Updating Infrastructure & Increasing Energy Efficiency

Performance Contracting Value Report for Community College of Philadelphia

Performance Period Year 1
September 2008 – August 2009

Presented To:
Facility Manager
Community College of Philadelphia

Presented By:
Haiyan Zhao, Performance Assurance Engineer
Johnson Controls, Inc

Supporting Your Mission

Since Johnson Controls became your strategic partner in January of 2007, it has been our charge to help you fulfill your mission – to create a caring environment which is intellectually and culturally dynamic and encourages all students to achieve greater insight into their strengths, needs, and aspirations, and greater appreciation of their own cultural background and experience; increased awareness and appreciation of a diverse world where all are interdependent; heightened curiosity and active interest in intellectual questions and social issues; improved ability to pursue paths of inquiry, to interpret and evaluate what is discovered, and to express reactions effectively; and self-fulfillment based on service to others, preparation for future work and study, and enjoyment of present challenges and accomplishments.

Johnson Controls is pleased to present Community College of Philadelphia this Performance Period Year 1 Project Savings Report which summarizes the results achieved by the JCI Program under the Performance Contract. The Program provided a number of utility saving retrofit strategies including domestic hot water heater conversion to electric in the summer, lighting retrofits, building controls, variable speed pumping, chiller replacement and cooling tower replacement.

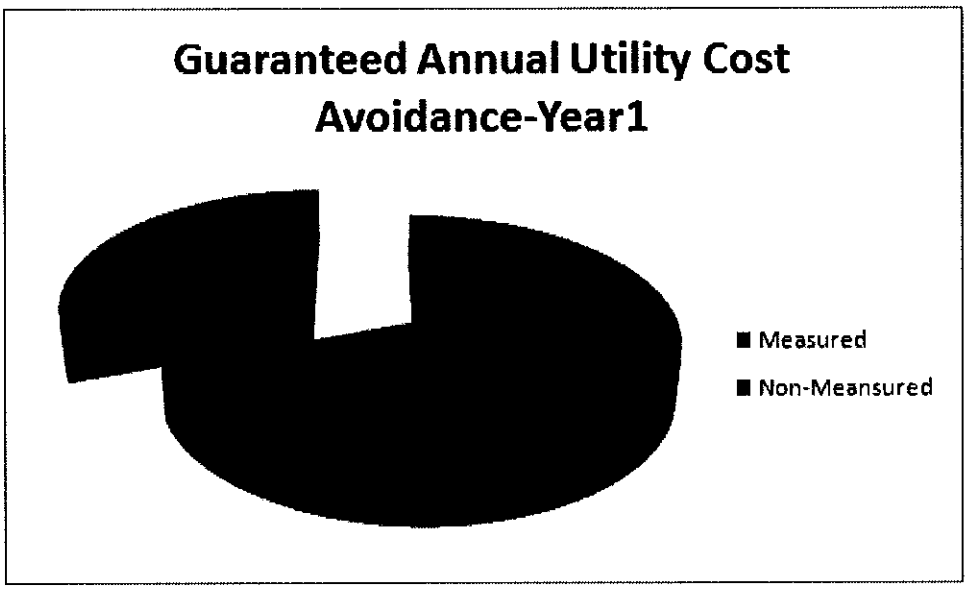
Johnson Controls continuously exceeds our customer's expectations by creating value-added solutions that improve our clients business and working environments. For example, the integration of innovative finance programs with constructing of capital improvements funded from operating expenses, allows revenue to be freed up for our clients to apply to their core businesses. For Community College of Philadelphia, this innovative contracting approach helped fund the capital projects at the campus. These changes have resulted in a Year 1 performance of *$299,962* cost savings.

Performance Contract Value Reports

Performance Period Year 1 Management Value Report

The project reached the Substantial Completion on August 31st, 2008. As provided in the Assured Performance Guarantee Agreement, Year 1 of the Guarantee Period commence on September 1st, 2008. The first annual Management Value Report, due by the end of October, 2009, covering the time period from Sep 2008 to Aug 2009. The Year 1 Utility Cost Avoidance Guarantee is $296,322. Johnson Controls is pleased to present Community College of Philadelphia, this annual Management Value Report to, which generated $299,962.

