Sustainable CUNY Conserves
Baruch College Energy Profile

Data, metrics, and graphs displaying campus energy and environmental performance

Sustainable CUNY
205 East 42nd Street, 11th Floor
New York, NY 10017
sustainable@mail.cuny.edu

About your College Energy Profile

This data is compiled as part of the Sustainable CUNY Conserves effort to measure, benchmark, and support your campus operations and maintenance staff in the management of their equipment and facilities, as well as to help them improve their energy performance. When applicable, raw data for further campus analysis is included as a part of this campus energy profle.

Each worksheet tab displays campus information about environmental and energy data, and their management. The following links can be used to navigate through the worksheets.

This campus energy profile is compiled by the Sustainable CUNY Conserves team. Please contact sustainable@mail.cuny.edu with any questions or comments. Because these energy profiles will be updated quarterly, refer to the change notes below for tracking updates.

Change Notes

Below are changes made to this energy profile, both as a part of normal updates, and to account for calculation or data set changes.

Date:	Name:	Note:
May-13	N. Richardson & J. Couey	1. energy data available to Jan 2013 in EC3 - actual and estimated readings included
Jun-13	J. Couey	Energy budget data updated to March 2013

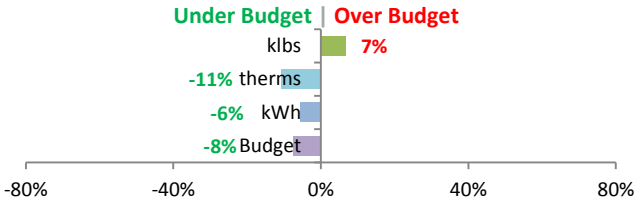
Baruch Energy Performance Dashboard

Campus performance metrics and suggested action areas. Data sources include aggregate data elsewhere in this report, as well as from the 2012 O'Brien & Gere campus audit report.

Energy & Environment Metrics

Energy Budget

-8% $: Year-to-Date (YTD) Projections / YTD Actuals (see more on Budget tab)
-6% kWh: Electricity Year-to-Date (YTD) Projections / YTD Actuals (see more on Budget tab)
-11% therms: Natural Gas Year-to-Date (YTD) Projections / YTD Actuals (see more on Budget tab)
7% klbs: Steam Year-to-Date (YTD) Projections / YTD Actuals (see more on Budget tab)

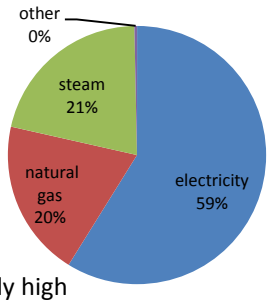


Energy Use Intensity: as per Executive Order No. 88 http://www.buildsmart.ny.gov/resources/

??? kBtu/ft^2 EUI: Energy-Use-Intensity, average source energy per square foot
??? %, percent difference from Target Year (FY11) - required to achieve -20% from baseline Target Year

Target Year EUI

106.84 kBtu/ft^2/yr EUI for Target Year FY11
59% percent EUI from Electricity
20% percent EUI from Natural Gas
21% percent EUI from Steam
0.3% percent EUI from diesel and/or fuel oil
1,572,632 Gross Square Feet (2010)



U.S EPA Energy Star Portfolio Manager (E*PM) Score

73/100 E*PM score, indicates potential for improvement is relatively high

Dept. of Energy's EIA CBECS 2003 database for College or University Buildings

79 Percentile of normalized electricity consumption (kWh/ft^2/year)
41 Percentile of normalized fuel consumption (mBtu/ft^2/year)

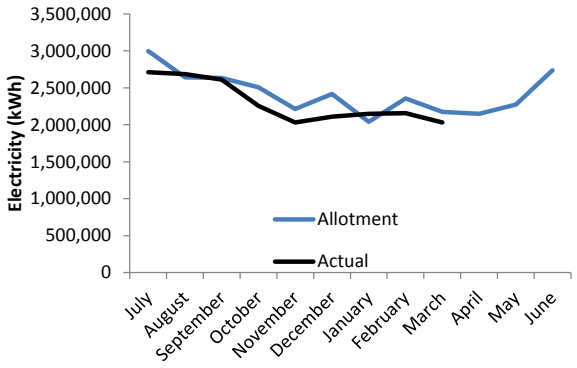
Takeaway: broad energy conservation measures remain for improving EUI score

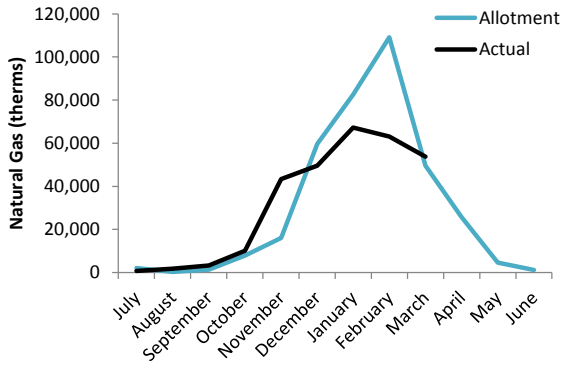
Suggested Action Areas

- Established Peak Load Management (PLM) Action Plan, covering (a) daily activities, (b) seasonal activities, and (c) grid constrained demand response days
  - see more via the PLM tab here
- Establish and monitor "unoccupied" scheduling to save energy in unused spaces via Building Management System, or if non-automated via directing personnel
  - Target lighting, fans, air conditioning units, and temperature set points
  - see more via the BMS tab here
- Enforce campus-wide temperature set point policy of 68F maximum in winter, and 78F minimum in summer (per the City of New York Department of Citywide Administrative Services Energy Conservation Guidelines for Facility Managers).
- Establish a short-term energy savings plan to implement "low hanging fruit" energy conservation measures, such as high efficiency lighting with smart controls, optimize central chiller plant sequencing & resets, implement a steam trap maintenance program, implement filter cleaning and other preventative maintenance for energy savings.
- Establish regular administration reviews of energy budget reports and management protocols for reviewing energy use breakdowns, energy bill variance and sensitivity to budget, energy savings priorities and control procedures.

Energy Overview and Budget Worksheet

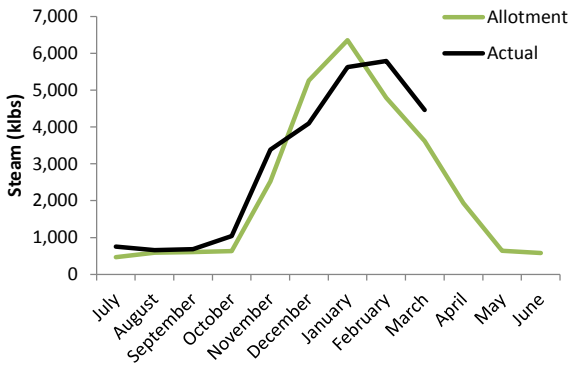
FY 2012/13 Baruch College		July	August	September	October	November	December	January	February	March	April	May	June	Total Projections /YTD Actuals	YTD Projections /YTD Actuals
Electricity (kWh)	Annual Allotment %	0.103	0.091	0.090	0.086	0.076	0.083	0.070	0.081	0.075	0.074	0.078	0.094		
Projected usage	29,140,000	2,997,016	2,642,464	2,631,761	2,507,840	2,213,659	2,418,409	2,041,984	2,354,216	2,174,814	2,146,090	2,275,310	2,736,437	29,140,000	21,982,164
	Actual Kwh	2,710,094	2,685,832	2,612,921	2,257,590	2,029,829	2,109,455	2,146,404	2,155,126	2,031,366				20,738,617	20,738,617
	Variance	-10%	2%	-1%	-10%	-8%	-13%	5%	-8%	-7%				-29%	-6%
Gas (Therms)	Annual Allotment %	0.006	0.001	0.004	0.022	0.045	0.166	0.229	0.303	0.138	0.071	0.013	0.003		
Projected usage	360,000	2,070	271	1,296	7,847	16,037	59,759	82,521	109,071	49,576	25,730	4,593	1,229	360,000	328,448
	Actual Therms	732	1,820	3,285	10196	43,319	49,535	67,301	63,080	53,690				292,958	292,958
	Variance	-65%	572%	153%	30%	170%	-17%	-18%	-42%	8%				-19%	-11%
Steam (klbs)	Annual Allotment %	0.017	0.021	0.021	0.023	0.090	0.188	0.227	0.171	0.129	0.069	0.023	0.021		
Projected usage	28,000	466	584	601	635	2,523	5,260	6,358	4,792	3,625	1,934	643	579	28,000	24,844
	Actual Klbs	751	657	679	1039	3,384	4100	5630	5791	4461				26,492	26,492
	Variance	61%	13%	13%	64%	34%	-22%	-11%	21%	23%				-5%	7%
Budget (Dollars)	Annual Allotment %	0.103	0.092	0.093	0.068	0.067	0.090	0.095	0.101	0.082	0.061	0.055	0.093		
Projected allocation	$6,212,954	$639,934	$571,592	$577,805	$422,481	$416,268	$559,166	$590,231	$627,508	$509,462	$378,990	$341,712	$577,805	$6,212,954	$4,914,447
	Actual $	$585,347	$501,408	$542,907	$362,568	$405,218	$507,860	$551,796	$560,541	$526,344				$4,543,989	4,543,989
	Variance	-9%	-12%	-6%	-14%	-3%	-9%	-7%	-11%	3%				-27%	-8%

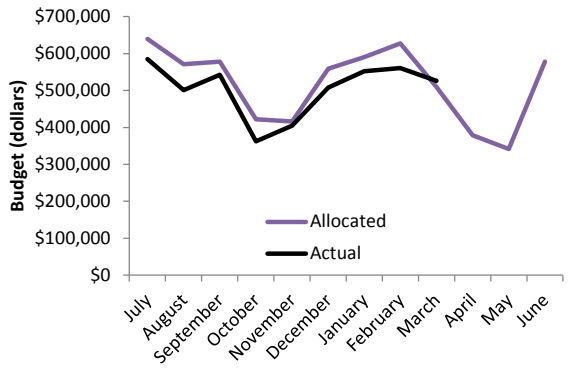


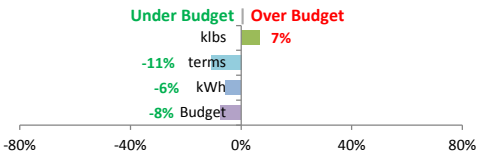


Suggested Action Items

- Utilize IT software for network level control of PC power management
- Optimize chiller plant performance by optimizing chiller sequencing (electric vs. steam) and reset chilled water and condenser water temperatures based on outdoor temperature conditions, as per O'B&G audit
- Reset hot water supply temperatures based on outdoor temperature conditions
- HVAC System Retrocommissioning as per O'B&G audit



