

# Public Sector Climate Leadership In Boston

*A Boston Green Ribbon Commission Report*

*Prepared by Meister Consultants Group  
on behalf of the Boston Green Ribbon Commission*

JUNE 2015

# FOREWORD

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The Boston Green Ribbon Commission is pleased to call attention to the important role the public sector is playing in achieving Boston's greenhouse gas emissions reduction targets. City, state, and federal agencies together own more than 11% of Boston's building stock. Each of these levels of government has committed to a goal of 25% reductions in GHG emissions by 2020. The Public Sector Climate Leadership report highlights four examples of public agencies in Boston that are going beyond pilot projects and pursuing energy innovation on a portfolio-wide basis. The initiatives demonstrate how aggressive climate targets are both attainable and often beneficial for generating cost savings and helping streamline operations – benefits that could be widely replicated in other sectors. We hope that the case studies presented will encourage other public agencies, as well as building owners in other sectors, to examine their opportunities to contribute to the City's goals and improve building performance.

The Boston Green Ribbon Commission (GRC) is a group of 34 civic, business, philanthropic, institutional, and community leaders representing major industries and organizations in the City. Co-Chaired by Mayor Walsh and Barr Foundation Trustee Amos Hostetter, the mission of the GRC is to help the City of Boston pursue the goals outlined in the City's Climate Action Plan (CAP), including the long-term goal of reducing greenhouse gas emissions 80 percent by 2050. The GRC focuses most heavily on the CAP priorities of mitigating carbon emissions and preparing for the impacts of climate change, and to that end it supports a variety of projects, conferences, research studies, and other initiatives that the City identifies as important. The GRC receives support from the Barr Foundation, the Bank of America Foundation, the Bollard Foundation, the Boston Foundation, the Grantham Foundation, the Henry P. Kendall Foundation and the business community. For more information, visit [www.greenribboncommission.org](http://www.greenribboncommission.org).

Boston has made significant progress in reducing greenhouse gas emissions over the base year of 2005 across all sectors, with large buildings and institutions making the most significant strides. Emissions from City government operations dropped by almost 25 percent from 2005 to 2014. In 2015, for the second time, the American Council for an Energy Efficient Economy ranked Boston number one out of 51 major US cities in its biennial City Energy Efficiency Scorecard.

We are both proud of the achievements to date and acutely aware that there is much more difficult work ahead. Reaching 80 percent reductions will require transformation of our energy, transportation, buildings and infrastructure systems. We need to prepare our City and ourselves to change, innovate, and become more resilient. This Public Sector Climate Leadership report is one of our efforts to increase understanding and support action toward a low-carbon future for Boston.



John Cleveland  
Executive Director  
Boston Green Ribbon Commission

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This report was prepared by Meister Consultants Group, Inc. (MCG) in partnership with the Innovation Network for Communities (INC) on behalf of the Boston Green Ribbon Commission (GRC).

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The mission of the GRC is to convene leaders from Boston’s key sectors – business, education, health care, civic society, finance, real estate, professional services, tourism and others – to support the outcomes of the City’s Climate Action Plan.



MCG is a Boston-based sustainability consulting firm specializing in renewable energy policy and strategy development. With affiliates in the United States and Europe, MCG is a global leader in clean energy policy, climate change planning, and stakeholder dialogue.

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# INTRODUCTION

## WHY THE PUBLIC SECTOR MATTERS FOR CLIMATE ACTION IN BOSTON



## Key Messages

- Climate action has been a policy priority in Boston for over a decade, and significant progress is being made on emissions reductions.
- City, state, federal government owns a large portion (over 11%) of building stock in the city and nearly a quarter of all non-residential space.
- The public sector is leading by example, adopting aggressive climate change goals which meet or exceed the City of Boston's community goal of 25% reductions in GHG emissions by 2020.
- Federal, state, and local governments are each moving beyond pilot projects and are pursuing energy innovation on a portfolio-wide basis.

