

COMPETITIVE ADVANTAGE

BOSTON BOLD ON CLIMATE CHANGE

Boston's Chief of Environmental & Energy Services talks with BioCycle about how sustainability is guiding the City's actions to reduce GHG emissions, dramatically increase energy efficiency and adapt to impacts from sea level rise.

Nora Goldstein



Solar installations on municipal buildings include the Boston Arts Academy (above). Mayor Thomas Menino is pictured third from the left.

In February 2005, Jim Hunt was appointed to fill a new position in the Cabinet of City of Boston Mayor Thomas M. Menino — Chief of Environmental & Energy Services. The position was created to address the “intensifying synergy between environmental, energy and economic matters,” stated a press release issued at the time. Hunt, who is a native Bostonian and a lawyer by training, is the Mayor’s lead advisor on environmental and energy policy and oversees several City agencies, including the Inspectional Services Department (including Building Permitting and Code Enforcement), the Parks Department and the Environment Department. Prior to joining the City, Hunt served as Assistant Secretary for the Massachusetts Executive Office of Environmental Affairs (EOEA).

The mission of the Environmental and Energy Services Cabinet is to “preserve and enhance the resources of our built and natural environment, and to promote safe, reliable, affordable, and efficient energy systems for Boston,”

Solar Boston

FUNDED through a U.S. Department of Energy grant as part of the Solar America Cities Program, Solar Boston is a multiyear city initiative to meet Mayor Menino’s goal of siting 25 MW of solar power in Boston by 2015. Solar Boston has succeeded in increasing installed solar capacity in the city ten-fold over the last few years, while also implementing some of the most solar friendly local government policies in the United States.

Accomplishments include development of the Solar Boston Map, a GIS-based web tool for tracking the city’s progress towards its renewable energy goals. Boston building

owners can use the map to conduct a shading analysis of their properties to determine if they may be good candidates for solar installations. The site is also a repository of information about federal and state incentives as well as basic information about solar technologies.

Another major accomplishment of the Solar Boston program

was adoption of a building permitting fee structure for solar projects that is among the most progressive in the nation. As a new technology, solar PV systems can be expensive, and, under traditional permitting fee calculation methods, solar PV systems were charged excessive fees based on these high installed costs. In the fall of 2010, Mayor Menino signed an ordinance that lowered permitting fees for PV systems by excluding the costs of solar panels and inverters from the cost calculation. This change helped reduce permitting fees by up to 60 percent for some solar installations.

Finally, the city has used the Solar Boston program as an opportunity to lead by example. Over the past three years, more than 500 kW of solar has been installed on municipal buildings, including schools, public health facilities and the city archives building. Solar Boston worked with multiple city departments to find funding and to coordinate the development of these municipal projects. As the program continues, Solar Boston is rolling out a residential rebate program as well as a district-scale solar energy challenge. gis.cityofboston.gov/SolarBoston/

according to the office's website. The Menino Administration has implemented a number of sustainability initiatives under Hunt's leadership, particularly in the areas of climate action, green building policy, renewable energy and efficiency, and groundwater protection. In 2007, Boston became the first major city in the nation to require private development to follow the U.S. Green Building Council's LEED standards as part of the City's zoning review process. And on Earth Day 2010, alongside former Vice President Al Gore, the city unveiled its vision for reducing greenhouse gas emissions 25 percent by the year 2020, while reducing energy costs for homeowners and stimulating Boston's clean energy economy. This commitment to sound environmental and energy practices has led to the City of Boston being ranked the "5th Most Sustainable City" in the U.S. by the Economist Intelligence Unit and the "3rd Greenest City" in North America by *Popular Science*.

BioCycle interviewed Jim Hunt about the City of Boston's progress toward urban sustainability. We also discussed the important role that cities play in taking climate action, and why being a sustainable city is a competitive advantage.



Jim Hunt, Boston's Chief of Environmental & Energy Services, unveils "Sparking Boston's Climate Revolution," the city's action plan that helps guide policies and programs.

