car sharing

VMT Reduction -- Other Programs (Mass Transit/Parking)

2020 GHG Reduction: 1.2%

Multi-space parking meters, expansion of hours [expanded measure]

Increasing parking meter rates can discourage driving, and potentially provide a revenue source for other VMT reduction efforts. Multi-space meters, which the City has already been installing in many areas of Boston, give customers more ways to pay. The meters are also capable of handling complex rate structures that vary by time of day, day of week, and amount of demand, and allow the City to manage demand and congestion.

LC Parking Meters and Hours Recommendations:

- Expand the installation of multi-space meters around Boston, with the goal of moving all meters to this system by 2020
- Investigate the potential costs and benefits of lengthening meter hours and extend meter hours in locations where there will be benefits (e.g. increased revenue and no adverse traffic/congestion impacts)
- Raise parking meter rates to discourage driving

- Use the revenues from increased parking fees and hours to support other VMT reduction measures, such as pedestrian and bicycle improvements

Residential parking permit fees [new measure]

There is currently no fee to obtain a residential parking sticker for Boston, and there is no limit on the number of permits per household. Partially as a result of this, the number of parking stickers held by Boston residents far exceeds the number of parking spaces designated for residents. A parking permit fee, with a rapidly increasing cost for each additional vehicle registered at the same address, can discourage car ownership and reduce VMT, while potentially providing a revenue source for other VMT reduction efforts.

LC Residential Parking Permit Recommendations:

- Introduce a graduated fee structure for residential parking
- Develop educational material that encourages residents not to own cars. Distribute the material whenever someone applies for or renews a permit either in-person or online.

Parking freeze [expanded measure]

Boston currently has parking freezes in three parts of the city: Downtown, South Boston, and East Boston. Boston has pioneered the parking freeze in the U.S. Although the specific regulations vary by district, the overall intent is to place a cap on the number of off-street commercial parking spaces. Currently, South Boston and East Boston permits require annual renewal and payment of a fee. Downtown permits require no fee and are, in principle, good forever.

LC Parking Freeze Recommendations:

- Change the administration of the Downtown parking freeze to require annual renewal of permits for all non-residential off-street parking and the payment of an annual fee
- Use increased revenues from the freezes to support stricter oversight of the freeze permits, including all conditions in the permits, and to support a new TDM coordinator position (see below)
- Use the permitting process, including public hearings, to increase the adoption of TDM measures
- Evaluate the potential to expand the freeze to new areas of the city

Mass Transit [expanded measure]

Boston is fortunate that it has an extensive public transit system, which, despite its well publicized difficulties, has relatively high ridership compared to other similarly sized cities. The City of Boston needs to remain a forceful advocate for the upkeep, expansion, and sound financial standing of all MBTA transportation options, including commuter rail and passenger rail to other cities.

LC Mass Transit Recommendations:

- Make a public statement in support of the MBTA system as a critical component of the Boston economy and its environment
- Support MBTA efforts to improve signage and access, and expand infrastructure and service.
- Support more and better intercity rail service (beyond Portland and Providence)
- Support expansion of commuter rail lines and tracks at South Station
- Meet with MA DOT to develop shared priorities and plan collaborative efforts to maintain and support the public transit system

Commute mode reporting [new measure]

The Massachusetts Rideshare regulations require large businesses (with greater than 250 or 1,000 commuters, depending on several factors) to collect data on commuting patterns, take various measures to reduce employee driving, and report to the Commonwealth. This state requirement can form the basis of a City program to expand its TDM (transportation demand management) programs and work more closely with large and small businesses and the city's several transportation management associations (TMAs).

LC Mode Reporting Recommendations:

- Work with the state to develop an agreement for sharing responsibilities for the enforcement of Rideshare regulations
- Develop a tiered program that, based on the number of employees, requires businesses to collect data on commuting and take various TDMs
- Work with the City's TMAs to develop programs that would encourage businesses to fulfill some or all of their TDM requirements through TMA membership

Transportation Access Plan Agreements [existing measure]

The City's Zoning Article 80 requires developers of large projects (greater than 50,000 square feet) to work out with the Boston Transportation Department a Transportation Access Plan Agreement (TAPA). The City has used this tool effectively for many years to develop the streetscape, keep down parking capacity, expand traffic management tools, expand bicycle infrastructure, and expand the use of TDM.