**Climate action has been a policy priority in Boston for over a decade.** The City began tracking its greenhouse gas (GHG) emissions in 2005 and first set emissions reduction targets for the city's municipal operations in a 2007 Executive Order which established policies for including climate change in long-term planning.<sup>1</sup> In 2011, the City released an updated Climate Action Plan which incorporated stakeholder input from a series of *Climate Action Leadership Committee* and *Community Advisory Committee* meetings, as well as a series of five public meetings that drew nearly 500 participants.<sup>2</sup> The 2011 report, *A Climate of Progress*, set even more aggressive targets for municipal operations as well as 2020 and 2050 targets for reducing communitywide emissions. Under Mayor Walsh's leadership, the City recently reaffirmed these commitments in its *2014 Climate Action Plan Update* and took steps toward more comprehensive climate preparedness planning, broadened community engagement, and provided an initial look at potential strategies for reaching the City's 2050 GHG reduction target.<sup>3</sup>

**Over this period, Boston has been making steady progress reducing GHG emissions.** Citywide emissions are now 17% lower than 2005 levels thanks in part to a cleaner electric grid and energy conservation initiatives implemented by residents, businesses, institutions, and public sector agencies.<sup>4</sup> Municipal emissions have also been reduced 25% since 2005. Boston has also been rated #1 in the country for energy efficiency programs and policies by the *American Council for an Energy Efficient Economy*,<sup>5</sup> and in 2014, the City was invited to join *C40 Cities Climate Leadership Group*, a network of 75 leading global cities committed to addressing climate change.<sup>6</sup> Boston has also received national recognition for the Boston Green Ribbon Commission, a group of 35 business and civic leaders supporting the implementation of the City of Boston Climate Action Plan.

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<sup>1</sup> Executive Order of Mayor Thomas M. Menino. (2007). An order relative to climate action in Boston. Available at: [http://www.cityofboston.gov/images\\_documents/Clim\\_Action\\_Exec\\_Or\\_tcm3-3890.pdf](http://www.cityofboston.gov/images_documents/Clim_Action_Exec_Or_tcm3-3890.pdf)

<sup>2</sup> City of Boston. (2011). *A Climate of Progress: City of Boston Climate Action Plan Update 2011*. Available at: [http://www.cityofboston.gov/Images\\_Documents/A%20Climate%20of%20Progress%20-%20CAP%20Update%202011\\_tcm3-25020.pdf](http://www.cityofboston.gov/Images_Documents/A%20Climate%20of%20Progress%20-%20CAP%20Update%202011_tcm3-25020.pdf)

<sup>3</sup> City of Boston. (2014). *Greenovate Boston: 2014 Climate Action Plan Update*. Available at: [http://www.cityofboston.gov/eeos/pdfs/Greenovate%20Boston%202014%20CAP%20Update\\_Full.pdf](http://www.cityofboston.gov/eeos/pdfs/Greenovate%20Boston%202014%20CAP%20Update_Full.pdf)

<sup>4</sup> City of Boston 2014.

<sup>5</sup> Boston. (2015). Retrieved from <http://database.aceee.org/city/boston-ma>

<sup>6</sup> City of Boston, Mayor's Office. (2014). Boston to Join C40 Global Climate Leadership Group. [Press release]. Retrieved from <http://www.cityofboston.gov/news/default.aspx?id=6581>

Both municipal and community emissions reductions strategies have focused significantly on buildings. Energy use in Boston buildings contributes to over 75% of total GHG emissions.<sup>7</sup> To encourage energy efficiency in large buildings, Boston implemented the *Building Energy Reporting & Disclosure Ordinance (BERDO)* in 2013. BERDO requires large- and medium-sized building owners to report annual energy and water use and conduct an energy assessment or energy action at least once every 5 years.

Non-residential buildings represent nearly half of Boston’s building stock by square footage, making them a major contributor to GHG emissions. Commercial, institutional, and public (CIP) entities own over 275 million square feet (roughly half of the 570 million square feet of buildings in Boston).<sup>8</sup> Due to the higher energy intensity (energy use per square foot) of these buildings, the sector’s share of total emissions is even higher, making the sector’s continued leadership essential for keeping Boston on track to meeting the City’s climate goals. While Boston has already reached 17% reductions in GHG emissions below 2005, achieving the remaining 8% of the 2020 goal will require a significant decrease in the emissions associated with buildings.