BioCycle: When you joined the Mayor's Cabinet in 2005, what were your and Mayor Menino's key priorities?

Jim Hunt: The Mayor wanted me to be sure that his vision for making Boston the greenest city in the nation was embraced throughout city government. He wanted me to institutionalize sustainability across all city departments, not just the agencies that my office oversees. We began by examining our own facilities and found opportunities to "lead by example" by reducing waste and making city government operations more energy efficient.

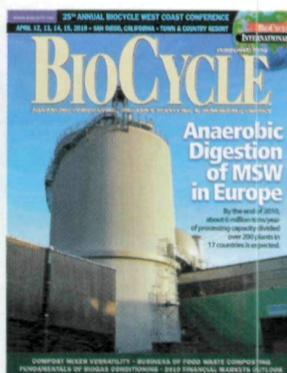
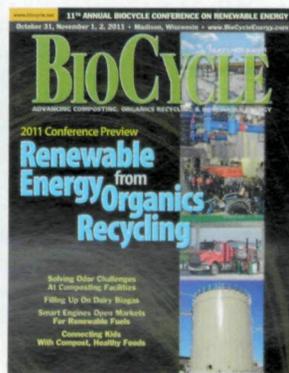
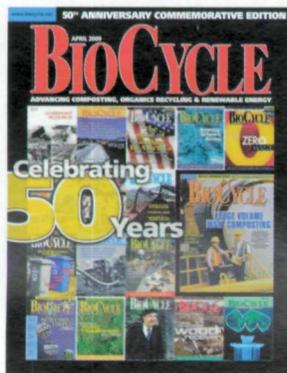
BioCycle: What were the biggest sustainability challenges that the City of Boston faced at that time?

Jim Hunt: I think the biggest challenge in sustainability is effectively communicating its benefits and motivating people to become engaged in this movement. Growing a sustainable community is about connecting our social, environmental and economic goals for the city—that intersection between our people, our planet and our prosperity. But to bring the sustainability movement to scale we need participation.

That's why we developed programs like Renew Boston, which delivers energy efficiency services to every neighborhood and every doorstep in the city. Renew Boston is a partnership with our local utilities that offers a no-cost comprehensive home energy assessment for Boston residents. Using federal stimulus funds, the city is now able to offer low or even no-cost weatherization to residents that can cut energy bills nearly 30 percent. We connected residents to local contractors to perform the work. Through Renew Boston, residents reduce their cost of energy and their carbon footprint, and support enterprises that create local jobs. This program is a great gateway to understand the triple bottom-line benefits of sustainability.

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Innovation District

ON the South Boston waterfront, the City of Boston is developing the Innovation District, a 1,000-acre high tech, clean energy cluster. Building on Boston's strengths — well-educated work force, high tech universities, a rich venture capital community and science-based start-ups — the Innovation District is helping to create new green products, develop new services and drive economic growth. In the past two years alone, the district has been the source of over 80 new businesses and 2,000 new jobs for the city.

Among the enterprises in the Innovation District is Next Step Living, one of the city of Boston's energy efficiency contractors. The company has experienced considerable growth since its launch in 2008, expanding from three employees to 205 in just a couple years. Satcon, an "innovative power conversion solutions" company, recently won a \$3 million award from the U.S. Department of Energy to manufacture next generation solar power inverters that minimize voltage variation caused by PV

systems. In May, the Fraunhofer Center for Sustainable Energy (CSE) announced it was moving its headquarters from Cambridge, Massachusetts to the Innovation District. According to the City of Boston Mayor's Office, Fraunhofer will develop a 50,000 square foot applied research and development laboratory and building technology showcase center that will "serve as a unique factory of innovation in support of established and start-up companies that are developing and demonstrating the next generation of energy efficiency technologies."