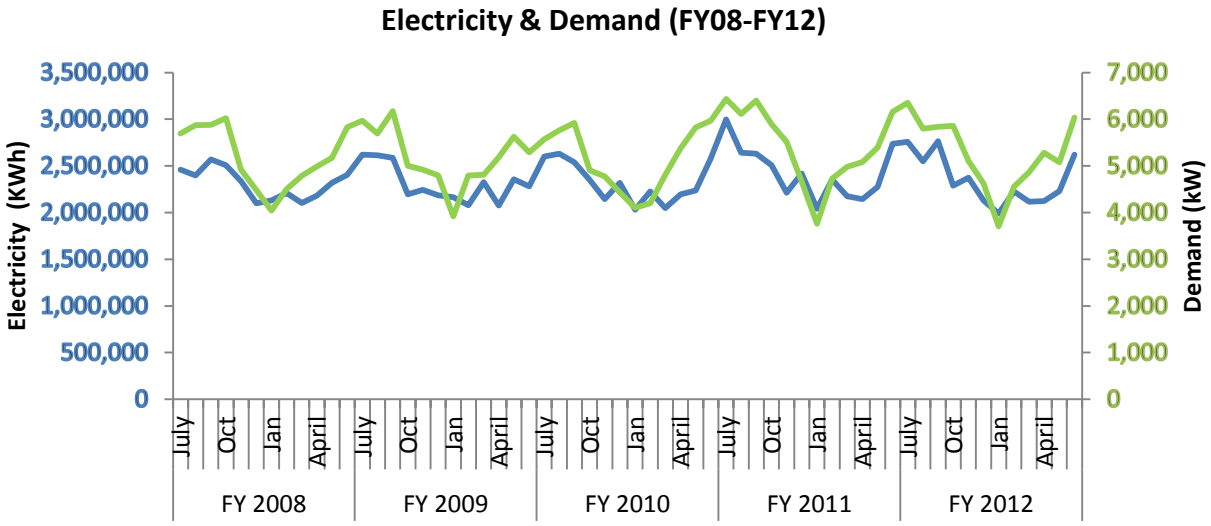


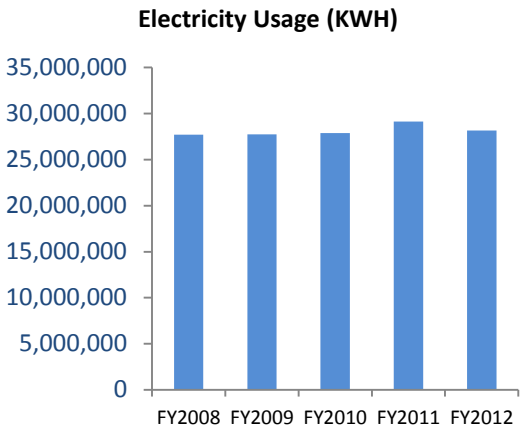


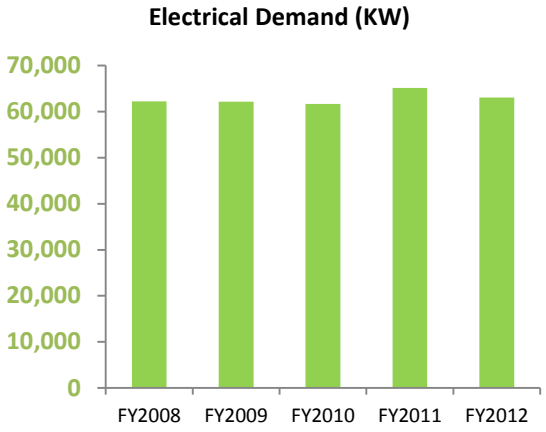
Energy Data

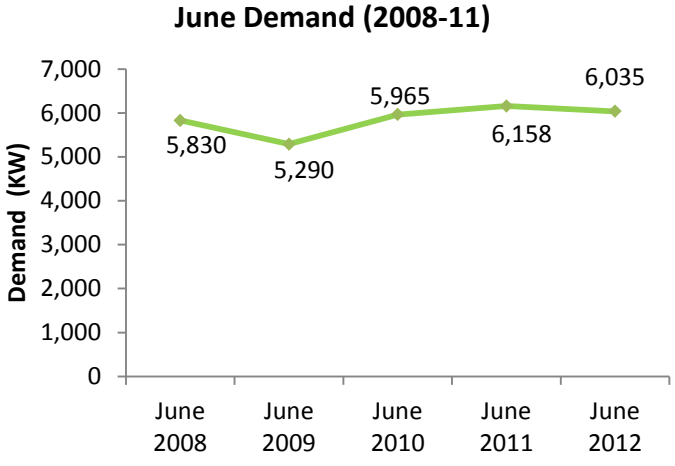
Campus agregate data for electricity, demand, natural gas, and if applicable steam.
Baruch College

Aggregate Electricity (kWh) and Demand (kW)