The public sector owns a large portion of Boston’s non-residential buildings and is well positioned to lead by example through ambitious GHG reduction targets and programs. City, state, and federal government owns and operates over 64 million square feet, 23% of Boston’s non-residential building stock (see Figure 1) and over 11% of total building stock. Each level of government has established GHG reduction targets that meet or exceed the City of Boston’s GHG target for community reductions of 25% below 2005 levels by 2020 (see Figure 2).

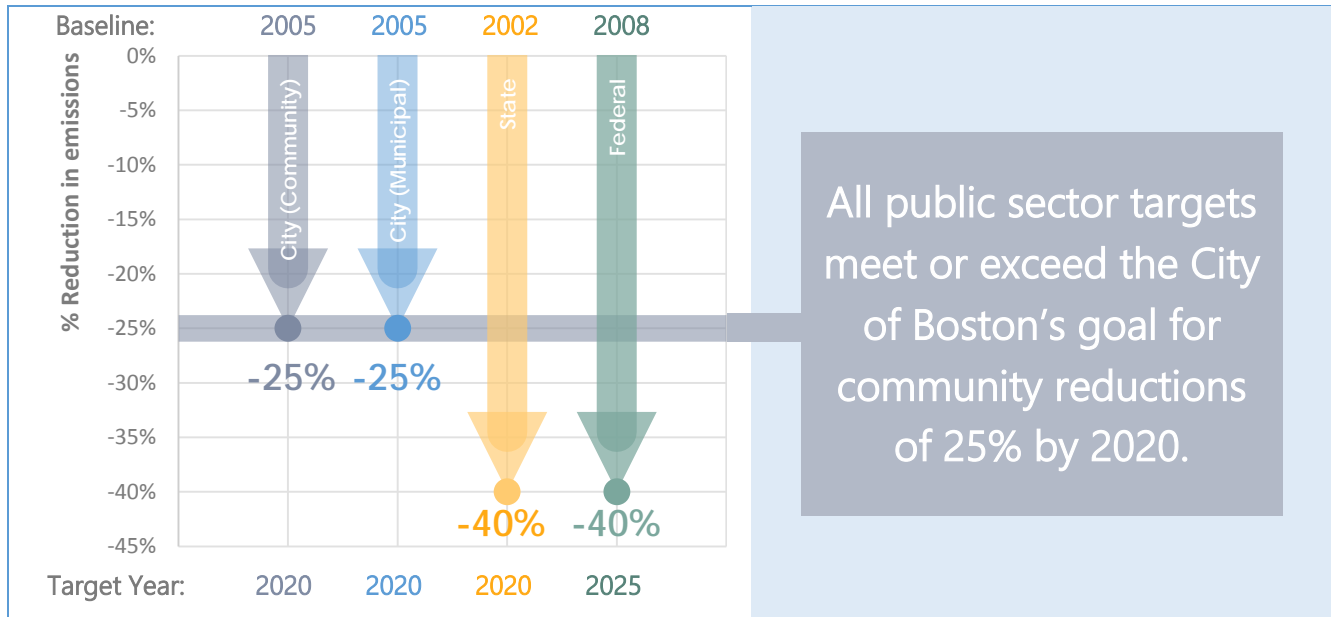
**Figure 1 – Ownership of Commercial, Institutional, and Public (CIP) building stock in Boston**



<sup>7</sup> Inferred from City of Boston, page 19, Figure 7 (emissions by fuel type).

<sup>8</sup> According to City records in 2013, Boston building stock includes over 570 million square feet of “living area” (which excludes parking, storage, maintenance areas, etc. Note that the 50 largest property owners together own over 165 million square feet, 60% of total CIP building space in Boston. Nearly 40% of this (64 million square feet) is owned by just eight public and quasi-public entities. The concentration of building ownership means that the decisions and commitments of just a few entities can have a profound impact on Boston’s future GHG emissions.

**Figure 2 – Public sector GHG emissions reduction targets**






The ambition of the public sector's climate targets combined with the scale of its operations is good news for Boston. Through the public sector's commitments alone, nearly a quarter of the city's non-residential buildings are covered under an aggressive emissions reduction target.