According to Galen Nelson, Green-Tech Business Manager for the Boston Redevelopment Authority, the Innovation District's success is due in large part to the city's responsiveness to business needs, its geographic proximity to university and R&D resources and good marketing. The city has hosted a number of workshops and networking events designed to either connect entrepreneurs or respond to specific business needs.

Moreover, the district is ripe for investment. Nestled between Boston's harbor, Logan International Airport, and two interstate highways, the Innovation District contains the largest undeveloped tract of land in the city. The long-term plan calls for broad infrastructure investment, including development of six million square feet of office space, two million square feet of retail space, and 8,000 residential units. So far, the City of Boston has developed only a portion of the envisioned plan and is looking for the right opportunity to develop the rest.

"In conventional economic development terms, the sheer growth of, and investment in the clean tech cluster in the Innovation District has been noteworthy," says Nelson. "But what is more compelling and frankly of greater value over the long term, is the social, innovation and informational capital formation that is generated when good, intentional urban design inspires and enables cross disciplinary collaboration, and new product development among entrepreneurs and investors." www.innovationdistrict.org

BioCycle: How "real" is climate change for the City of Boston?

Jim Hunt: As a coastal city, Boston is very vulnerable to extreme weather events and sea level rise. Two centuries ago, Bostonians adapted to the need for economic growth by filling in tidal zones. Now we have to make these low-lying coastal areas more resilient to the effects of climate change.

Boston was one of the early cities to get out front on addressing climate change. Mayor Menino was among the first mayors in the U.S. to officially "acknowledge" climate change and the risks it would pose to residents, visitors, businesses, institutions and infrastructure. In 2005, he joined other members of the U.S. Conference of Mayors in unanimously adopting the U.S. Mayors Climate Protection Agreement, which committed Boston to meet the Kyoto Protocol, a 7 percent reduction in greenhouse gas emissions by 2012.

We used Mayor Menino's call to climate action in 2007 as a planning framework for sustainability, and have been able to dramatically reduce our emissions profile through energy efficiency. Boston's energy costs are among the highest in the nation, so energy efficiency is the most cost-effective way to curb greenhouse gas emissions and reduce energy costs. We focused our attention initially on city-owned buildings such as public housing, schools, police stations and city offices.

These strategies are saving our city millions of dollars annually in avoided energy costs and more than pay for themselves in a short period of time.

We also greened up our energy purchases by requiring that 15 percent come from renewable energy sources. We then began installing our own clean energy systems including wind energy and solar systems at key locations in the city. Every clean energy project is tracked online through our Solar Map ([see \[gis.cityofboston.gov/SolarBoston/\]\(http://gis.cityofboston.gov/SolarBoston/\)](http://gis.cityofboston.gov/SolarBoston/)), so the public can learn from these projects and even estimate the solar potential of their rooftop by pointing and clicking on their property. These clean energy projects not only reduce our city's carbon footprint, but they showcase the promise that the clean tech industry holds for Boston's economy.

The positive impact of these programs has been impressive from a climate change perspective. In fact, earlier this year, Mayor Menino was able to announce that Boston met the Kyoto target for our own emissions a year ahead of schedule.

BioCycle: *What distinguishes the City of Boston's approach to sustainability from other major U.S. cities?*

Jim Hunt: I think what distinguishes Boston's approach is that we place equal importance on climate mitigation — collectively reducing emissions of CO₂ and other greenhouse gases — and climate adaptation, immediately

incorporating projected changes in sea level, increase in extreme weather, and other effects of climate change into planning and operations for infrastructure, land use, emergency preparedness, economic development, public health and other vital civic functions. We are continually looking for ways to implement sustainability policy and planning across departments, in a manner that will both enhance the services of the department and provide concrete benefits to the environment, budget and bottom-line.

For example, the Boston Redevelopment Authority (BRA) — the City's economic development and planning agency that administers the Zoning Code — has required climate adaptation planning in construction design for waterfront properties, which not only ensures that our city's infrastructure is prepared for the effects of climate change, but also protects the economic investments for development in Boston.