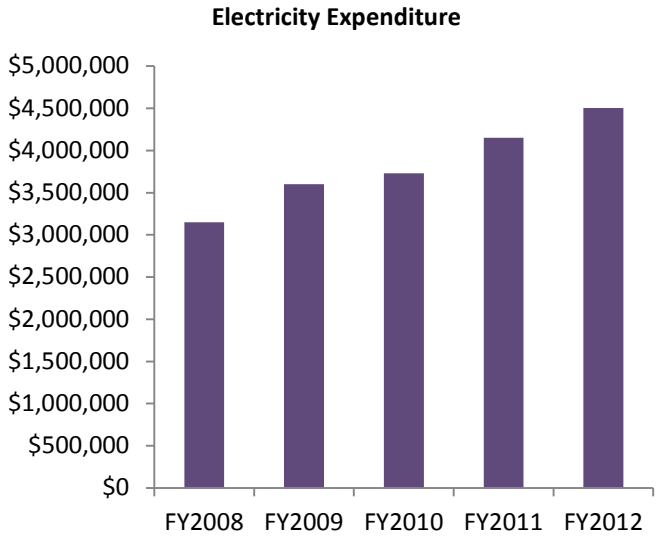


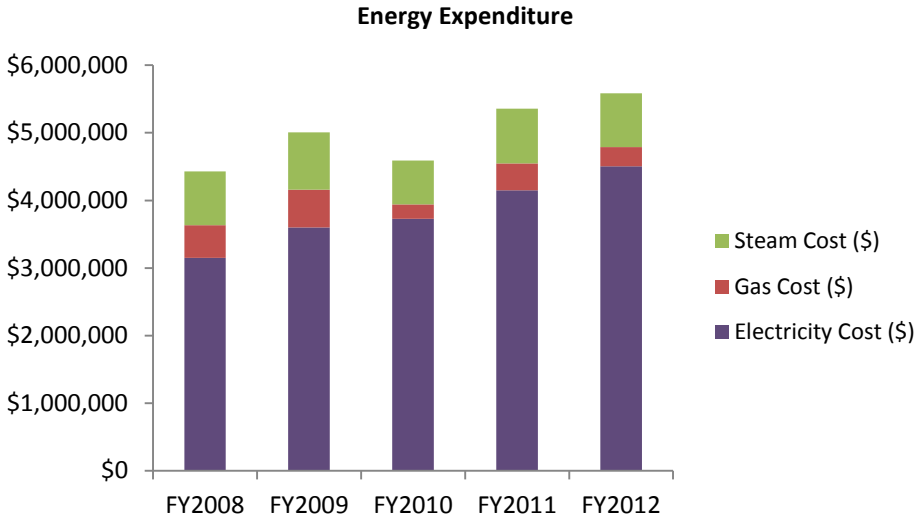


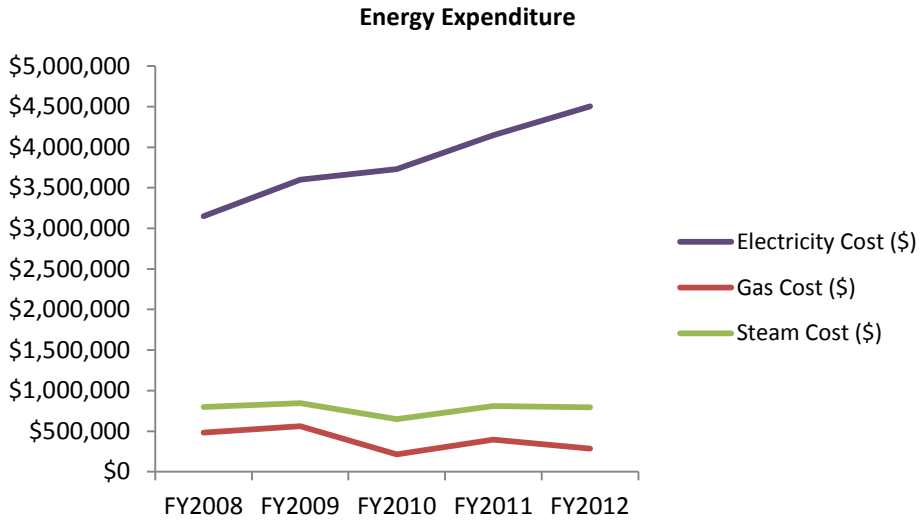




Expenditures: electricity, steam, and gas





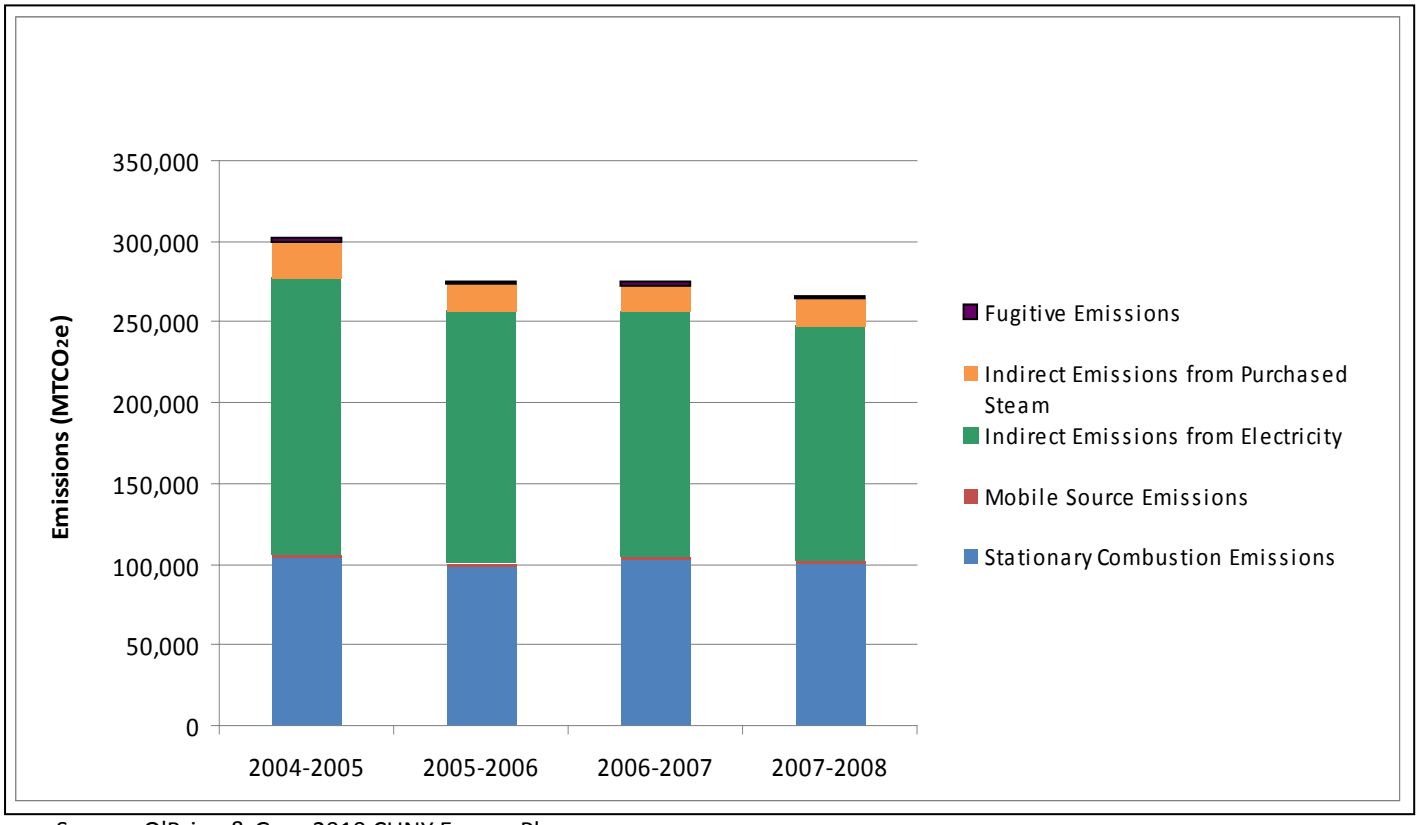


Sustainability Data

Below are nine charts covering some of CUNY and your Campus environmental

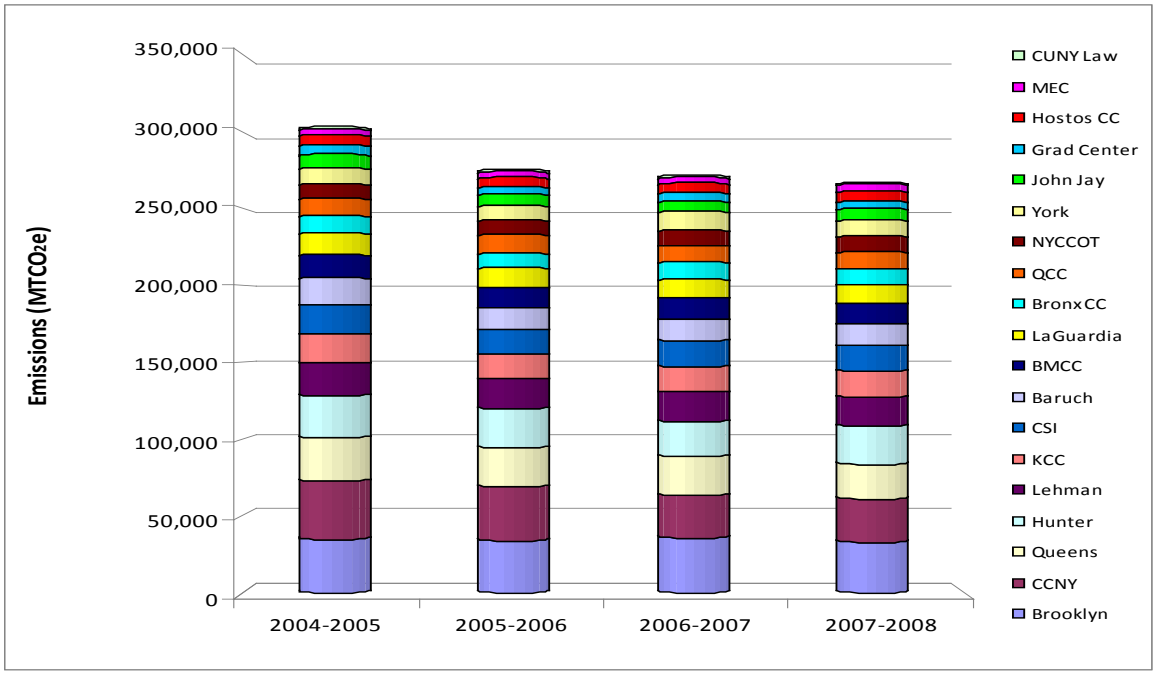
Future updates will more closely track GHG, other emissions (NOx, SOx, etc.), water, recycling, etc. on a sub-annual basis.

CUNY-wide Greenhouse Gas Emissions (GHG), in metric tons CO_2 equivalent



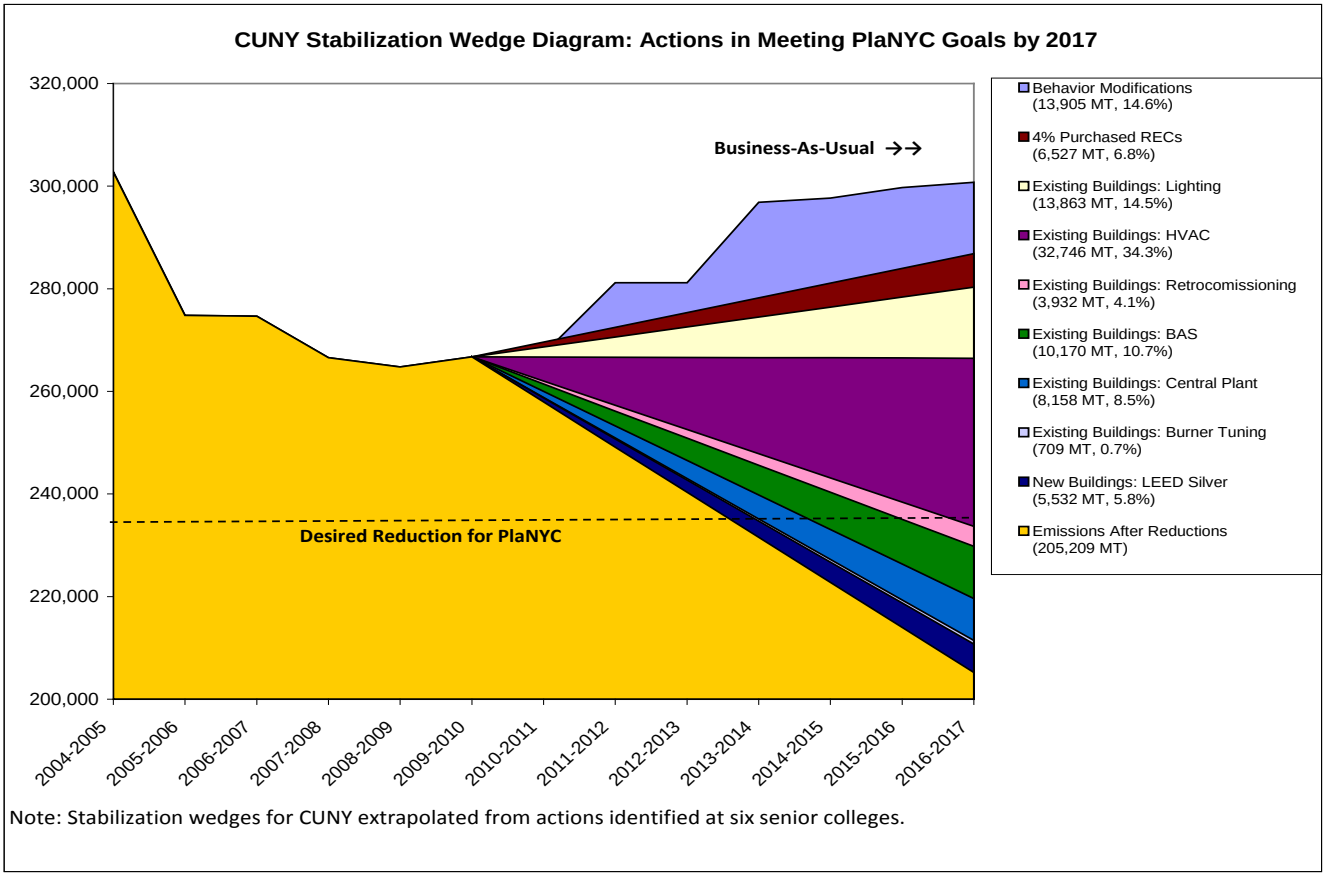
Source: O'Brien & Gere 2010 CUNY Energy Plan

College contribution to the GHG emissions



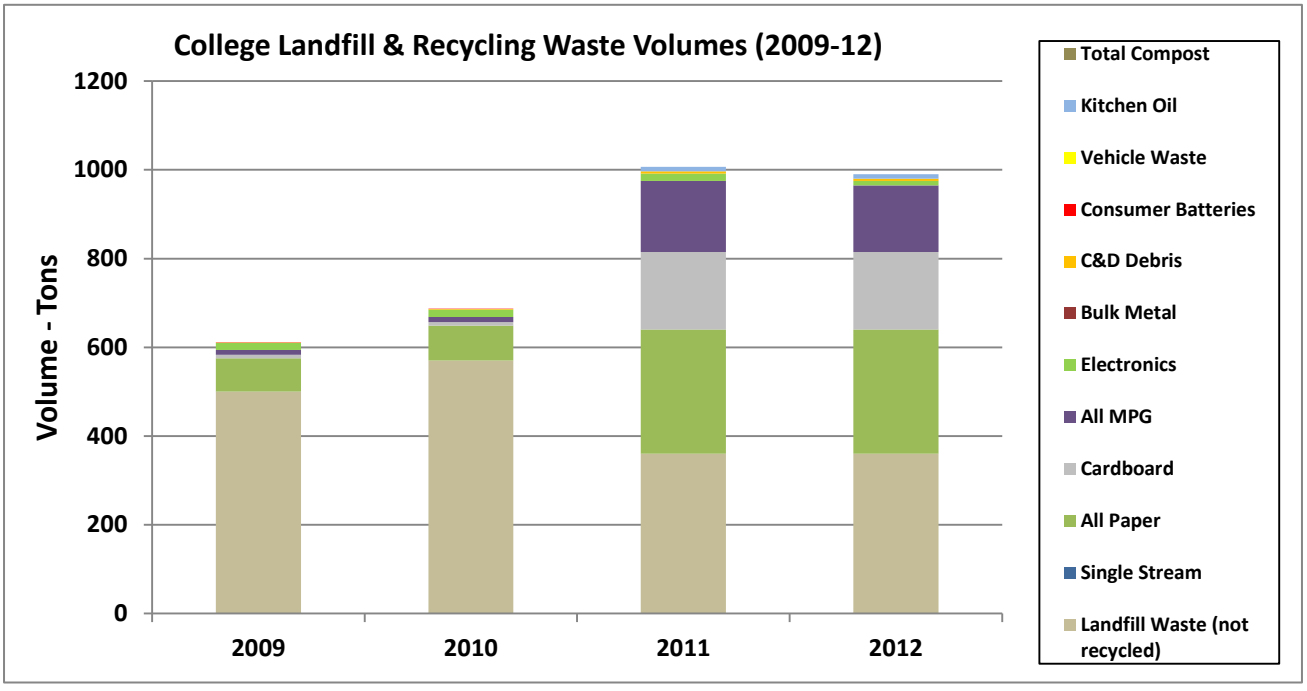
Source: O'Brien & Gere 2010 CUNY Energy Plan