These targets are the result of clear policy mandates set at each level of government and are linked to robust action plans. For example, nearly all public and quasi-public agencies have developed organization-specific action plans and/or sustainability policies outlining their particular approach to reducing impacts. Table 1 summarizes various policy mandates, plans and programs, and progress towards to date toward GHG targets.

City, state, and federal agencies are each taking steps to manage GHG emissions across their portfolios of facilities in Boston. This is being accomplished through a range of projects, from green buildings to alternative vehicle fleets, developing innovative funding mechanisms, investing strategically in sustainability personnel, and reporting results through a variety of channels.

The remainder of this report highlights a few examples of specific projects implemented by public sector agencies in Boston. These case studies are more than pilot projects and one-off initiatives: they showcase strategies public agencies have used to make sizeable investments in energy efficiency and emissions reductions as part of an ongoing commitment to continuous improvement. While each project addresses context-specific challenges and opportunities, the insights and strategies they highlight have broad applicability to both public and private sector climate action.

**Table 1- Policy underpinning, climate plans, and progress toward targets**

Level of Government	Policy	Plans & Programs	Progress
	A 2007 Executive Order on <i>Climate Action</i> established GHG reduction goals and set broad guidelines for reaching them. It also called for climate action plans to be published every three years.	Climate plans, published in 2011 and 2014, have provided blueprints for the City's climate strategy, which are implemented as part of the <i>Greenovate Boston</i> initiative.	The City has reduced municipal GHG emissions 25% below 2005 levels, meeting its 2020 goal six years ahead of schedule. Citywide emissions are now 17% lower than in 2005, two thirds of the way to the City's 2020 goal. <sup>9</sup>
	Executive Order No. 484 created the <i>Leading by Example</i> (LBE) program in 2007 and set targets for renewable energy, energy efficiency, and water conservation in state-owned facilities. It also set three GHG reduction targets: 25% by 2012, 40% by 2020, and 80% by 2050 (all below 2002 levels). <sup>10</sup>	The State's LBE program supports state agencies, authorities and public colleges and universities in efforts to reduce overall environmental impacts of state government. LBE recently documented successes to date in its 2014 progress report.	The State met its 2012 target of 25% below 2002 levels on time, reducing overall emissions approximately 314,000 metric tons. <sup>11</sup>
	2009 Executive Order 13514 established GHG reduction targets for federal agencies of 28% below 2008 by 2020 (Scope 1 & 2 emissions). <sup>12</sup> In March 2015, E.O. 13693 increased the target to 40% by 2025. <sup>13</sup>	Under Executive Order 13514, Federal agencies are required to develop, implement and annually update a Strategic Sustainability Performance Plan.	The federal government is on track to meet both its 2020 and 2025 goals, having achieved 17.4% emissions reductions below 2008 in 2014. <sup>14</sup>

<sup>9</sup> City of Boston 2014.

<sup>10</sup> Executive Order of Governor Deval L. Patrick. (2007). *Leading by example—clean energy and efficient buildings*. Available at: <http://www.mass.gov/anf/docs/dcam/dlforms/energy/energy-eo484-final.pdf>

<sup>11</sup> Massachusetts Executive Office of Energy and Environmental Affairs (2014). *Leading By Example: Towards Our Targets*. Available at: <http://www.mass.gov/eea/docs/eea/lbe/lbe-eo484-report.pdf>

<sup>12</sup> Executive Order of President Barack H. Obama. (2009). *Federal Leadership in Environmental, Energy, and Economic Performance*. Available at: <http://www.gpo.gov/fdsys/pkg/FR-2009-10-08/pdf/E9-24518.pdf>

<sup>13</sup> Executive Order of President Barack H. Obama. (2015). *Planning for Federal Sustainability in the Next Decade*. Available at: <https://www.whitehouse.gov/the-press-office/2015/03/19/executive-order-planning-federal-sustainability-next-decade>

<sup>14</sup> U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy. (2014). *Federal Comprehensive Annual Energy Performance Data*. Available at: <http://energy.gov/eere/femp/federal-facility-annual-energy-reports-and-performance>



# CASE STUDIES

## HOW THE PUBLIC SECTOR IS REDUCING GHG EMISSIONS



# CREATING A “VIRTUOUS CYCLE” OF CLIMATE ACTION

Climate initiatives sometimes fail when critical success factors are absent or neglected. There is a growing base of literature on organizational energy and GHG management that demonstrates the importance of taking a comprehensive approach that aligns leaders, staff, financial resources, project opportunities, and communications within an organization.