LC TAPA Recommendations:

- Continue to use the TAPA process aggressively to promote public transit, walking, and biking, and discourage vehicle use in the city.

Smart Growth and Transit Oriented Development [existing measures]

Smart Growth and Transit Oriented Development are two similar policies directed at encouraging relatively high-density mixed-use development, including affordable housing, around transportation centers. This encourages the development of vibrant neighborhoods and reduces the need for cars. The Boston Redevelopment Authority has had a transit-oriented development initiative for many years, and Zoning Article 87 establishes the bases for Smart Growth overlay districts in the city, as required by state law.

LC TOD/Smart Growth Recommendations:

- Continue to implement smart growth planning and transit oriented development

TDM Coordinator Position [new measure]

Transportation demand management may be better coordinated city-wide if there were a single person employed by the City responsible for management, implementation, and coordination.

LC TDM Coordinator Recommendations:

- Create a position of TDM Coordinator to oversee mode reporting requirements and ridesharing and other programs, and to enforce TDM requirements incorporated into TAPAs and parking freeze permits.

Ride Sharing (incentives/support) [new measure]

The first target of most TDM programs is single-occupancy commuter vehicles. New Web-based technology and other networking tools are making it easier to link up ride seekers with ride providers and supplement traditional carpools, vanpools, and park-and-ride lots. The City has been using TAPAs and parking freeze permits to expand the number of parking spaces reserved for ride-sharing vehicles.

LC Ride Sharing Recommendations:

- Support and expand ride share options including provisions for reserved parking spaces
- Provide educational outreach on the benefits of ridesharing and how to do it

Electric Vehicle Pilot Program [existing measure]

Electric vehicles have the potential to significantly reduce GHG emissions, especially if the electricity comes from renewable sources. As more automobile companies develop all-electric and plug-in hybrid vehicles, a major impediment is the lack of charging stations in convenient—or any—locations. The City has already exhibited leadership by starting a process to install a pilot, on-street charging station near City Hall.

LC Electric Vehicle Pilot Recommendations:

- Expedite the plan to install a pilot charging station near City Hall
- Develop a comprehensive strategy for the installation of refueling/charging stations throughout Boston
- Use TAPAs and parking freeze permits to expand the number of refueling/charging stations

Complete Streets design initiative [existing measure]

In summer 2009, Mayor Menino appointed the Complete Streets Advisory Committee to discuss design guidelines for street reconstruction. Topics that the guidelines will address include: bicycle lanes; storm water drainage techniques; bus priority measures; scooter, electric car and vanpool parking; and pedestrian-friendly sidewalks.

LC Complete Streets Recommendations:

- Ensure that the design guidelines, when completed, are implemented expeditiously
- Implement—or continue to implement—measures that the City has already recognized as important to a safer, more efficient transportation system

Multi-modal Social Marketing [new measure]

Transportation is an area where Boston residents, workers, and visitors make daily choices. For this reason, social marketing campaigns can have significant effects when tied to multi-modal options programs that encourage the use of car sharing and ride sharing as well as biking, walking, and transit.

LC Transit Social Marketing Recommendations:

- Expand social marketing and information programs to encourage Boston residents, workers, and visitors to get out of their cars
- Develop an on-the-ground, face-to-face outreach program to educate residents about all available transportation options and how to effectively use the options, and pilot it in one neighborhood

Taxis [new program]

In 2007, the City of Boston, working with Massport, developed an incentive program to encourage taxicab owners to switch to hybrid cabs. In 2009, the City established a requirement for hybrid cabs, but this requirement was invalidated in federal court. Although the number of taxicabs in Boston (about 1,800) is small relative to the total number of vehicles, their constant use throughout the day makes it important to reduce their emissions. The growing visibility of green cabs—now numbering over 340—makes them an excellent symbol of the city’s progress.