CUNY-wide GHG mitigation strategy

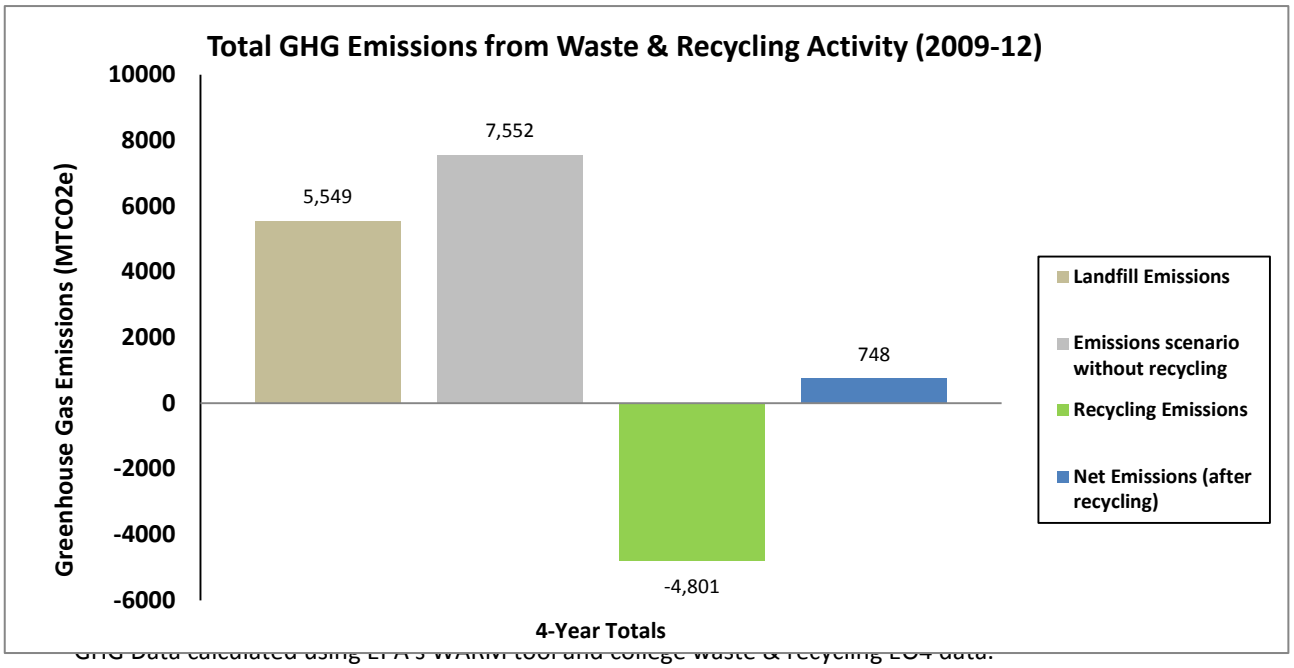


Source: O'Brien & Gere 2010 CUNY Energy Plan

College Landfill & Recycling Waste by Volume

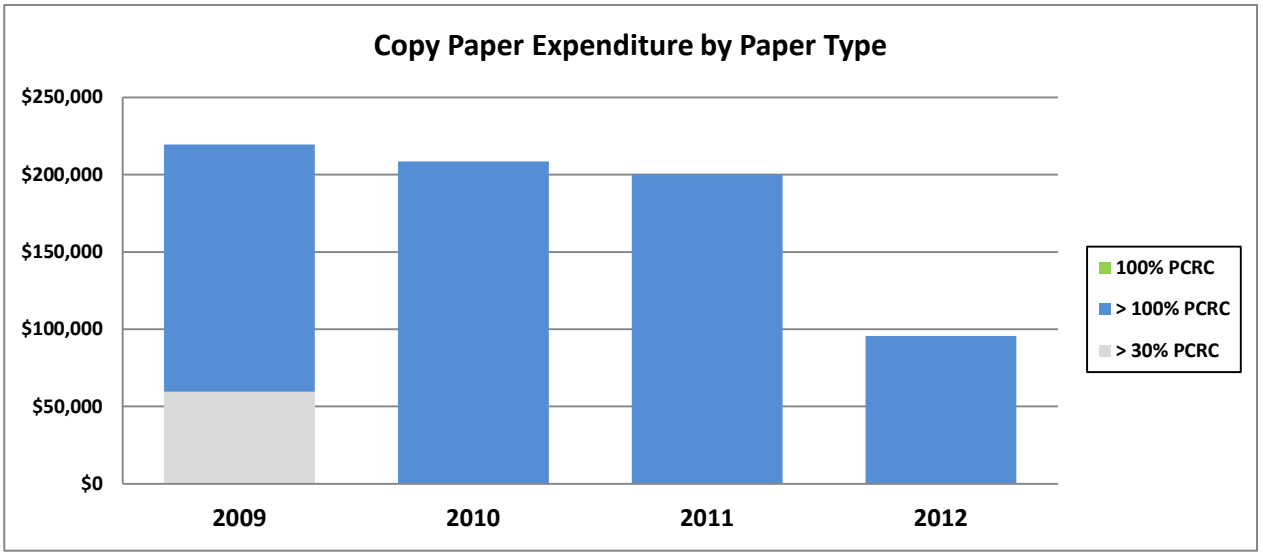


College GHG's from Waste & Recycling - 4 year totals

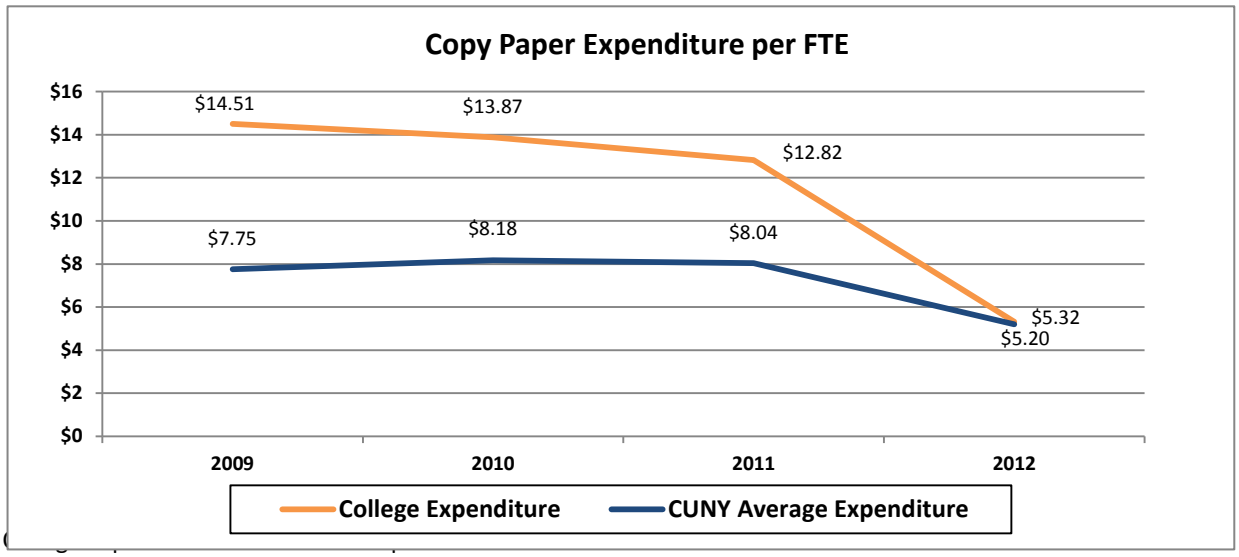


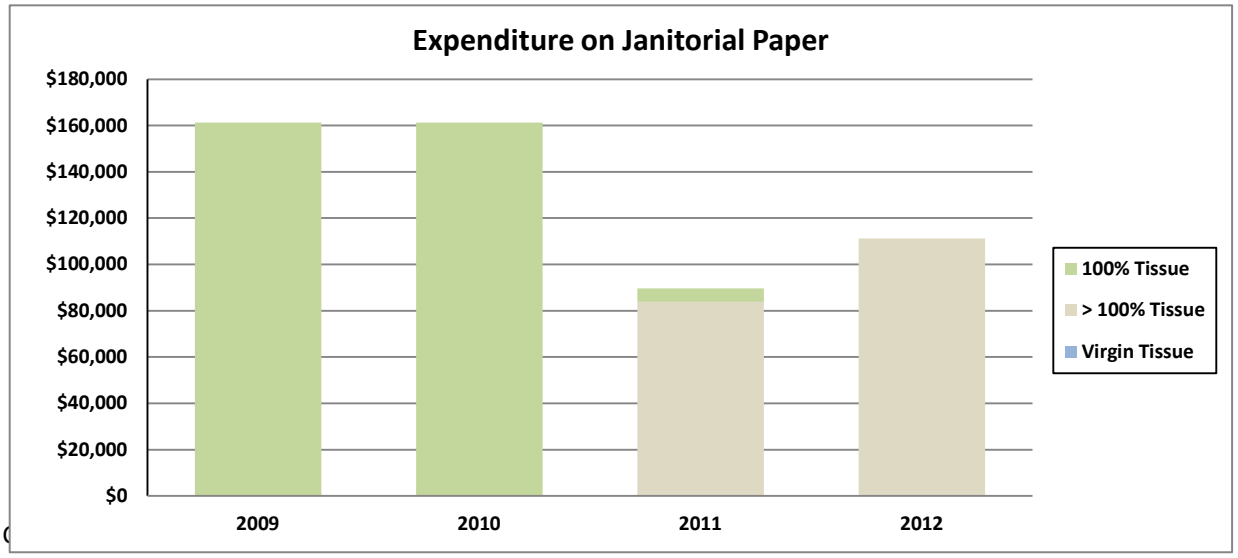
GHG Data calculated using EPA's WARM tool and college waste & recycling EO4 data.
(Assumed all non-recycled waste is landfilled.)