When the right systems are in place, various barriers to energy and emissions management can be overcome, and a self-reinforcing process of energy and GHG management can be created.<sup>15</sup> Figure 3 shows the components that need to be in place within an organization to successfully manage greenhouse gas emissions:

1. Committing to climate targets;
2. Investing in people;
3. Identifying funding sources;
4. Implementing projects; and
5. Sharing results.

Figure 3 – A “virtuous cycle” of strategic emissions management



These strategies are mutually-reinforcing, and when progress is maintained across all of them, a “virtuous cycle” can be created in which early successes help generate momentum for future activities, and greater investment.

While these strategies are present in each of the case studies to varying extents, each project was selected with the intention of highlighting one of the strategies, indicated using the icons shown in Figure 3. Note that the cases focus on three of the five categories: investment in people, identification of funding sources, and project implementation. High profile efforts to create climate targets and share results are underway in Boston are discussed in the previous section.

<sup>15</sup> Adapted from Hiller, J., Reyna, E., Riso, C., & Jay, J. (2012). The virtuous cycle of organization energy efficiency: A fresh approach to dismantling barriers. Presented at the ACEEE Summer Study on Energy Efficiency in Buildings.

# ADDRESSING KEY IMPACTS

The case studies focus on the four *Greenovate Boston* climate action categories (Figure 4): **transport, waste, energy, and water.**<sup>16</sup> Note that these categories are overlapping and interdependent (for example, transport is required to haul waste; energy is required to heat water) and many projects impact multiple categories.



## ABOUT THE CASE STUDIES

The emissions and energy-reduction activities of public sector agencies in Boston are too numerous to catalogue comprehensively. What follows is a selection of four examples of innovative strategies implemented in city, state, and federal government agencies which represent a range of the climate strategies and impact categories outlined above:

1. The **City of Boston's Municipal Energy Unit** provides a model for strategic investment in full-time staff resources dedicated to energy management and provides compelling evidence that such positions can be highly cost-effective.
2. The **Massachusetts Division of Capital Asset Management and Maintenance (DCAMM)** is financing energy investments on a large scale by leveraging its tax-exempt bonding authority to access capital at rates well below what would be available from commercial energy service companies.
3. The recently completed **MassPort Rental Car Center** consolidated all nine rental car companies operating at Logan Airport into a single LEED facility, dramatically lowering shuttle bus emissions by reducing the need for redundant shuttles and replacing its diesel fleet with fuel-efficient hybrids.
4. The **U.S. General Services Administration** has invested in deep energy retrofits of a 700,000 square foot Boston landmark, cutting emissions nearly in half between 2003 and 2014 through a mix of green building renovations, optimizing equipment, and energy-conscious occupant behavior.

Each of the selected case studies are part of larger initiatives which seek not just to implement one or two isolated projects, but rather aim to reduce energy and GHG emissions across a portfolio of buildings. Outcomes are quantified as GHG emissions reductions, energy reductions, and/or cost savings depending on the data available. In each case the projects demonstrate the potential for innovative strategies to deliver significant results. In the future, additional case studies will be conducted to highlight both public and private sector leadership.

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<sup>16</sup> Greenovate Boston. (2015). Retrieved from <http://greenovateboston.org/>

# MUNICIPAL ENERGY UNIT [MEU]





## CITY OF BOSTON ENVIRONMENT, ENERGY & OPEN SPACE CABINET



**What it is:** A team of dedicated City personnel that coordinates cost-effective energy efficiency projects across municipal facilities.