Year 1 (September 2008 – August 2009) Guaranteed Utility Cost Avoidance: $296,322

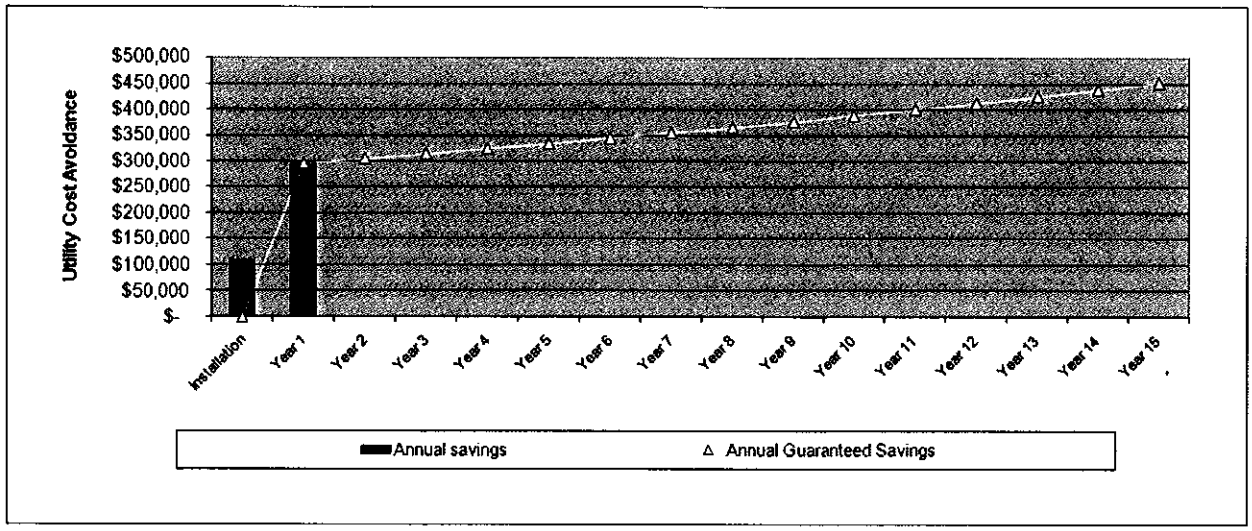


Summary of Results

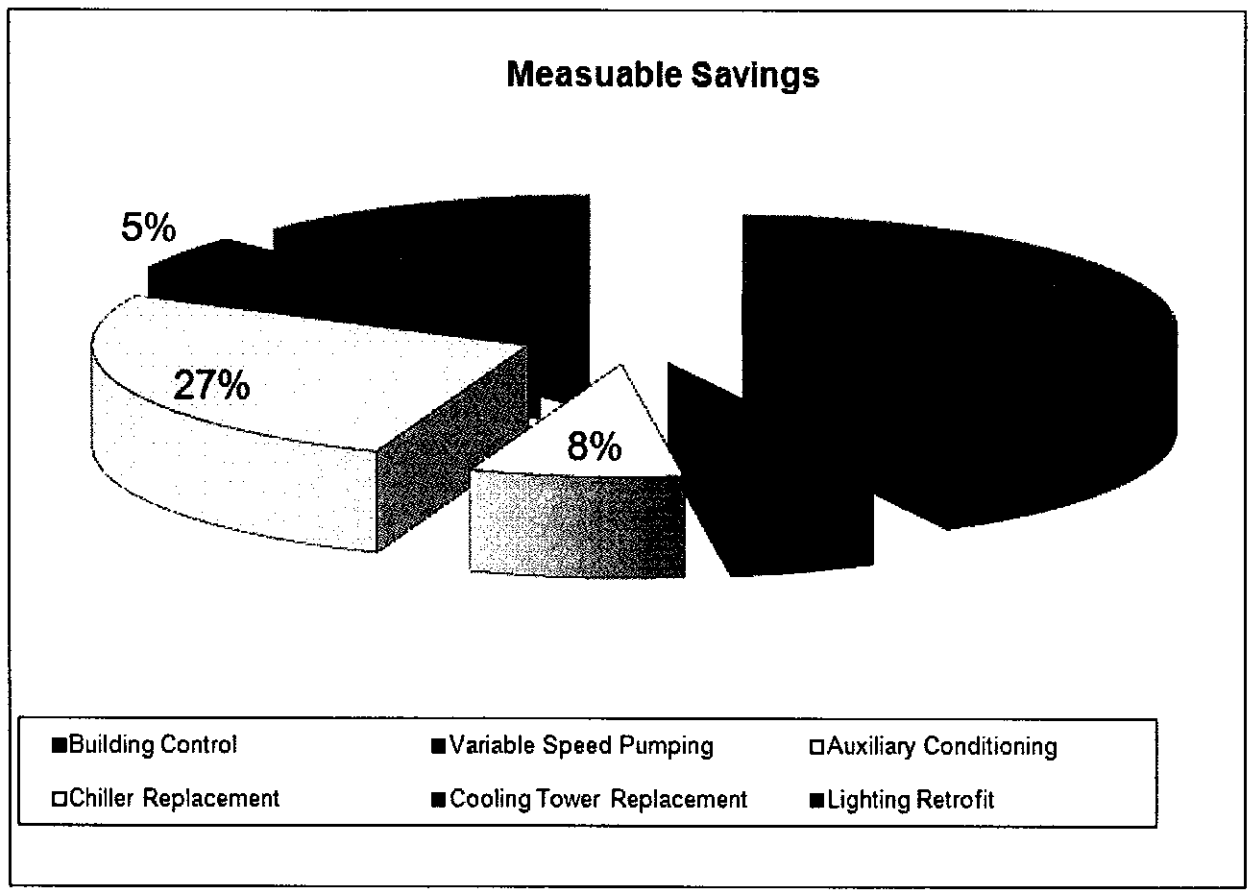
Performance Period Year 1: September 2008 – August 2009