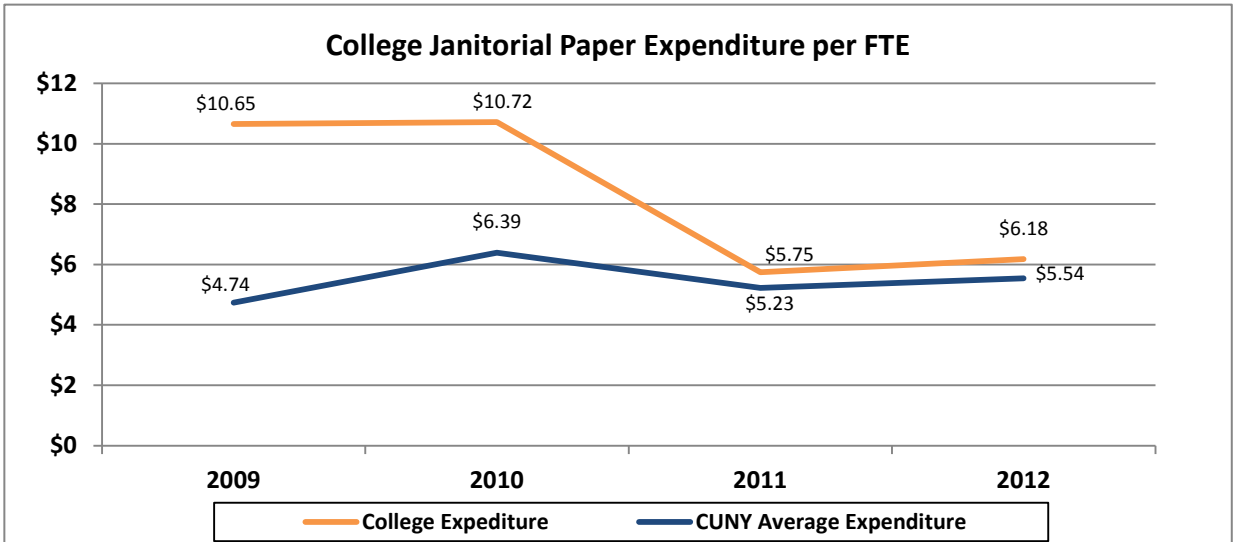
College Copy Paper Expenditure by Paper Type



College Copy Paper Expenditure per Full-Time-Equivalent (FTE) Student





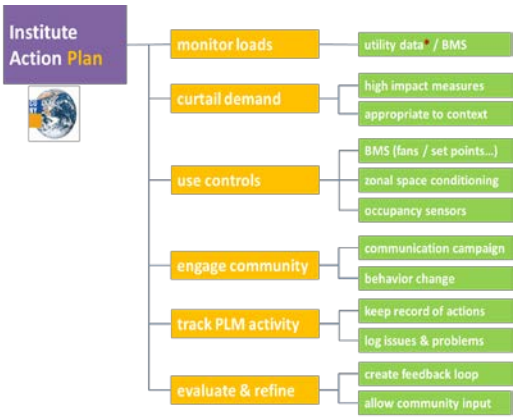


Peak Load Management (PLM)

Data below showing PLM performance, more detailed information to follow when available from DCAS.
Note: typical curtailment and supportive measures take by CUNY campuses is listed below

Suggested Action Areas

- Establish a College PLM Action Plan
  - Obtain & review available data
  - Identify relevant curtailment options
  - Clarify roles & reporting protocols
  - Define policy, targets & accountability
  - Identify additional supportive measures
- Institute Action Plan
- Assess Action Plan Accountability
- Reinvest in PLM Program Outcomes & Benefits



2012 NYPA PLM - Option 2 commitments

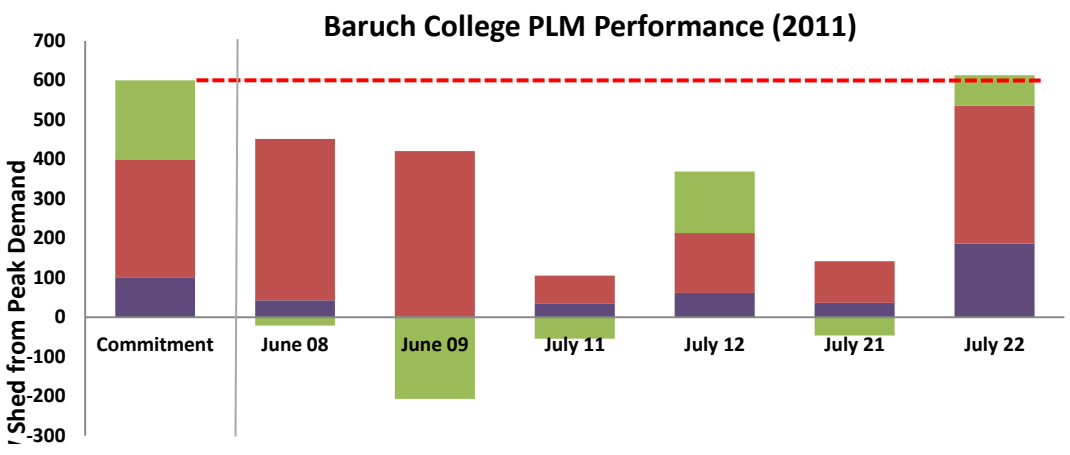
Facility	*Commitment (kW)*	*Curtailment Average (kW)*	*Delta Commitment*
Baruch College	75	3.5	-71
Baruch Site A	275	85.2	-190
Baruch Site B	50	76.5	27
CUNY - Total	4375	2346	-2029

2012 NYPA PLM - Option 3 commitments

Facility	*Commitment (kW)*	*Capacity Reduction (kW) NYISO Average*	*Delta Commitment*
Baruch	didn't participate	n/a	n/a
CUNY-Total	1325	4079	2754

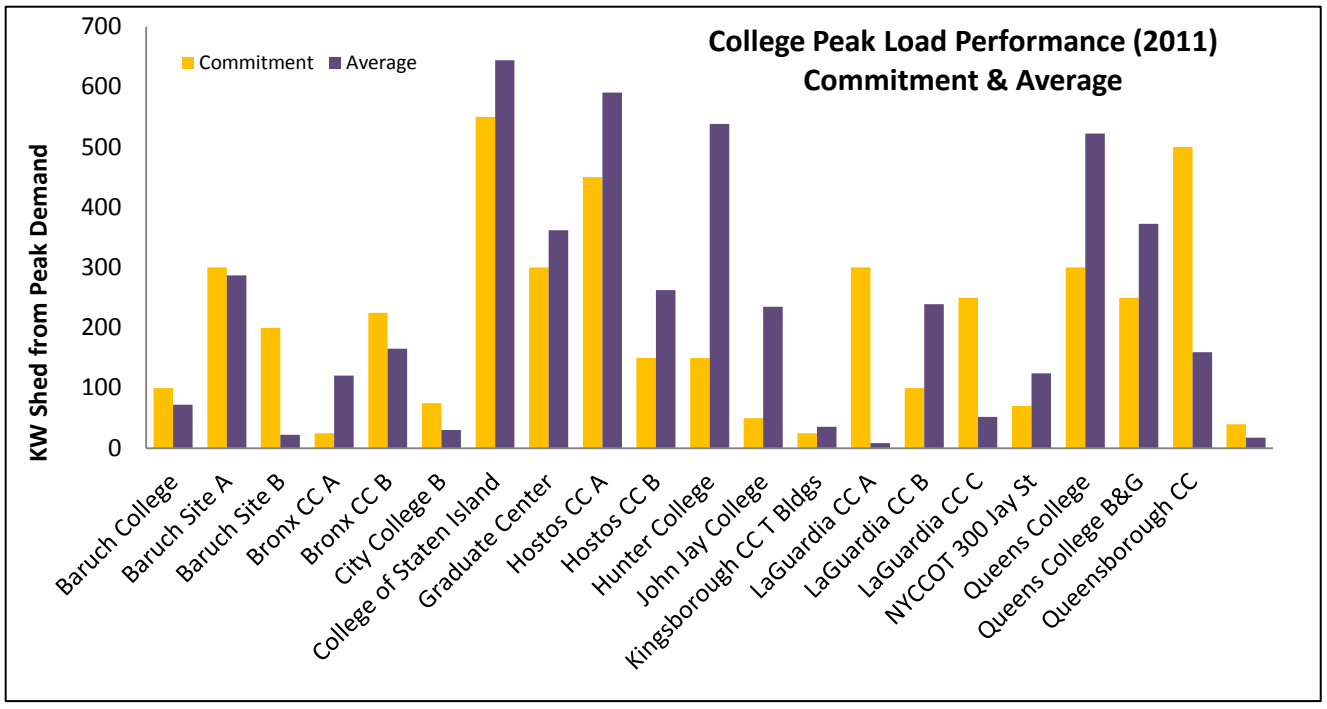
2011 NYPA PLM data for action days (capacity reduction: kW)

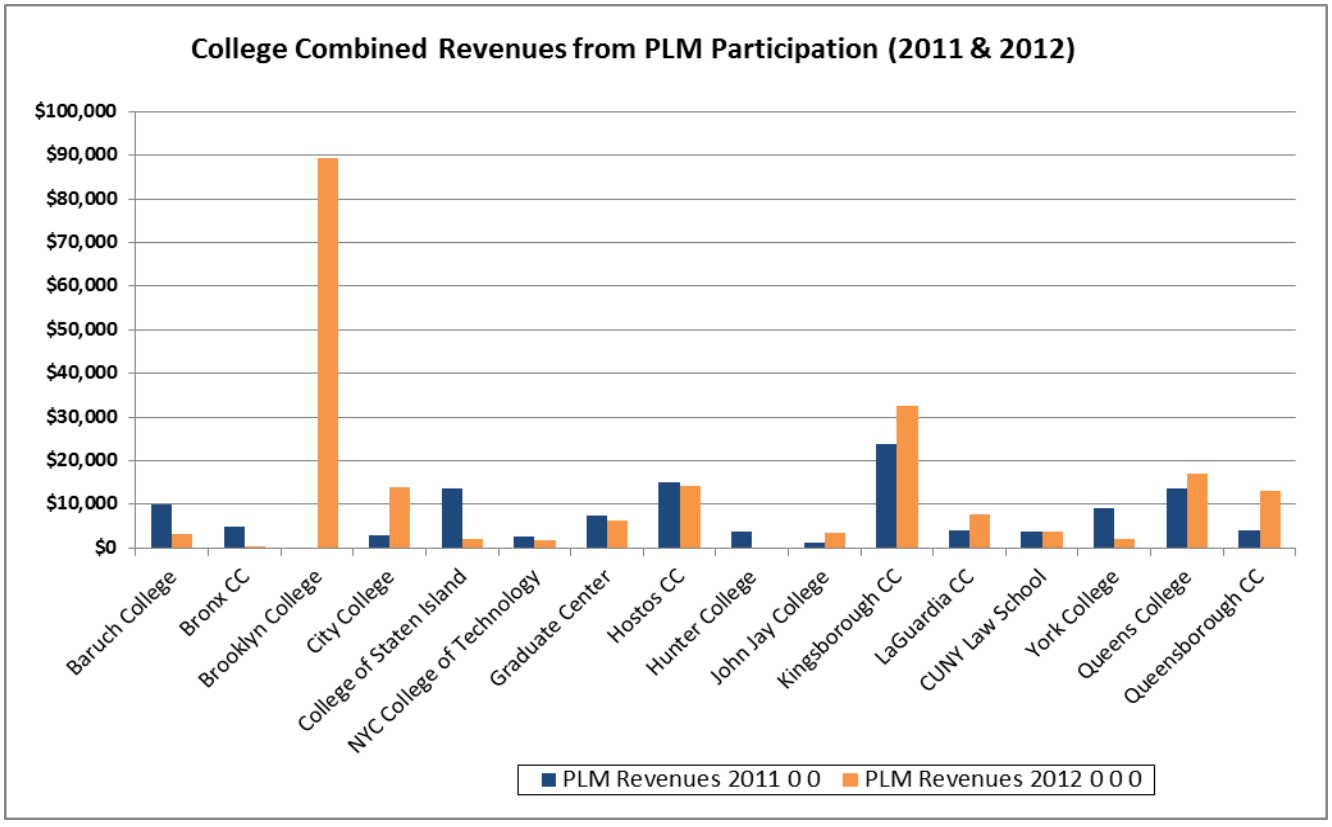
Facility	Commitment	Average	June 08	June 09	July 11	July 12	July 21	July 22 (Friday)
Baruch College	100	72.4	43.2	1.4	34.4	61.9	36.6	186.2
Baruch Site A	300	286.9	408.1	419.3	71.1	151.3	105.4	350.2
Baruch Site B	200	22.4	-20.7	-207.1	-53.9	156.0	-46.1	76.6



