FY12 Sustainability
Cambridge Public School District
"Cambridge Green Schools Initiative (CGSI)"

FY 2012 Year-in-Review

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2012 Sustainability Year-In-Review http://www3.cpsd.us/sustainability/Sustainability

I. ENERGY

A. Energy-Savings Projects

**Please See Attached: Energy & Financial Savings Chart*

The Sustainability Manager has worked in partnership with the Department of Public Works, the DOER Green Communities Grant Program, NSTAR Electric, the Facilities Department, and Prism Energy to implement efficiency projects that reduce usage and save money.

These projects have been successfully completed over the past two years, and continue to be developed by the Sustainability Manager, based on analysis of overall district energy usage that is tracked by both the Sustainability Manager and the Department of Public Works.

The focus has been on implementing energy efficiency activities by means of Lighting and HVAC Measures.

Lighting upgrades have consisted primarily of the installation of high efficiency lamps, ballasts and occupancy sensors by means of retrofitting existing lighting fixtures. HVAC projects have related to the installation and upgrade of heating and cooling mechanisms and DDC (direct digital control) systems that allow for more control over systems being turned on/off, and temperature control, thus enabling greater energy savings.

Over the past two years we have implemented the following energy efficiency projects, resulting in a net projected annual savings of $295,738 dollars; 618,313 kWh of electricity; and 29,863 therms.

- November 2010: We installed a high-efficiency condensing boiler at the Longfellow School Building. The new boiler replaced inefficient and failing equipment, and was conversion from oil to natural gas. In addition, we installed a DDC (direct digital control system) that allows for a centralized and more efficient means of digitally controlling HVAC systems for a tighter control over temperature and timing of energy systems. This in turn saves energy by reducing inefficiency.

- February 2011: We installed high-efficiency lighting and occupancy sensors at the Peabody School, Kennedy-Longfellow School, Baldwin School, and Haggerty School. The new lights use 20%-50% less electricity than the old ones, and occupancy sensors, installed where appropriate, add to the savings by turning off lights when rooms are vacant. Rooms are brighter too, due both to the color of the new lamps and because output from old bulbs decreases over the years.

- July 2011: We installed Variable Frequency Drives (VFDs) at the Haggerty School. This is an aspect of the digital controls system that allows for a centralized and more efficient means of digitally controlling HVAC systems for a tighter control over temperature and timing of energy systems.

- September 2011: We installed high-efficiency lighting and occupancy sensors at the Morse School, Solomon Garage, and High School Field House. As in the lighting upgrades we did in February 2011, the new lights use 20%-50% less electricity than the old ones, and occupancy sensors, installed where appropriate, add to the savings by turning off lights when rooms are vacant.

- September 2011: We completed the programming of the Cambridge Rindge and Latin High School PV System, which is now live and in action. We have set it up so that the daily energy tracking and savings can be viewed by students and staff of CRLS online, and used as an educational resource.

- January 2012: We installed district-wide Direct Digital Controls (DDC) system connecting back to our central base at the War Memorial Building, including the following nine schools: Baldwin School, Cambridgeport School, Graham & Parks School, Kennedy-Longfellow School, King-Amigos School, King Open School, Morse School, Peabody School, and Tobin School.

- February 2012: We commissioned a new HVAC system at the Longfellow School Building, allowing for more efficient cooling, heating, and air quality measures and energy savings.

- Projects Underway and Future Projects: We are currently planning a DDC upgrade project at the Haggerty School, and the potential for building a Net Zero and/or LEED designed school in place of the existing King-Amigos School. Future projects being outlined now include an HVAC upgrade for the Peabody School, lighting upgrades for the Cambridgeport School and Fletcher-Maynard Academy, and HVAC upgrade for the Baldwin School, and a new high-efficiency boiler for the Solomon Garage.

B. *Attached: Energy & Financial Savings Chart*

II. WASTE

A. Recycling

- Single stream recycling in partnership with DPW is underway at all schools and administrative buildings. We track the total tonnage recycled at each school per month, in partnership with custodians and DPW.

- The Innovation Agenda Move happening now is utilizing a highly specialized recycling and re-streams process with an outside contractor, Sterling Mail, for all purging of materials and move components, in addition to single stream recycling.

- We use sustainable waste disposal during construction projects such as re-purposing of materials.

- CGSI promotes the Product Stewardship Institute's school-based programs, such as "opt-out of catalogs and phonebook program," and other waste reduction classroom projects.