LC Taxis Recommendations:

- Continue to encourage the growth of low-GHG taxis (e.g. hybrids)
- Continue to explore ways to re-institute the requirement for low-GHG taxis

Anti-Idling

2020 GHG Reduction: 0.04%

State anti-idling law [existing measure]

Massachusetts state law and the state’s air pollution regulations prohibit excessive vehicle idling. Although non-traffic-related idling is a relatively small contributor to the city’s GHG inventory, idling is a very visible offense to many members of the public as well as a source of local air pollution.

LC Anti-idling Recommendations:

- Increase enforcement of the anti-idling law and regulation
- Expand the City’s existing anti-idling educational efforts to reach more members of the community with information about the health and economic benefits of idling reduction and dispel myths about the “need” for idling.

Behavior Changes

Behavior changes measures require actions by individuals and businesses to 1) conduct routine maintenance on vehicles (tire pressure, oil and filter changes); 2) purchase low rolling resistance tires; and 3) improve driving technique (e.g., smooth acceleration).

Behavior Change recommendation:

- City should partner with other entities (e.g., state) to provide on-going education on the environmental and economic benefits of behavior change related to operating and maintaining vehicles.

Other (2020 GHG Reductions: 0.7%)

Residential Solid Waste Reduction

2020 GHG Reduction: 0.2%

Single stream recycling for residential curbside pickup [existing measure]

The City began its first single-stream recycling pilot in 2007, and is now in the process of delivering single-stream recycling bins to all residential neighborhoods. The City supplies curbside pickup and

supports the implementation of recycling at larger multi-unit buildings (that can also participate in curbside recycling collection). These efforts have produced significant increases in recycling, but there is much room for improvement. According to the City's recycling office, Boston residents currently recycle only about 14 percent of the trash that they produce, but more than 50 percent of trash is recyclable.

LC Single Stream Recycling Recommendations:

- Complete the full rollout of single stream recycling city-wide
- Ensure that all residents have the equipment and information that they need for increased recycling

Pay-as-you-Throw [new measure]

Pay-As-You-Throw (PAYT) is a policy that requires residents to pay for the pickup of non-recyclable trash (for example, by purchasing garbage bags or stickers), but imposes no fee on recycling. If efforts to increase voluntary recycling and waste reduction are not sufficient, the imposition of a trash fee can be an effective incentive.

LC PAYT Recommendations:

- After the full rollout of single stream recycling is complete, beginning in 2015, implement PAYT for all Boston residents that receive curbside pickup from haulers contracted with the City.

Organic waste diversion [new measure]

The City of Boston already has a program to separately collect spring and autumn yard wastes and Christmas trees in early January, all of which material it mulches or compost. In 2008, the City issues a Request for Expression of Interest (RFI) as part of its effort to expand its capacity to compost this type of organic material year-round. The City received several responses, and continues to explore possible sites and technologies.

The next expansion step in organic waste diversion would be to include food waste, including food scraps and food-soiled paper (e.g. pizza boxes). As with the garden waste already collected, the new organic material could be used as feedstock for composting or anaerobic digestion. It would not be put in a landfill and allowed to decompose and release methane, a potent greenhouse gas, into the atmosphere.

LC Organic Waste Recommendations:

- Begin planning a comprehensive residential curbside organics pickup program that provides material to a local/regional composting operation either prior to or concurrent with implementing PAYT
- Continue to investigate the potential to construct a Boston-based anaerobic digester to process organic material
- Develop a program to include commercial organic waste in this program
- Investigate whether the promotion of in-sink garbage disposals coupled with anaerobic treatment at Deer Island would be an effective complimentary organic waste diversion program

Local Food and Farming, and Reducing High GHG Content Foods [new measure]

Boston was recently rated as the best large city in the U.S. for local food availability and farmers markets. Local food and farming results in fewer transportation miles and supports beneficial land use (e.g. agriculture, which can assist with sequestration). Meat production is highly carbon intensive; eating less meat reduces carbon emissions.