KW

Baruch College Baruch Site A Baruch Site B





Peak Load Management (PLM) - Demand Response Actions

Load Curtailment Measures Typically Taken by CUNY Colleges

- Access class & other space use schedules to identify areas where lighting, cooling & ventilation are unnecessary or can be restricted during the event
- Unnecessary lighting is shut off, in some instances to emergency lighting levels
- Cooling to sparsely populated indoors areas is cut back
- Elevator service is restricted, with some cars shut down
- Chilled water temperatures are increased slightly (4-10 degrees)
- Escalator service is restricted, with either the down or both the up & down stairs shut off in certain areas
- Turn off pool pumps & filtration system if not in use during the event
- Shut off key pumps and/or fans or slowing these down by use of VSDs
- Begin key curtailment measures ahead of requested time (eg. begin at 6am if the request from NYPA is for 12pm.) Often this is so that the target temperatures for the peak load event are already in place when the event begins. (An event typically lasts 6hrs.)
- Limit outside air (ventilation) to a minimum and restrict the number / type of doors that provide access to the buildings to prevent hot air & humidity from entering (to maintain stable temperatures & avoid need for cooling)

Supportive Measures & Actions

- Email blasts informing college community that a peak load event is occurring, including explanations about what this is, what types of action will be taken and requesting cooperation and assistance. Assistance includes shutting off lights, unused computers and similar electronic equipment, shutting off or limiting window A/C unit use, closing windows, pulling down blinds
- Signs are strategically placed around the college alerting people to the peak load event, including on TV monitors. (Printed signs are available for free from DCAS.)
- Signs are posted on any large visible equipment & devices taken out of service (e.g. escalators)
- Establish a clear PLM protocol for facilities and building & grounds staff to follow (responsibilities & reporting lines, actions to be taken, types of equipment to monitor, emergency procedures)

Building Management System (BMS)

Below is information for the BMS system(s), gathered as part of a CUNY-wide survey in Fall 2012.
Working with CUNY FPCM, the CUNY Conserves team is assessing and validating this information.

CUNY Conserves: Areas of BMS Short-Term focus

1. Developing Internal Skills & Knowledge
   - Group training and best-practice sharing by system type
   - Share best practices and foster discussion on the Forum
   - Make best use of current system
2. Improved Contracting & Procurement Standards
   - Work with campuses for improved vendor contract performance where appropriate
   - Support work on procurement standards for new/major upgrades to a BMS
3. Functionality Integration and Coordination with Energy Savings Goals
   - Support efforts for functionality integration and smart energy decision making
   - Support efforts for campus BMS integration for broader data driven analytics and monitoring
   - Support efforts for CUNY-wide integration where appropriate for CUNY-wide best practices

Suggested Action Areas

- Ensure Occupied and Unoccupied modes enabled
  - Monitor performance by automating reporting
  - Via correct scheduling timeperiods, ensure implemented via time and setpoint reset
- Review and establish alarms and notification protocol
  - If alarms unacknolowledge then implement procedure to review and action plan to mitigate
- Review options for enabling or programming energy saving modes, such as peak load management mode or a demand response mode
  - Investigate options via service contract engineer
- Train and monitor campus personnel on energy savings protocol through building automation controls

Baruch College BMS Survey

1 - System Overiew Questions	**Baruch Reponse**
1. Please list the BMS system(s) in place across your college/campus? Include multi-building, building level & sub-building level BMS systems in your summary, as well as the equipment & location they are associated with.	22nd St. North Campus 55 Lexington Ave., 151 E 25th St., 137 E 25th St. South Campus BMS System Siemens/ Invensys System, CPU located in room B-104 of 137 E 22nd St. Monitors equipment located in 133 E 22nd; AHU's 1-10 and Roof Top Chillers 1 & 2. Monitors equipment located in 137 E 22nd St.; AC-1, AC-3, Fan Coil Unit for the Floors, Roof Top Chiller 1 & 2, Boilers 1 & 2. 17 Lexington does not have a BMS control system. North Campus BMS System Siemens/ Invensys System, 55 Lexington Ave CPU located in room B1-116 controls equipment within 55 Lexington. 151 E 25th St CPU located in room B-34 controls equipment within 151 E 25th St and 55 Lexington Ave. 137 E 25th St. Rental Space No BMS control System
2. Do any of your BMS systems control building functions beyond HVAC equipment, such as fire protection, lighting, elevators & escalators, access or irrigation?	Both North and south BMS systems do not control ancillary systems at best they monitor some system such as fire smoke purge.
3. Do you have a single, over-arching integrated BMS system that allows you to centrally monitor & control HVAC equipment for your entire college/campus? If not, are any of the various BMS systems at your college/campus integrated. Provide details.	Both North and South Campus BMS system will monitor/ control adjacent buildings but we do not have a full central monitoring/ control system which integrates both the North and South Campus as one.

4. Is your BMS system(s) able to integrate with other systems using common protocols such as BACnet, ModBus or Lonworks?	BMS Systems are Invensys System by Siemens which has limited common protocols.
5. Describe the age and manufacturer details of the BMS system(s) at your college/campus, including any major upgrades or additions to existing systems and approximately when these took place. Provide details.	South Campus BMS installed in year 2000 for the monitoring of 137 E 22nd St with limited control of valves. South Campus BMS system was upgraded in 2002 to monitor 133 E 22nd St. North Campus BMS installed in year 2001 for the control and monitoring of 55 Lexington Ave. 151 E 25th St was back fitted/upgraded to the Invensys Siemens system in 2002 to monitor and limited control and link with the 55 Lexington Ave BMS system.
6. How many of your BMS systems can be accessed remotely via the internet? How many can be controlled by multiple people at multiple workstations or sites? Provide details.	Both North and South BMS system can be accessed remotely but currently we do not. At times the service contractor TBS had access the system remotely. Presently the BMS systems are controlled locally by the staff such as Stationary Engineers and High Pressure Plant Tenders.

2 - Operating Capability Questions

	Baruch Reponse
1. Describe the basic types of function your BMS allows you to perform, such as modifying equipment schedules, changing temperature set points, zonal control of space temperatures, modifying air flow speeds, lighting control and so on.	South Campus only monitors with very limited controls. It can control valves which swing between chilled water to hot water for the Fan Coil Units of 137 E 22nd as well as schedule the on/ off of the entire floor for the fan coil units. North Campus; 55 Lexington Ave BMS can control the AHU's and various other equipment and for 151 E 25th St the BMS has limited controls.
2. Does your BMS system(s) allow you to control economizers to take advantage of outside air for space cooling?	South Campus does not. 133 E 22nd AHU's the dampers are not working and therefore cannot control the outside air. North Campus Yes for 55 Lexington and 151 E 25th St. however noise complaint from neighbors have limited the use of the economizer mode for 151 E 25th St.
3. Does your BMS system allow you to modify chilled water temperatures relative to outside air temperature? Is this capability programmable or automated? Do you have staff capable of programming these functions?	South Campus No, done manual at the machine. North Campus No, done manual at the machine.
4. Are most of your system(s) components pneumatic? To what extent do you have direct digital controls in place informing you either of space conditions & equipment performance, or enabling you to control HVAC equipment	South Campus controls is mostly pneumatic and some digital control. North Campus 55 Lexington is digital control. 151 E 25th St is pneumatic control and some digital control.
5. Describe the current condition of your BMS system(s), including details of leaking or malfunctioning system components such as actuators, thermostats, sensors, switches, controllers and so on.	South Campus controls is mostly pneumatic and some digital control. North Campus 55 Lexington Ave is digital and is good to fair condition. 151 E 25th St pneumatic system is poor to not working

3 - System Users & Maintenance Questions

1. Who are the primary users of your college/campus BMS system(s)? Provide details	Stationary Engineers, High Pressure Plant Tenders and Thermostat Repairman. Operate and monitor BMS system and Thermostat Repairman makes repairs on the physical controls.
2. Describe the typical range of tasks the users perform using the BMS system(s) and any specializations.	Monitor current system; airflow, temperature, waterflow, equipment running, heat exchanger, OAT, heating system. Address alarms, change set points with BMS control or locally. Control equipment with BMS control or locally.