B. Composting

- **Six schools are composting their lunch leftovers now.**
- They are: King Open, Graham & Parks, Peabody, Cambridgeport, Tobin, and CRLS.
- Through April 2012 five schools kept the following amounts of food scraps out of the trash:
  - *King Open*: From March 2009 -- **nearly 20 tons**.
  - *Graham & Parks*: From November 2010 -- **more than 10 tons**.
  - *Peabody*: From October 2011 -- **more than 10,000 pounds.**
  - *Cambridgeport*: From November 2011 -- **over 4,000 pounds.**
  - *Tobin*: From February 2012 -- **nearly 5,500 pounds.**

III. PRODUCTS

A. Custodial Management & Cleaning Products

- **Currently, the Facilities Department has inventoried, recycled, and replaced outdated custodial cleaning equipment with new equipment that utilizes environmentally-friendly products, methods, and supplies.**

Specifically, we have removed all non-conforming cleaning supplies from our schools, implementing a Green Cleaning Program in partnership with Casey Engineering that utilizes metered green cleaning supplies through the Commonwealth of Massachusetts under the contract for environmentally-preferred cleaning products (contract #GR016). All custodians have been trained, and buildings stocked with multiple dispensers and products, which reduce packaging resources. A custodial cleaning standards handbook provides a template for custodians utilizing the green cleaning products. Facilities developed a baseline to look at the cleaning needs based on the environmental contaminants outside the building, and mitigation of the contaminants in the building.

B. Pest & Building Management

All pest-management plans continue to be updated, we are using non-VOC paint when possible, environmentally-friendly ice melt is used, all water coolers have been removed and replaced with water filtration systems, and glass replacement in buildings is completed with the highest R value glass available in this area.

C. Food Services and More
We have a bioware pilot underway at CRLS, in which we have ordered and introduced compostable trays and foodware into the cafeteria for lunchtime use. In partnership with our Food Services department, the Department of Public Works (DPW), and the Cambridge Health Alliance (CHA), projects are underway to phase out polystyrene entirely and use only compostable food products like biodegradable trays and plates—currently this is a more expensive option.

D. Green Office Tips
Additionally, the Sustainability Manager sends out Office Tips and other green tip-of-the-week recommendations to staff. We are working with our internal Purchasing Department to order environmentally-sustainable office products, and energy-saving appliances and machines for our schools and offices.

E. Managed Print Services
The Office for Sustainability is working in partnership with the school district's ICTS Technology Department to develop, upgrade, and purchase energy-efficient print service machinery, and to establish a protocol for Managed Print Services including reduced ink, paper, and energy use.

IV. FOOD

A. Tasty Choices Program
Currently, the Tasty Choices Program, a partnership between the Cambridge Public Health Department School Health Program and the schools' Food Services Department, is an essential part of the ongoing work to help students stay healthy and in school so that they can reach their academic potential. Through this program, school nutrition staff collaborate with the schools' Food Services Department to increase the number of healthy and appealing food choices available to students. Nutrition staff work to create a school environment that promotes healthy choices throughout the school day, as well as provide education and outreach to students, staff and families. As part of the Tasty Choices Program, the Farm to School Program, started by the Growing Healthy Collaborative, is bringing locally-grown food into the school cafeterias, including nectarines, cider, apples, peaches, tomatoes, butternut squash, carrots, and pickles.

B. Let's Move Campaign
Additionally, in February 2011, Cambridge officially signed on to First Lady Michelle Obama's national campaign to end childhood obesity, entitled, "Let's Move. Locally, this campaign is being directed out of the Cambridge Public Health Department and helps to raise awareness about childhood obesity and inspire families, schools and communities to take action to help kids be more active, eat better and get healthy.

C. Citysprouts
CitySprouts is a Cambridge-based nonprofit that is currently working in all of our schools. There is a garden in every school thanks to this partnership, and CitySprouts introduces school gardens as a core element of children's public school education. The gardens ensure that hands-on learning,

environmental stewardship, and the physical & sensory experience of growing and eating food becomes part of our students' public education.

V. GREENSPACE

A. Storm Water Management
The CPSD Office for Sustainability is working on storm water management, analyzing use of pest-control for outdoor spaces, and incorporating LEED design elements into new building design. We hope to look more extensively into the possibility of green roof options for future buildings.