Today, there are probably more similarities between cities' sustainability initiative than there are differences. We are collaborating with other cities to develop innovations and share best practices. I co-chair a peer network of Sustainability Directors from over 100 cities in North America, the Urban Sustainability Directors Network. With support from the foundation community, we are working together to develop joint strategies in city greening, from

clean energy and transportation, to zero waste and urban food systems. By working together, we are accelerating the pace of policy development and bringing urban sustainability to scale.

BioCycle: *Why have cities been able to make significant inroads toward more sustainable practices and programs, such as beginning to address challenging issues like climate change?*

Jim Hunt: Cities are in a unique position to take climate action, to reduce future emissions and prepare for the changes that will come. Cities are small enough to see the threats concretely, nimble enough to move quickly, and big enough to gather resources. City governments know their residents, businesses and institutions individually, and can work with them as partners, hear their particular concerns and find creative solutions together. The Boston Green Ribbon Commission, created last year, is a good example of how the public and private sectors can work together. The Commission is a group of business, institutional and civic leaders in Boston working to develop and implement strategies for fighting climate change in coordination with the City's Climate Action Plan.

BioCycle: *What do you consider some milestones in terms of Boston's progress toward sustainability?*

Jim Hunt: In 2007, Boston became the first city in the nation to require a green building standard through municipal zoning requirements. Article 37 of the Zoning Code requires that all large-scale projects meet the U.S. Green Building Council's LEED certification standards. We increased these standards in 2011 with a new energy code that is 20 percent more efficient than the model codes used in other U.S. cities. There was some resistance to Boston's green building requirements at the outset, but today the development community views green building as a market differentiator. Our largest

commercial office property owner, Boston Properties, just opened Atlantic Wharf, a new LEED Gold skyscraper. This building uses 42 percent less energy than a typical office tower and it captures 95 percent of the rainwater that falls on the property, harvesting it for reuse on site and keeping it from running off into Boston Harbor. Despite being constructed and opened during the recession, this building is nearly fully leased — just months after opening its doors.

Also in 2009, the Mayor created the Climate Action Leadership Committee that was tasked with revamping the City's Climate Action Plan and developing the roadmap for reducing greenhouse gases 25 percent by 2020, and 80 percent by 2050. This plan is now in place and we are working to meet these aggressive targets.

Another key programmatic moment was when we launched the HubWay in 2011, Boston's new bike share program. Within the first two months the program had already achieved over 100,000 rides, and when Hubway's first season ended in November 2011, over 140,000 rides had been taken. Hubway represents a shift in how Bostonians and visitors to the city think of transportation in Boston, as the City and our partners are facilitating adoption of alternative transportation options to lessen environmental impacts, and ensure a higher quality of life. Boston was once considered one of the least friendly bike cities, but today we've turned our city around by building bike lanes, launching bike share, and changing the culture in Boston. As Mayor Menino likes to say, the car is no longer king in Boston.

BioCycle: *Has the City of Boston employed ordinances to "institutionalize" sustainability programs?*

Jim Hunt: The Mayor has issued several Executive Orders and filed legislation to codify our sustainability policies.

Green Ribbon Commission

FIRST convened in 2010, the Boston Green Ribbon Commission is a foundation-funded initiative that brings together Boston business executives, institutional leaders and community representatives to support the city's goal of reducing greenhouse gas emissions by 25 percent by 2020. The commission advises Boston on climate policy design and implementation, and engages its member's peer networks to promote energy efficiency and renewable energy best practices. It grew from a recommendation in the

City's 2010 Climate Action Leadership Committee Report to "establish [a] public commission that engages all segments of the community in the design and implementation of policies and programs."

Commission members are actively involved in one of seven working groups. These range from sector-specific committees like Health Care, Commercial Real Estate and Education to working groups focused on Policy, Finance, Communications and Climate Adaptation.