3. Describe the level of knowledge and skill the users of your BMS system(s) have.	Any Software or communication changes to BMS system are performed by outside firm such as TBS. College staff will replace or repair some hardware except addressable/ reportable devices.
4. Are any of the staff able to create programs or set definitions on the BMS system(s) which impact the operation or performance of building equipment? Is this type of programming typically performed by an outside contractor/vendor?	When available on the BMS system changes to set points, override operation of equipment and set schedules otherwise software changes are made by an outside firm.
5. What important gaps exist in user knowledge of your BMS system(s)? Is training offered on your BMS system(s), either by college/campus staff or by external parties? Provide details.	Training in use of BMS software has not been provide since the initial training offered by the installing BMS contractor.
6. What maintenance functions, if any, are typically performed on your BMS system(s) by college/campus staff? Do you have an Instruments Mechanic or similar title on staff, for example?	The College recently hired a Thermostat Repair and he is expected to diagnose and replace control equipment as needed.
7. Summarize the maintenance arrangements that are currently in place with outside contractors /vendors. Include details about annual cost, what is and what is not covered by the agreement, whether periodic site visits are included, whether field equipment (sensors, actuators) are worked on and whether any monetary savings that result from the service(s) accrue to the contractor /vendor	TBS is our outside vendor to make repairs on a Time and Material bases
8. Does the contractor/vendor offer additional services which help you to maximize the energy management capabilities of your BMS system(s).	We believe TBS is capable to offer this service but cost would be on a Time and Material. It is our understanding that there is an existing Project to update 151 E 25th ST. The South Campus is under way with a major renovation and perhaps the necessary upgrade/integration for 133 E 22nd and 137 E 22nd is being consider under 17 Lexington Ave Project

4 – Data Management Capability	**Baruch Reponse**
1. Are you able to track and respond to your peak demand via your BMS system(s)? Provide details.	North Campus and South Campus BMS systems are unable to perform trend analysis
2. Does your BMS system(s) track boiler fuel consumption and/or the resulting steam or hot water output? Are you able to compare the ratio of fuel oil to steam or hot water output?	North Campus and South Campus BMS systems are unable to capture energy us/ generated therefore we are unable to perform an efficiency analysis.
3. Describe other types of data and information that your BMS system(s) relays to you either via computer or other panel displays. Include data relayed about real-time space conditions as well as system performance	The North Campus and South Campus BMS systems do not provide readily available trending information.
4. Describe the types of data that your BMS system does not capture that would significantly improve your ability to monitor performance and operate HVAC equipment or other building systems effectively?	The North Campus and South Campus BMS systems should capture real time energy use along with OAT, RAT, SAT, RH, CO2 etc. and perform changes to optimize the various metrics.
5. Are you able to generate reports either about equipment performance or space conditions, from the various data points of your BMS system(s)? Describe the reporting capabilities at your disposal.	The North Campus and South Campus BMS systems do not provide readily available trending information. The BMS systems reside on Desktop CPU's which do not have data storage capabilities.
6. Describe the different ways in which you make use of the data generated by reports from your BMS system(s) and who else you share these reports with at your college/campus.	Not applicable, no trending is available

7. Are the utility meters at your campus tied into your BMS system(s) and if so, how is the data displayed and what reporting capabilities are in place for this? If possible, be specific about which meters relay to which BMS systems.	Utility meters have not been linked to the BMS systems
8. Does your college/campus IT department currently host the data collected by your BMS system on the college/campus servers? Does your IT department maintain the BMS application server?	Our IT department does not host data collection nor is the BMS system software on a server. Presently the North and South Campus BMS systems software are on Desktop CPU's that are original date of installation.

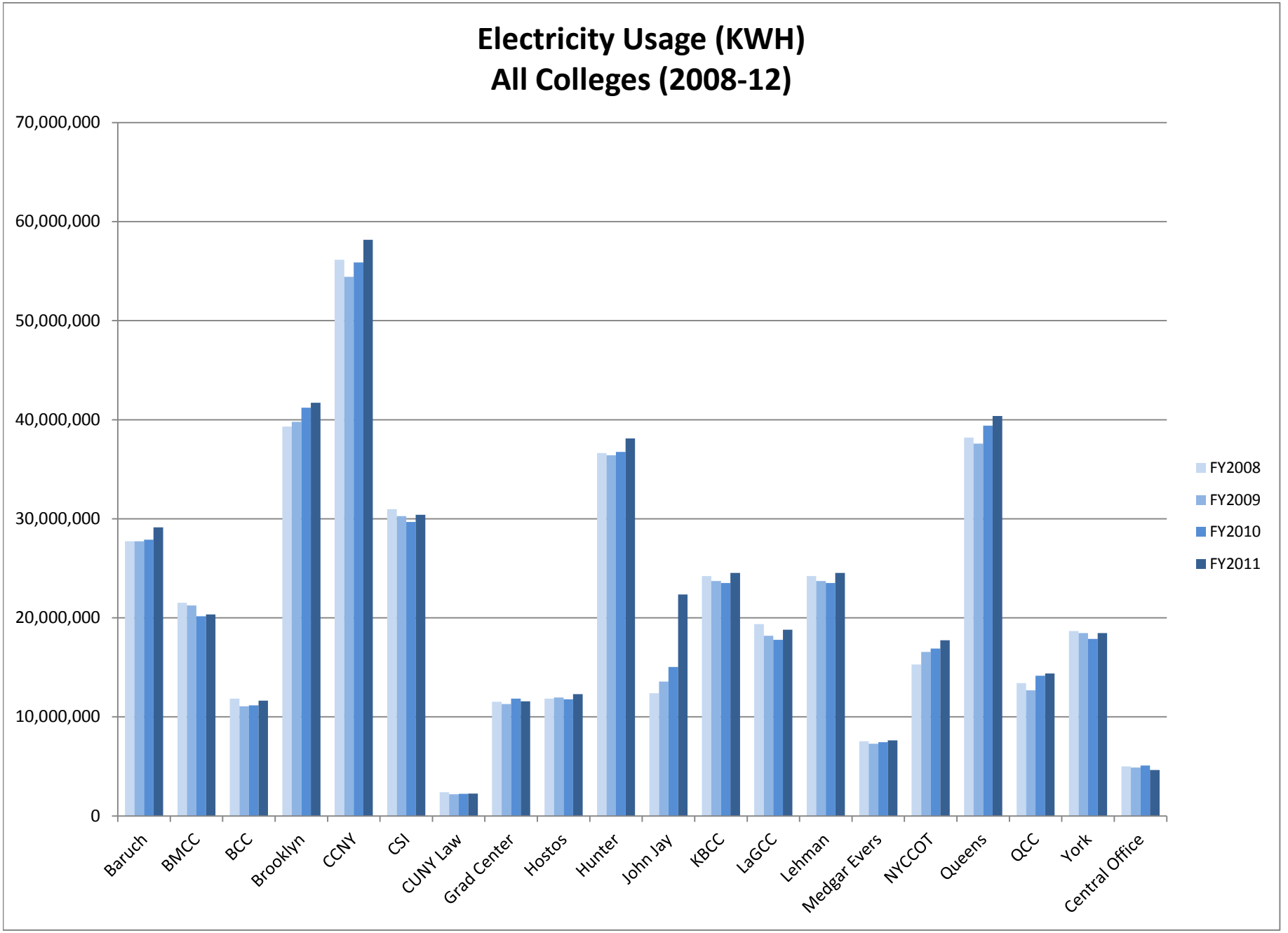
5 – Other	**Baruch Reponse**
1. Please add any relevant additional comments regarding your BMS system(s).	--

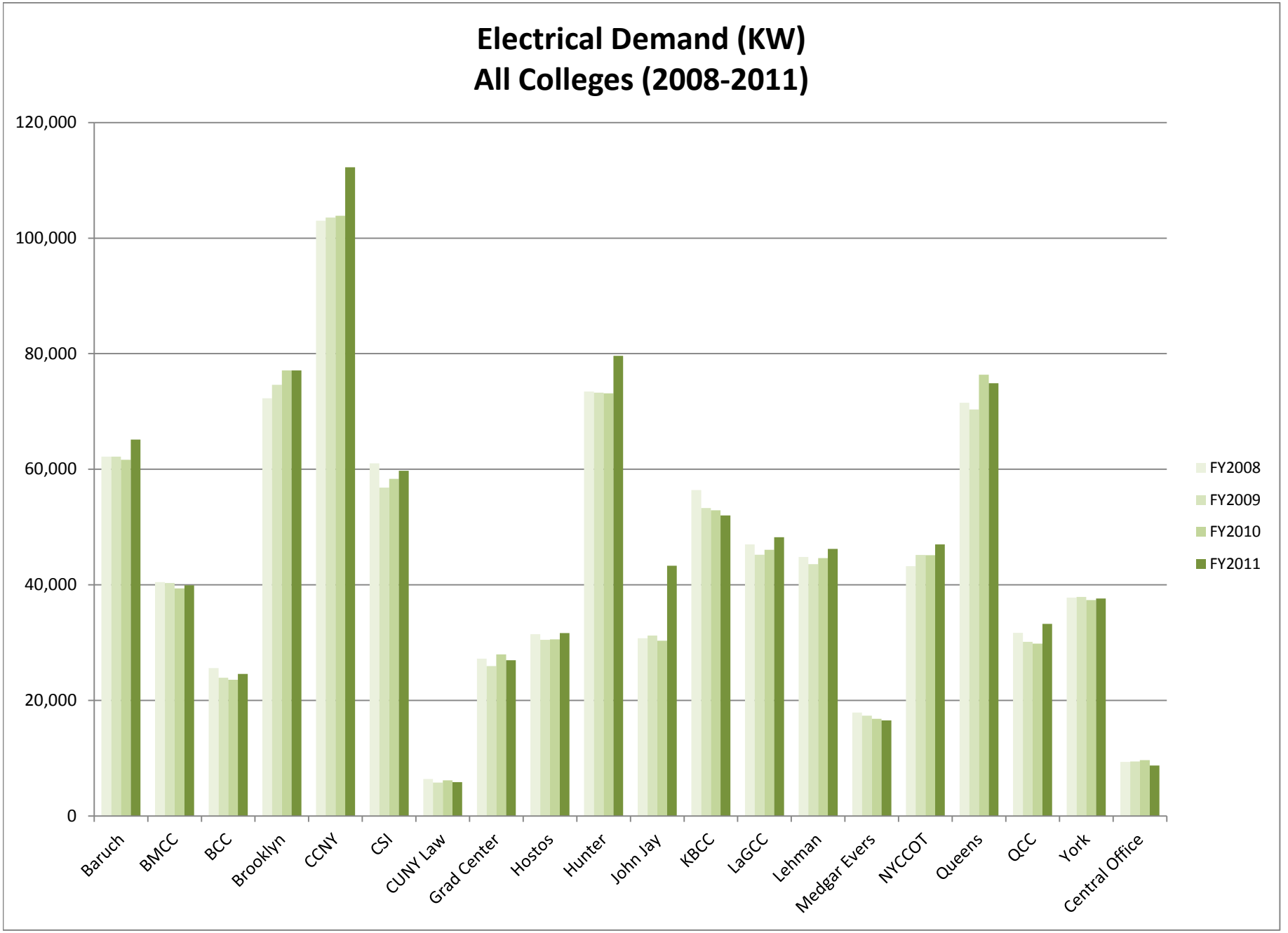
Utility Meters Information

Meter list from DCAS EC3 Database

OEC Facility ID	Facility Name	Account Number	Energy Type	Utility Service Address
0100205	137 EAST 22ND ST	490118080000000	ELE	134 E23 ST BARUCH COLLEGE 17 LEXINGTON A
0100205	137 EAST 22ND ST	490118089003005	ELE	137 EAST 22ND ST BARUCH COLLEGE
0100205	137 EAST 22ND ST	490118089006008	ELE	135 EAST 22ND STREET - BARUCH COLL.
0100205	137 EAST 22ND ST	490118089007006	ELE	135 EAST 22ND STREET BARUCH COLL.
0100205	137 EAST 22ND ST	495018011100009	GAS	135 EAST 22ND ST (HEAT) BARUCH COLLEGE
0100205	137 EAST 22ND ST	495018140700000	GAS	137 EAST 22ND ST BARUCH COLLEGE
0100243	11 LEXINGTON AVE	490118089001009	ELE	11 LEXINGTON AVENUE
0100243	11 LEXINGTON AVE	495018032035002	GAS	17 LEXINGTON AVE BMBC COLLEGE CITY O
0101340	141 EAST 25TH ST	490118079900004	ELE	141 EAST 25TH ST BARUCH COLLEGE SITE A
0101340	141 EAST 25TH ST	664200000000000	STM	141-55 25 ST E ENT
0101427	41	490118089010000	ELE	41 LEXINGTON AVE BARUCH COLLEGE SITE B
0101427	41 LEXINGTON AVE	495018032040002	GAS	41 LEXINGTON AVE (COOK) BARUCH SITE B
0101457	137 EAST 25TH STREET	490013000006007	ELE	137 EAST 25TH STREET GFL - BARUCH COLL.
0101457	137 EAST 25TH STREET	490013000007005	ELE	137 EAST 25TH STREET 3RD FL - BARUCH COL
0101457	137 EAST 25TH STREET	490013000008003	ELE	137 EAST 25TH STREET 8TH FL - BARUCH COL
0101457	137 EAST 25TH STREET	490013000009001	ELE	137 EAST 25TH STREET 9TH FL - BARUCH COL
0101457	137 EAST 25TH STREET	490013000010009	ELE	137 EAST 25TH STREET 10TH FL- BARUCH COL
0101641	120 East 29th St	490014000012003	ELE	120 E 29 ST 5DMANHATTANNY