B. Sustainable Transportation
In partnership with the Green Streets Initiative (Walk/Ride Days) the schools are encouraging students and staff to use sustainable modes of transportation to commute: such as walking, biking, carpooling, or using public transportation. This helps to encourage people to spend time outdoors when traveling between locations, in addition to reducing energy use.

C. Outdoor Environmental Education
The CPSD Office for Sustainability shares monthly information with schools and district staff on outdoors education opportunities, including use of local resources for ecological and wilderness experiential learning. Fresh Pond, The Water Department, and the Maynard Ecology center are a few examples.

VI. COMMUNICATIONS

A. Online
- Weekly e-mails
- Tip-of-the-week
- Website
- Green Hero Award Program

B. On The Ground
- In-school presentations to staff & students
- Regular communications with custodians, principals, district & city staff
- Meetings & events with CGSI partners
- Materials, posters, stickers for CGSI in schools
- Coordinating energy & sustainability projects and events

VII. WEBSITE

A. Link to Website
- The Sustainability website can be viewed at: http://www3.cpsd.us/sustainability/Sustainability.

VIII. GREEN HERO AWARD

A. Overview

- The Green Hero Award given every two months is a program of the Cambridge Green Schools Initiative (CGSI), and the honor is given to individuals or groups who are making a significant contribution or impact towards environmental sustainability in the school district. The honor is given by the school department's Office for Sustainability.

IX. EDUCATION & OUTREACH

A. Teachers, Students, & Parents

- Sustainability and environmental educational opportunities are e-mailed to staff on a regular basis and via "weekly e-mail updates," from Sustainability Manager. Updates are also included in some school newsletters that go home to families, via family liaisons.
- The website includes a detailed "Resources" section with additional websites, curriculum, games & tools, videos, standards & policy, places to visit, and volunteering opportunities.
- Sustainability Manager gives presentations and workshops to classes, including lessons related to sustainability, environment, and climate change.

X. PARTNERSHIPS & COMMUNITY

A. Official Partners of the Cambridge Green Schools Initiative/CGSI

- The Department of Public Works
- The Cambridge Energy Alliance
- Prism Energy Services
- NStar
- Casey Engineering
- CPSD Food Services Department
- Cambridge Health Alliance
- Walk/Ride Days (Green Streets Initiative)

B. City & Community Partnerships

- Green Communities Working Group
- ICLEI Climate Task Force Training Committee
- Presentations to the City's Environmental Committee & CPAC
- Working Group for U.S. Department of Education's Green Ribbon Schools Program

ELECTRICITY USE

JULY - DECEMBER	**FY11**		FY12 JULY - DECEMBER	**FY12**		
Row Labels	Sum of Use (kwh)		Row Labels	Sum of Use (kwh)	**Change**	
School Department			School Department		**n/a**	
Administration						
School Administration Building	93,786		School Administration Building	95,306	**2%**	
Solomon Garage	95,440		Solomon Garage	87,600	-8%	lighting retrofit
Indoor Recreation						
Russell Field Field House	78,560		Russell Field Field House	74,280	-5%	lighting retrofit
War Memorial Recreation Center	693,120		War Memorial Recreation Center	785,040	**13%**	
Schools						
15 Upton Street	100,201		15 Upton Street	103,201	**3%**	
Baldwin School	338,466		Baldwin School	319,938	-5%	lighting retrofit, DDC integration
Cambridge Rindge & Latin School	1,619,251		Cambridge Rindge & Latin School	2,024,791	**25%**	
Cambridgeport School	201,120		Cambridgeport School	204,696	**2%**	
Fletcher-Maynard Academy	198,360		Fletcher-Maynard Academy	207,240	**4%**	
Graham & Parks School	140,408		Graham & Parks School	136,744	**-3%**	DDC integration
Haggerty School	378,290		Haggerty School	321,794	-15%	lighting retrofit, DDC integration, VFD upgrade
Kennedy/Longfellow School	749,808		Kennedy/Longfellow School	724,764	-3%	lighting retrofit, DDC integration
King Open School	203,328		King Open School	205,284	**1%**	
King/Amigos School	448,560		King/Amigos School	418,380	**-7%**	DDC integration
Longfellow Building	166,080		Longfellow Building	79,440	**-52%**	DDC integration, HVAC comm., bldg. closed
Morse School	351,948		Morse School	308,076	-12%	lighting retrofit, DDC integration
Peabody School	553,040		Peabody School	544,544	-2%	lighitng retrofit, DDC integration
Tobin School	1,015,617		Tobin School	845,367	**-17%**	DDC integration