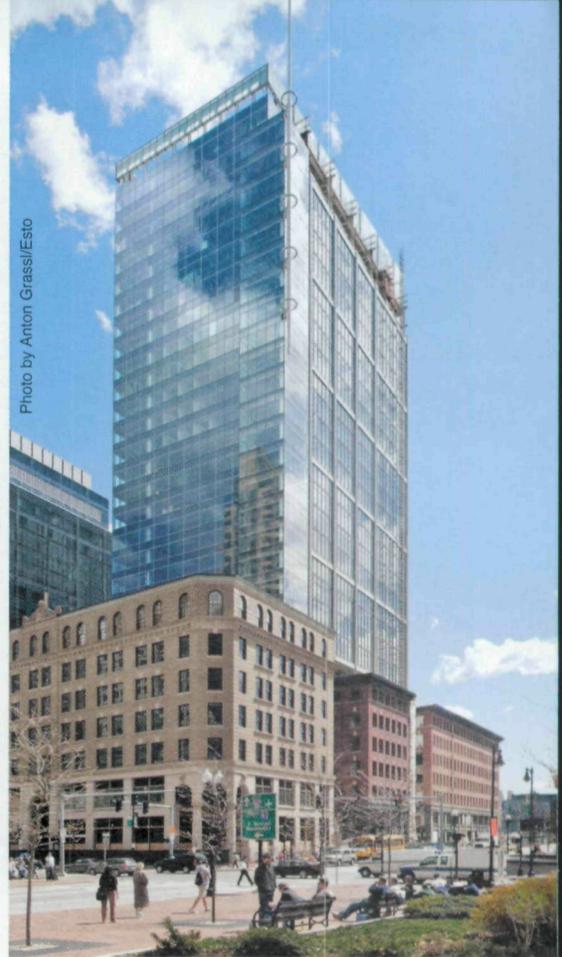


Photo by Anton Grassl/Esto

Atlantic Wharf, owned by Boston Properties, is a new LEED Gold skyscraper that consumes 42 percent less energy than a typical office tower, and captures and reuses 95 percent of the rainwater that falls on the property.

The green building standard in the zoning code is one example. Another is the Stretch Energy Code that requires new residential and commercial buildings in Boston to achieve approximately 20 percent better energy efficiency than is required by Massachusetts' base energy code. Mayor Menino submitted his proposal to City Council to adopt these strong energy efficiency regulations and it was unanimously approved on November 17, 2010. The Council also passed the Mayor's proposed ordinance for solar energy projects in Boston that will make the process for obtaining solar permits more efficient and less costly.

The BRA has begun asking developers of projects that may be subject to more frequent coastal flooding due to sea-level rise to analyze the effects of climate change. This falls under Article 80 of the Zoning Code, which authorizes BRA to review all large projects, institutional master plans and some smaller projects. In 2009, as a result of such an analysis, Partners HealthCare raised the base elevation of its proposed Spaulding Rehabilitation Hospital at the Navy Yard in Charlestown by two feet. In fall of 2010, the BRA in-

Renew Boston

Launched in 2009, Renew Boston is a collaborative partnership between the City, local electric and gas utilities and community partners to drive participation in energy conservation programs. The initiative was established to support ambitious citywide energy savings goals, reduce community greenhouse gas emissions and grow Boston's green economy. It leverages city relationships with community stakeholders, utilities and retrofit contractors to provide comprehensive energy retrofit services.

Current program offerings include no-cost home retrofits for qualified 1-4 family homeowners and a direct-install efficiency program for small business owners. Renew Boston is also focusing on one of the City's most challenging energy problems by hiring a full-time coordinator to help landlords and tenants access Renew Boston's efficiency programs.

Coordination and program development was initially funded with a grant from the Barr Foundation and federal support from the American Reinvestment & Recovery Act (ARRA). Renew

Boston also has successfully leveraged funding and support from state and utility partners. To date, its network has provided more than 4,000 energy efficiency assessments to homes and businesses and has retrofitted more than 1,300 homes and small businesses. Typical energy upgrades include insulation, air sealing, water saving devices, high efficiency lighting, as well as HVAC improvements.