LC Food and Farming Recommendations:

- Continue to promote and expand local farmers markets and provide education to residents on the potential benefits of local food and farming
- Encourage healthy, lower carbon diets through education and outreach, especially to students

Commercial Solid Waste Reduction

2020 GHG Reduction: 0.5%

Commercial recycling [expanded measure]

In Boston, trash haulers are required to offer recycling services. However, Boston businesses that contract with the private haulers for trash disposal are not required to purchase these services.

LC Commercial Recycling Recommendations:

- Create requirements or incentives to increase commercial recycling rates

Grow Boston Greener [existing measure]

Established in 2007, Grow Boston Green is a collaboration between the City of Boston and its partners in Boston's Urban Forest Coalition (BUFC) to increase the urban tree canopy cover in the city by planting 100,000 trees by 2020. The planting of these trees will increase Boston's tree canopy cover from 29% to 35%, by 2030 as the planted trees mature.

LC Grow Boston Greener Recommendations:

- Continue the implementation of this program

Water conservation and retention [new measure]

Measures to encourage residential water conservation will provide additional GHG reduction primarily by reducing the amount of energy used to transport and clean water.

LC Water Recommendations:

- Develop outreach and education to encourage residential water conservation in order to decrease demand on the energy-intensive water delivery system, and for hot water
- Simultaneously provide education and support for on-site water retention measures, both mechanical and vegetative

Municipal Measures

Existing Municipal Buildings [new measure]

Track, benchmark and report energy usage in all City buildings and develop a plan to retrofit all City buildings with all cost effective efficiency measures

LC Municipal Building Recommendations:

- By 2011, track and report energy use in all municipal buildings and facilities individually (which may require the installation of separate meters).
- Use EPA's Portfolio Manager or a comparable rating system to benchmark all City facilities
- By 2012, develop a comprehensive plan to retrofit all City buildings and facilities with cost-effective energy efficiency measures and take advantage of all utility incentive programs and other financial resources
- By 2012, complete an evaluation of the feasibility of using on-site renewable resources and CHP for all City buildings and facilities
- Expedite the establishment of an Energy Manager position, as outlined in the City's Energy Efficiency Conservation Strategy
- Link the installation/implementation of energy efficiency and renewable energy measures at schools with the school curriculum; provide educational opportunities for students to learn first hand about energy efficiency measures

Leading by Example for renewable energy purchasing and renewable energy installations [existing measure]

In 2007, Mayor Menino directed in his executive order on climate action that by 2012 at least 15 percent of the electricity purchased by municipal departments must come from renewable sources. The expansion of renewable energy sources and the projected increased efficiency of City facilities should mean that it is possible to increase that goal.

LC Municipal Renewable Energy Procurement Recommendations:

- Set a goal of at least 20 percent of electricity purchased by the City of Boston be from renewable energy sources by 2020

Leading by Example Green Building [existing measure]

All new municipal buildings and major renovations currently must meet requirements for LEED Silver

LC Municipal Green Building Recommendations:

- Increase minimum requirement for new municipal building from LEED Silver to LEED Gold.,
- Require installation of all cost-effective energy efficiency measures

City Hall Bike-Share [existing measure]

Employees at City Hall have access to a pool of bikes that can be used for travel around the city.

LC City Hall Bike Share Recommendations:

- Continue to implement and look for ways to enhance this program

Green municipal operations policies [existing measure]

The green municipal operations program includes guidelines for procurement of all goods and services, a “green” IT roadmap including printing and electronics, expanded recycling, and “green” (i.e. less toxic) cleaning products. A specific instance of this is the City’s vehicle procurement policy, which requires that all new vehicles must be alternative fuel vehicles or among the most fuel efficient vehicles available.

LC Green Procurement Recommendations:

- Continue to implement this program
- Establish clear goals for the procurement of ENERGY STAR appliances and equipment as appropriate
- Expand the procurement guidelines to cover and encourage the purchase, where appropriate, of food from local sources