2011 - Present

Costs	
Program costs	 Approx. \$300,000/yr
Funding source(s)	 Seed funding from Energy Efficiency & Conservation Block Grant Program (EECBG); ongoing funding from City operating budget

Benefits	
Energy	 31 million kWh reduction by 2012
Financial	 \$4 million in energy savings + leveraged utility rebates in 2011

Timeline	
2011	MEU is formed with seed funding from federal EECBG program
2011	City completes \$3.3M in energy efficiency projects
2012	MEU staff are added to City payroll
2013	City sets target to reduce energy another 33 million kWh by the end of 2015
2014	City hits 2020 municipal GHG reduction target 6 years ahead of schedule

### Project Description

The City of Boston's Municipal Energy Unit (MEU) is a team within the Environment, Energy and Open Space Cabinet focused specifically on identifying and pursuing energy efficiency opportunities across the City's 16 million square feet of facilities. The MEU's work includes setting annual energy efficiency targets, implementing building and energy management systems, facilitating capital budgeting and capital design processes for new construction and major rehabilitation projects, and assisting the City's Office of Budget Management and the various City departments responsible for property management and construction to complete energy efficiency capital improvement projects.

The MEU was formed in 2011 with seed funding from the Energy Efficiency and Conservation Block Grant (EECBG) (part of the American Recovery and Reinvestment Act of 2009). EECBG funding was used to hire two full-time staff for one year: a project manager and a finance manager. During its first year, the MEU had generated financial benefits nearly 14 times the program's costs, having implemented more than \$3.3 million in cost-effective energy efficiency investments that would yield an estimated annual energy cost savings of \$1.4 million while leveraging \$2.6 million in available utility incentives.

Based on the program's success, both MEU members were added to the City's payroll in 2012 as permanent employees after the initial EECBG-funded program was set to expire. By the end of 2012, the City had exceeded its three-year target of avoiding 28 million kWh of electricity use, having reached cumulative reductions of 31 million kWh while leveraging over \$7 million in utility rebates. By 2014 the City has reduced municipal GHG emissions 25% below 2005 levels, meeting its 2020 goal six years ahead of schedule.

# BOND FINANCING FOR THE ACCELERATED ENERGY PROGRAM [AEP]







**COMMONWEALTH OF MASSACHUSETTS**  
DIVISION OF CAPITAL ASSET MANAGEMENT AND MAINTENANCE (DCAMM)



**What it is:** Innovative financing models leveraged the state's tax-exempt bonding authority to create a large-scale fund for energy efficiency at rates below commercial ESCOs.

**2011 - 2016**

Costs		
Seed funding		\$427M
Financing source(s)		Clean Energy Investment Program bonds (60%); Utility finance (5%); G.O. bonds (35%)
Benefits		
Cost savings		\$43 million/yr *
GHG savings		135,000 tonnes CO <sub>2</sub> /yr*

\*Targeted/projected

Timeline		
	2007	Gov. Deval Patrick signs Executive Order 484
	2011	DCAMM creates Accelerated Energy Program (AEP)
	End-2014	Work begins at all 700 state sites
	2015	Commonwealth Facility Fund for Energy Efficiency (CoFFEE) opens

## Project Description

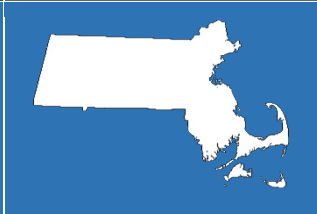
The Accelerated Energy Program (AEP) was established in December 2011 to accelerate the implementation of energy and water saving projects in accordance with Executive Order 484. The AEP initiated work (including Towards Zero Net Energy Retrofits at 10 pilot sites) at all 700 state sites at the end of 2014. Besides supporting E.O. 484 targets through its upgrades, the AEP aims to create clean energy jobs, improve communication with state employees and the public, improve operations & maintenance through continuous training and support, and contribute to maintaining Massachusetts' #1 ranking on the ACEEE State Energy Efficiency Scorecard.