The residential retrofit program has focused on Boston's low- to middle-income residents (earning between 60 to 120 percent of the state median income) – a group of residents that have typically been underserved by traditional energy efficiency programs. The Renew Boston small business program has focused on serving restaurants, storefronts and other small-scale energy users who may not have typically taken advantage of traditional efficiency programs. Marketed through the city's Main Streets districts, the program has used the city's existing relationships with Boston business owners to drive adoption of energy efficiency technologies. www.renewboston.org

full service solutions. Now that energy efficiency and renewable energy markets are more mature, private financing innovations are beginning to gain stronger footing.

Sustainability at its core drives home efficiencies that both reduce the environmental footprint and the financial burden on the municipality. But these projects often require significant capital funding upfront, which can create some resistance both politically and institutionally as they compete against other much needed projects. Often times the operational savings on those sustainability projects are substantial, which has been proven in our programs. For example, the City did a major street light retrofit, replacing mercury vapor bulbs that are very energy intensive with efficient LED lights, resulting in a 60 to 70 percent reduction in energy consumption. The project required millions of dollars in capital costs, but it comes back in savings to the Public Works Department.

The private sector understands these projects are sound investments, often returning 15 to 30 percent on investment. Off balance sheet solutions to finance sustainable energy projects are now available, including long-term power purchase agreements for solar and performance guaranteed contracts for energy efficiency. These financing solutions provide private capital to cover the first costs of clean energy projects and pay the debt service back with the savings on energy over time. It's the operational savings and revenue generation on these types of projects that are ultimately driving them. After the initial investment, energy savings become the gift that keeps on giving.

BioCycle: *After six years as Chief of Environmental & Energy Services, do you feel Boston's shift toward sustainability is permanent, e.g., not subject to the whims of politics?*

Jim Hunt: Change is hard and takes leadership. Mayor Menino has put Boston on a course to be one of the greenest cities in the nation. But we've also been able to engage our residents and our business leaders in appreciating that being a sustainable city is a big competitive advantage for Boston. It's improving livability for our residents, it's helping attract and retain the best talent to our city, it's bringing new companies, and it's positioned Boston as a national hub for the clean tech cluster. I'd say the greening of Boston is here to stay. ■

The four sidebars in this article are written by Neil Veilleux and Andrew Belden, project consultants with Meister Consultants Group's Boston office (www.mcgroup.com).

sported a climate adaptation requirement into the overall project permit for the multibuilding, 6.3-million square foot Seaport Square project in South Boston. All the individual components — residential, commercial, cultural and educational — will have to comply with applicable state and city strategies for addressing sea-level rise and climate change.

BioCycle: *It is highly likely that federal funding that helped the City of Boston make significant gains in energy efficiency and greenhouse gas reduction will be cut substantially or possibly eliminated in 2012. Will this slow the momentum of the City's sustainability initiatives?*

Jim Hunt: Federal funding through programs like the Energy Efficiency

and Conservation Block Grant have been critically important in accelerating clean energy deployment across the U.S., saving money, curbing emissions, growing our clean tech economy and creating jobs at all skill levels. Other programs under economic stimulus, like the green affordable housing retrofits funded by U.S. Housing and Urban Development, are keeping construction workers off the unemployment roll while helping transform neighborhoods into more sustainable communities. These federal programs helped introduce efficiency and sustainability to policy makers and private sector leaders, stimulating markets and demand for products and services. The loss of these funding pipelines will certainly slow progress in cities, but the private sector is now better positioned to offer innovative financing and

The Boston Redevelopment Authority reviews proposed projects that may be subject to more frequent coastal flooding due to sea level rise. After such an analysis, the base elevation of the Spaulding Rehabilitation Hospital (left) at the Navy Yard in Charlestown was raised by two feet.



Artist's rendering courtesy of Partners HealthCare

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