Note: work in progress - need to verify on-site and correlate with EPA Portfolio Manager & LL84


Electricity Usage (KWH)
All Colleges (2008-12)
70,000,000
60,000,000
50,000,000
40,000,000
30,000,000
20,000,000
10,000,000
0
Baruch
BMCC
BCC
Brooklyn
CCNY
CSI
CUNY Law
Grad Center
Hostos
Hunter
John Jay
KBCC
LaGCC
Lehman
Medgar Evers
NYCCOT
Queens
QCC
York
Central Office
FY2008
FY2009
FY2010
FY2011


Electrical Demand (KW)
All Colleges (2008-2011)
120,000
100,000
80,000
60,000
40,000
20,000
0
Baruch
BMCC
BCC
Brooklyn
CCNY
CSI
CUNY Law
Grad Center
Hostos
Hunter
John Jay
KBCC
LaGCC
Lehman
Medgar Evers
NYCCOT
Queens
QCC
York
Central Office
FY2008
FY2009
FY2010
FY2011

Preliminary calculations shown while final metrics determined. In no way are the calculations below to be taken as anything other than a estimate until final values and methods are put in place.
- jcouey 4/16/2013

Table 1

The City University of New York
New York, New York

Summary of BuildSmart NY Baseline Data

Jeremiah's addition for estimate of where these are going

College	Estimated Energy Use Intensity EUI (kBtu/ft²)	Electric EUI (% EUI)	Natural Gas EUI (% EUI)	Steam EUI (% EUI)	Other Fuel EUI (% EUI)	CUNY EUI Rank	Gross Square Feet CUNY[a]	Gross Square Feet BuildSmart	Electricity (kWh) CUNY	Electricity (kWh) BuildSmart	Natural Gas (kBtu) CUNY	Natural Gas (kBtu) BuildSmart	Steam (kBtu) CUNY[b]	Steam (kBtu) BuildSmart	Natural Gas + Steam (kBtu) CUNY	Natural Gas + Steam (kBtu) BuildSmart	Fuel Oil (gal) Diesel	Fuel Oil (gal) No. 2	Fuel Oil (gal) No. 4	Fuel Oil (gal) No. 6
Baruch	106.84	59%	20%	21%	0%	10	1,572,632	1,572,632	28,992,378	28,992,378	33,012,900	64,912,998	35,533,610	-	68,546,510	64,912,998	4,249	-	-	-
Brooklyn	197.82	30%	68%	0%	2%	1	2,411,705	2,409,923	41,461,330	41,461,330	326,284,800	326,284,800	-	-	-	-	1,757	65,705	-	-
CCNY	122.55	58%	42%	0%	1%	9	2,781,649	2,993,602	57,676,800	57,676,800	142,217,400	142,217,400	-	-	-	-	3,410	10,402	-	-
CSI	143.67	53%	45%	0%	2%	4	1,354,984	1,354,984	30,178,541	30,178,541	88,462,900	88,462,900	-	-	-	-	398	23,000	-	-
Grad Center	84.60	66%	1%	33%	0%	12	709,962	616,781	11,572,000	11,572,000	542,100	18,489,114	19,991,230	-	20,533,330	18,489,114	330	-	-	-
Hunter	129.04	38%	44%	17%	1%	7	2,608,702	2,660,096	37,458,100	37,458,100	148,828,400	199,936,376	56,929,320	-	205,757,720	199,936,376	292	21,766	-	-
Queens	136.11	44%	54%	0%	2%	6	2,409,961	2,649,271	42,586,933	42,586,933	177,183,600	177,183,600	-	-	-	-	423	39,469	12,597	-
NYCCOT	62.95	88%	11%	0%	2%	14	1,104,946	411,194	17,873,560	17,873,560	7,519,600	7,519,600	-	-	-	-	97	7,500	-	-
Medgar Evers	155.28	48%	52%	0%	0%	2	579,632	576,046	12,711,883	12,711,883	46,434,100	46,434,100	-	-	-	-	140	1,300	-	-
York	128.34	52%	47%	0%	1%	8	937,783	937,783	18,457,736	18,457,736	56,754,500	56,754,500	-	-	-	-	433	4,094	-	-
Central Office	104.20	79%	21%	0%	0%	11	217,443	657,087	5,240,400	5,240,400	4,775,800	4,775,800	-	-	-	-	-	-	-	-
John Jay	84.63	57%	0%	43%	0%	13	1,463,371	1,463,371	20,591,520	20,591,520	480,400	48,130,552	53,077,640	-	53,558,040	48,130,552	200	-	-	-
Lehman	153.21	34%	65%	0%	1%	3	1,524,527	1,609,905	22,997,212	22,997,212	151,841,000	151,841,000	-	-	-	-	1,230	22,450	-	-
Honors College	137.53	56%	44%	0%	0%	5	24,096	24,096	542,800	542,800	1,461,800	1,461,800	-	-	-	-	-	-	-	-

Notes:
(a) CUNY GSF represent 2010 GSF.
(b) Steam consumption was estimated based on a steam heat input of 1.33 MMBtu/Mlb steam.
(c) Unit conversion: 1 kilowatt hour = 3412.14163 Btu
(d) Unit conversion: Diesel 1 gal = 129,500 Btu
(e) Unit conversion: Fuel Oil #2: 1 gal = 138,500 Btu
(f) Unit conversion: Fuel Oil #4: 1 gal = 145,000 Btu
(g) Unit conversion: Fuel Oil #6: 1 gal = 153,000 Btu

		Baruch
FY 2008	July	2,460,720
	Aug	2,396,480
	Sept	2,569,880
	Oct	2,509,240
	Nov	2,334,640
	Dec	2,099,080
	Jan	2,129,800
	Feb	2,207,920
	March	2,104,680
	April	2,181,360
	May	2,318,160
	June	2,405,360
FY 2009	July	2,622,360
	Aug	2,612,880
	Sept	2,586,600
	Oct	2,194,560
	Nov	2,242,720
	Dec	2,186,640
	Jan	2,164,440
	Feb	2,078,840
	March	2,325,800
	April	2,073,960
	May	2,356,640
	June	2,281,320
FY 2010	July	2,598,520
	Aug	2,629,880
	Sept	2,537,480
	Oct	2,349,840
	Nov	2,144,400
	Dec	2,319,000
	Jan	2,032,280
	Feb	2,225,960
	March	2,048,360
	April	2,194,080
	May	2,235,720
	June	2,580,440
FY 2011	July	2,996,547
	Aug	2,642,051
	Sept	2,631,349
	Oct	2,507,448
	Nov	2,213,313
	Dec	2,418,031
	Jan	2,041,665

	Feb	2,353,848
	March	2,174,474
	April	2,145,754
	May	2,274,954
	June	2,736,009
FY 2012	**July**	2,759,083
	Aug	2,547,851
	Sept	2,763,442
	Oct	2,287,145
	Nov	2,373,719
	Dec	2,129,425
	Jan	1,988,385
	Feb	2,227,972
	March	2,118,306
	April	2,122,262
	May	2,231,569
	June	2,622,313

		Baruch
FY 2008	July	5,695
	Aug	5,873
	Sept	5,880
	Oct	6,026
	Nov	4,918
	Dec	4,477
	Jan	4,044
	Feb	4,503
	March	4,787
	April	4,986
	May	5,175
	June	5,830
FY 2009	July	5,966
	Aug	5,698
	Sept	6,176
	Oct	5,001
	Nov	4,920
	Dec	4,793
	Jan	3,920
	Feb	4,799
	March	4,808
	April	5,185
	May	5,627
	June	5,290
FY 2010	July	5,572
	Aug	5,766
	Sept	5,917
	Oct	4,903
	Nov	4,773
	Dec	4,430
	Jan	4,106
	Feb	4,200
	March	4,808
	April	5,381
	May	5,824
	June	5,965
FY 2011	July	6,432
	Aug	6,113
	Sept	6,402
	Oct	5,890
	Nov	5,515
	Dec	4,663
	Jan	3,761

	Feb	4,725
	March	4,981
	April	5,084
	May	5,395
	June	6,158
FY 2012	**July**	6,350
	Aug	5,794
	Sept	5,837
	Oct	5,861
	Nov	5,103
	Dec	4,624
	Jan	3,702
	Feb	4,554
	March	4,864
	April	5,281
	May	5,074
	June	6,035

	Baruch	BMCC	BCC	Brooklyn	CCNY	CSI	CUNY Law	Grad Center	Hostos	Hunter
June 2008	5,830	3,586	2,494	6,765	10,166	6,359	744	2,318	3,202	7,620
June 2009	5,290	3,315	1,890	7,408	9,240	5,265	504	2,156	2,816	6,533
June 2010	5,965	3,448	2,204	7,115	10,506	5,973	760	2,534	3,237	7,670
June 2011	6,158	3,422	2,562	7,004	10,690	5,513	539	2,452	3,076	8,348
June 2012	6,035	3,348	2,745	8,938	9,676	5,482	n/a	2,606	3,148	8,074

John Jay	KBCC	LaGCC	Lehman	Medgar Evers	NYCCOT	Queens	QCC	York	Central Office	CUNY
2,782	5,845	3,202	3,808	1,681	4,387	7,268	2,924	3,808	938	87,415
2,731	5,263	2,816	3,359	1,398	3,849	6,219	2,547	3,359	866	78,852
2,775	5,416	3,237	3,804	1,669	4,485	7,641	3,070	3,804	823	88,434
3,982	5,192	3,076	3,433	1,526	4,251	7,080	3,064	3,433	845	89,118
5,587	5,405	4,602	3,825	2,674	3,697	9,062	3,169	3,769	930	93,867

Seniors	Commuinities
64,509	22,906
58,796	20,055
65,699	22,734
66,438	22,679
70,717	23,150