Among the most notable aspects of AEP are its innovative means of project financing. Relying on an already strained state budget to achieve ambitious energy efficiency and emissions reductions goals left few options for financing the full pipeline of projects: federal funding tranches (i.e. American Recovery and Reinvestment Act funds, Qualified Energy Conservation Bonds, Clean Renewable Energy Bonds ) were available but insufficient for the scope of the project; energy service companies (ESCO) were available to provide private financing, albeit at costly interest rates of 7% or more. Nearly 60% (\$278 million) of AEP funds ultimately came from Clean Energy Investment Program (CEIP) bonds, which leverage the state's tax-exempt bonding authority to finance energy efficiency projects repaid by the energy savings realized by the state agency receiving the funding at interest rates of under 5%. By mandating that projects result in annual savings of at least 110% of debt payments and by securing debt payment commitments from agencies in advance, these funds were obtained without affecting the state's borrowing cap. A further \$24 million of financing was made available through the creation of a framework with National Grid, NSTAR/Northeast Utilities (now Eversource), Unitil, Columbia Gas of Massachusetts, and Cape Light Compact to provide utility incentives to implemented AEP projects. Traditional sources of funding (e.g. \$125 million in General Obligation bonds) are expected to fund the remaining projects.

# CONSOLIDATED RENTAL CAR CENTER [RCC]



## MASSPORT LOGAN INTERNATIONAL AIRPORT



**What it is:** Logan Airport consolidated all nine rental car companies into a single LEED gold rental car center and replaced its diesel shuttle fleet with fuel-efficient hybrids.

**2010 -  
2014**

Costs	
Project Costs	\$310 Million

Benefits	
Energy savings	740,000 kWh in 2014

Timeline	
1994	\$4.4 billion Logan Modernization program begins
2006	Logan Airport completes first LEED-certified terminal in the U.S.
2010	Consolidated RCC construction begins
2013	RCC opens

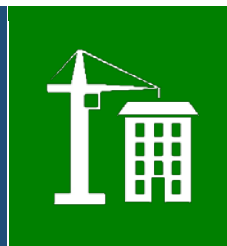
### Project Description

Boston's Logan International Airport has maintained a reputation for being one of the most sustainable airports in the country: 60% of its buildings and facilities have been newly constructed or retrofitted with energy efficiency measures since 2004, and Logan received the first LEED-designation for an airport terminal in the country in 2006.

In 2014, Massport completed a new consolidated rental car facility (RCC) at Logan Airport. Emissions reductions from the RCC stem from the significant reduction in bus traffic and the characteristics of the new facilities. By consolidating all nine rental car companies in the same facility, Massport eliminated all of the diesel-powered company buses, replacing them with a unified fleet of efficient hybrid buses. Total bus traffic has dropped from approximately 100 buses per hour to 28, and a 33-35% decline in airport vehicle fleet air pollution is expected from the 70% reduction in shuttle bus vehicle miles traveled.

The new LEED Gold certified RCC includes a four-level, 1.2 million ft<sup>2</sup> parking structure, a 113,000 ft<sup>2</sup> customer service terminal, and limited maintenance and service areas for rental car vehicular fleets. Water usage was reduced by 38%, and 150 kW of solar PV on the garage's rooftop offsets 5% of the facility's building energy usage. Other accompanying modifications to the roadways and terminal curbsides have reduced road congestion and improved terminal accessibility from mass transit.

# MCCORMACK POST OFFICE & COURTHOUSE GREEN RENOVATION





**U.S. FEDERAL GOVERNMENT**  
GENERAL SERVICES ADMINISTRATION [GSA]



**What it is:** The GSA completely renovated a 700,000 square foot City of Boston landmark to become one of the most energy efficient buildings of its size in Boston

2006 -  
2009

Costs	
Project Costs	 approx. \$163 million

Benefits	
Energy savings	 48.7% reduction in building energy intensity (2003 to 2014)
GHG savings	 Over 2,500 MtCO <sub>2</sub> e (2010 to 2014)

Timeline	
2002	Renovation and modernization design process begins
2006	Construction work begins
2009	Building reoccupied
2010	LEED Gold status achieved
2014	ENERGY STAR score of 92 achieved

## Project Description

The John W. McCormack Post Office & Courthouse was completed in 1933. In 2002, the GSA began the extensive process of renovating and modernizing the building. The GSA was tasked not only with the challenge of conforming to federal guidelines for high performance buildings, but also with the critical goal of maintaining the building's historical significance as a shining example of Art Deco-style architecture and an official landmark of the City of Boston.