Energy & Cost Savings Summary -- School Energy-Efficiency Projects 2010 to Present

Measure		Status	Energy Savings		Financial Savings & Costs					Reference Data
Category/Building	**Energy Conservation Measure**	**Status (Completed with month/year or planned Qtr/year)**	**Projected Annual Electricity Sav (kwh)**	**Projected Annual Gas Sav (therms)**	**Projected ANNUAL Cost Savings ($)**	**Total Installed Cost ($)****	**Green Community Grant ($)**	**Utility Incentives ($)**	**Net Cost ($)**	**Funding Source(s) for Net Costs**
1. Longfellow School	Replaced Boiler (converted from oil to natural gas) and Installed Direct Digital Control System	COMPLETE 11/2010	0	16,490	$18,000	$414,212	$0	$30,000	$384,212	EECBG and City Capital Funds
2. Peabody School	Lighting Retrofit	COMPLETE 2/2011	206,244	0	$30,937	$116,885	$0	$51,611	$65,275	EECBG and FY10 Bond
3. Kennedy/Longfellow School	Lighting Retrofit	COMPLETE 2/2011	170,090	0	$25,514	$90,711	$0	$42,522	$48,189	EECBG and FY10 Bond
4. Baldwin School	Lighting Retrofit	COMPLETE 2/2011			$0	$59,170	$0	$20,139	$39,032	EECBG and FY10 Bond
5. Haggerty School	Lighting Retrofit	COMPLETE 2/2011	84,425	0	$12,664	$50,864	$0	$19,494	$31,370	EECBG and FY10 Bond
6. Haggerty School	Variable Frequency Drives	COMPLETE 7/2011	41,963	0	$6,294	$25,929	$15,438	$10,491	$0	N/A
7. Morse School	Lighting Retrofit	COMPLETE 9/2011	117,840	0	$17,676	$83,139	$53,679	$29,460	$0	N/A
8. Solomon Garage	Lighting Retrofit	COMPLETE 9/2011	11,054	0	$1,658	$12,767	$10,004	$2,764	$0	N/A
9. High School Field House	Lighting Retrofit	COMPLETE 9/2011	185,000	0	$27,750	$59,018	$12,768	$46,250	$0	N/A
10. Cambridge Rindge and Latin High School PV System	31 KW Rooftop PV	COMPLETE 9/2011	30,000	0	$4,500		$0	$0		Mass. Renewable Energy Trust Grant
11. Baldwin, Cambridgeport, Graham & Parks, Kennedy-Longfellow, King/Amigos, King Open, Morse, Peabody, Tobin	DDC System Integration	COMPLETE 1/2012	171,176	0	$51,292	$158,628	$0	$40,644	$117,984	FY10 Bond
12. Longfellow School	Commission New HVAC	COMPLETE 2/2012	TBD	TBD	TBD	$11,250	$0	$0	$11,250	Energy Fund - Appropriated Utility Rebates
Solomon Garage	New High-efficiency Boiler	Planned FY12	5,450	1,038	$2,426	$150,000	$0	TBD	$150,000	FY12 City Capital Funds - Residential Parking
*Baldwin School	HVAC Upgrade	Planned FY12 or FY13	40,228	3,954	$12,163	TBD	$0	TBD	TBD	TBD
Cambridgeport School	Lighting Upgrade	Planned FY12 or FY13	56,009	0	$8,401	TBD	$0	TBD	TBD	TBD
Fletcher-Maynard Academy	Lighting Upgrade	Planned FY12 or FY13	43,392	0	TBD	TBD	$0	TBD	TBD	TBD
*Haggerty School	DDC Upgrade	Planned FY12 or FY13	176,889	8,272	$36,460	$293,000	$0	TBD	$293,000	TBD
Martin Luther King, Jr. School	Demolition or Major Renovation - Silver LEED	Design FY12 Construction FY13	TBD	0	TBD	TBD	$0	TBD	TBD	City Bond
*Peabody School	HVAC Upgrade	Planned FY12 or FY13	95,169	16,599	$40,004	TBD	$0	TBD	TBD	TBD
TOTAL Projected Savings			**618,313**	**29,863**	**$295,738**	**$1,525,574**	**$91,889**	**$293,374**	**$1,140,311**	

* = priority