The table below summarizes the results we have delivered:

Objective	Approach	Guarantee	Actual	Variance
Utility Cost Avoidance	Please See Project Scope Above	$231,322	$234,962	$3,640
Reduce Operation & Maintenance Cost	Reduction in Service Calls	$15,000	$15,000	$0
Demand Response Incentive	Participation in Demand Response Program	$50,000	$50,000	$0
Total Savings	Period of Performance September 2008 to August 2009	$296,322	$299,962	$3,640
Contract to Date Savings	Period of Performance January 2007 to August 2009	$296,322	$407,791	$111,469



Performance Period Year 1 Performance Summary (September 2008 – August 2009)



Johnson Controls

Community College of Philadelphia

Program Scope and Completion Dates:

The table below details the project scope and the completion dates of the FIMs.

Facility Improvement Measure (MEASURABLE FIM)	Date Completed	Facility Improvement Measure (NON-MEASURABLE FIM)	Date Completed
VFD/HIGH EFFICIENCY MOTOR		**SUMMER USE DOMESTIC HOT WATER BOILERS**	
MINT	08/31/2007	MINT	04/30/2008
BONNELL	09/30/2007	BONNELL	04/30/2008
WEST	08/31/2007	WEST	04/30/2008
VAV BOX REPLACEMENT		**DEMAND RESPONSE METER**	
MINT	09/30/2007	BONNELL	07/31/2008
BONNELL	10/30/2007		
WEST	10/30/2007		
BUILDING AUTOMATION			
VARIOUS BUILDING	06/30/2008		
REBUILD EXISTING AIR HANDLERS			
GYMNATICS	06/30/2007		
VARIABLE SPEED PUMPING			
MINT	05/31/2008		
BONNELL	05/31/2008		
WEST	05/31/2008		
CHILLER REPLACEMENT			
MINT	04/30/2008		
BONNELL	04/30/2008		
WEST	04/30/2008		
COOLING TOWER REPLACEMENT			
MINT	04/30/2008		
BONNELL	04/30/2008		
WEST	04/30/2008		
AUXILIARY CONDITIONING			
CBI BUILDING	06/30/2007		
LIGHTING			
PARKING GARAGE	05/31/2007		