Cutting-edge green building techniques were utilized at all stages of the design and building process: 99% of the building's historical structure was preserved, 97% of non-hazardous construction debris was recycled, and high-efficiency mechanicals, plumbing, and cool roofing were installed. The renovations ultimately met expectations, with energy intensity reduced by nearly 20% in 2010 (2003 baseline). The newly-renovated McCormack building was awarded LEED gold status in 2010 and an ENERGY STAR score of 75 in 2011. With the EPA as the primary tenant, additional measures to improve lighting and HVAC performance, changes in occupant behavior, and closure of the cafeteria have since increased the building's ENERGY STAR score to 92, pushing the McCormack building far ahead of federally mandated building energy intensity reductions of 30% below 2003 levels by 2015.

The renovation of the McCormack building is part of broader efforts by the GSA to address climate change mitigation and adaptation throughout the buildings it operates in the New England region. To date, the GSA operates a dozen LEED buildings throughout the New England region, and all but one federal building within the City of Boston have met federal high performance building standards outlined in Executive Order 13514. The GSA is also in the process of developing several other projects for its Boston buildings, including a full retro-commissioning for the McCormack building, a climate adaptation study for its most vulnerable buildings, and a \$30 million utility energy service contract for energy efficiency measures in three of its buildings.

# CONCLUSIONS

## BUILDING ON SUCCESSFUL CLIMATE STRATEGIES IN BOSTON





## Key Messages

- The public sector is leading by example in Boston, showing that aggressive climate targets are both attainable and beneficial while generating cost savings and helping streamline operations.
- The successes demonstrated by the public sector show potential for deep reductions in emissions which are replicable in other sectors.
- Similar climate targets in the commercial and institutional sectors would lead to an additional 1/8<sup>th</sup> reduction in Boston's emissions.
- Increased collaboration and information sharing across public agencies (e.g. through a peer learning network) could greatly accelerate adoption of successful strategies and scale overall impact.

## SCALING CLIMATE COMMITMENTS

The public sector has established targets for substantial emissions reductions by 2020 and is on track to meet them. Successes to date illustrate that these goals are attainable: by prioritizing efficient buildings, streamlining operations, and providing the financial and human resources needed to manage portfolio-wide opportunities, the public sector has shown significant reductions in emissions are possible. While some strategies available to the public sector (e.g. bond finance) may not be available in all other sectors, the underlying principles can often be adapted to other sectors. For example, Massport's Rental Car Center illustrates how consolidating and co-locating operations can result in a significantly more efficient systems, a lesson that can be adapted to private entities.

If similar commitments and strategies were adopted across the commercial and institutional (C&I) sectors, Boston would be on track for dramatic decreases in GHG emission over the next decade. The C&I sectors in Boston are responsible for over half of the city's total emissions.<sup>17</sup> This means that by adopting and achieving the City of Boston's 2020 target of 25% below 2005, the C&I sector alone could reduce Boston's emissions by 1/8<sup>th</sup> in next several years. Bold climate leadership will be needed to achieve the targets set forth in Boston's climate plans. The public sector is leading by example by demonstrating the feasibility and benefits of ambitious climate commitments and large scale emissions management initiatives.

## REPLICATING SUCCESSES ACROSS SECTORS

The clear alignment of city, state, and federal commitments to climate action creates significant opportunities for collaboration across the different levels of government. For example, successful platforms have been created for sharing best practices across organizations such as EDF Climate Corps Peer Learning Network, first piloted in Boston in 2013.<sup>18</sup> The network brought together seven organizations who met every two months on average to exchange best practices in energy and emissions management. This and similar initiatives allow representatives from different agencies, levels of government, and the private sector to regularly discuss experiences with their climate programs and share lessons learned.

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<sup>17</sup> City of Boston 2014, 13.

<sup>18</sup> EDF Climate Corps (2015). Retrieved from <http://edfclimatecorps.org/>.

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