Johnson Controls

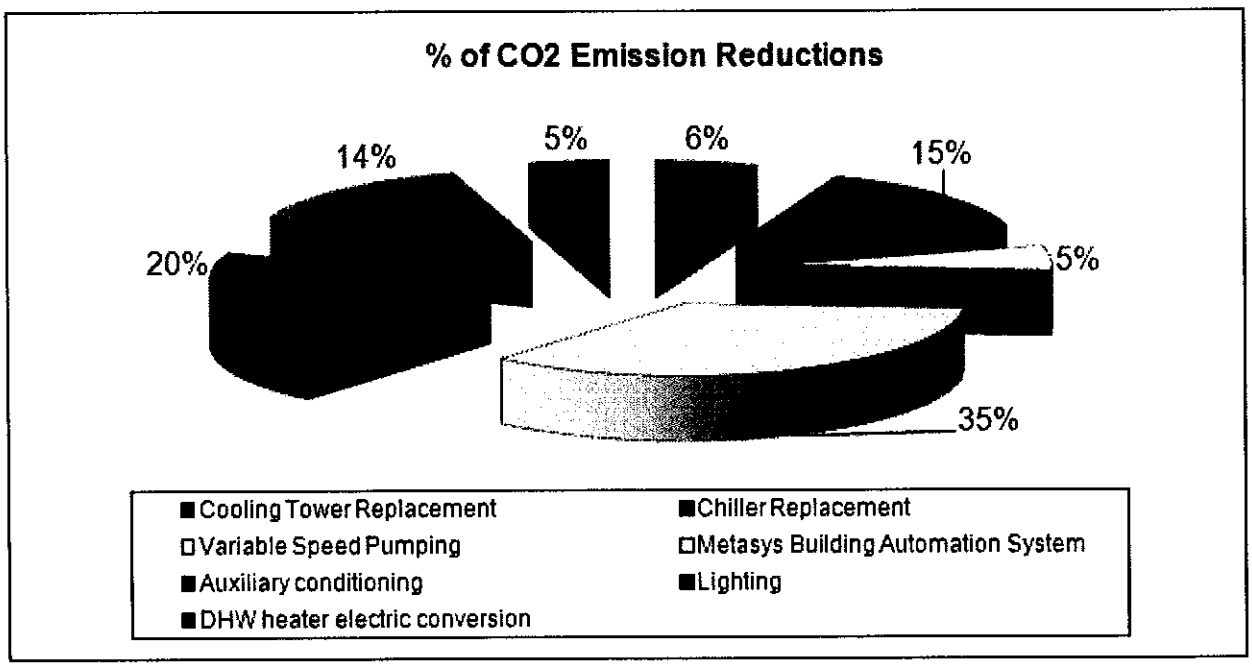
Community College of Philadelphia

Community Benefit: Reduced Air Emissions

Reduced electric and gas consumption yields a favorable impact in the form of reduced air emissions. The generation of electricity results in air emissions, including Nitrogen Oxides (NO_x), Sulfur Dioxide (SO_x), and Carbon Dioxide (CO_2). CO_2 is a "greenhouse gas" which may contribute to global climate change. SO_2 and NO_X released into the atmosphere react to form acid rain. Nitrogen Oxides also react to form ground level ozone, an unhealthful component of "smog". Reduced electric consumption also results in avoidance of pollution associated with fuel production (such as coal mining) and transportation of power plant waste.

In the Year 1, CCP reduced electricity by 1,467,589 kWh and natural gas consumption by 74,577 therms. In all, CCP has reduced energy consumption by 12,368 MMBtu. This resulted in the following pollution reductions.

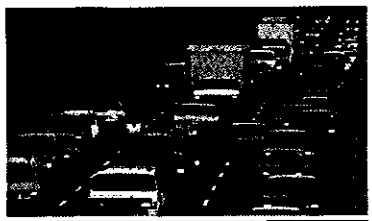
EMISSION ASSOCIATED WITH AVOIDED ENERGY CONSUMPTION	LBS	TON
Greenhouse Gases (CO 2)	3,144,975	
Volatile Organic Compounds (VOC)	40	
Nitrogen Oxides (NO x)	4,610	
Carbon Monoxide (CO)	179	
Sulfur Dioxide (SO 2)	7,634	
Particulates (PM10)	14	
Mercury (Hg) - mg not lbs	7,137	
TOTAL AVOIDED CO 2 EMISSIONS (LBS)	**3,144,975**	**1,572**
CO_2 is a "greenhouse gas" which contributes to global climate change		



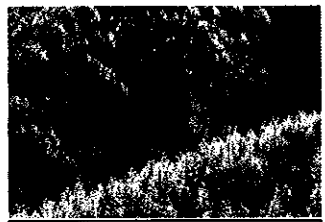
Johnson Controls

Community College of Philadelphia

Equivalent ~~Quarterly~~ ANNUAL Energy Savings is equivalent to[1]



Taking over 309 off PA roads



Planting over 4,717 Trees

Providing Electricity to 215 Homes

Thank You

We value your business. It has been and will remain our privilege to work in partnership with Community College of Philadelphia.

[1] Based on the Leonardo Academy October 2001 white paper statistics, 1 ton CO2 = 3 trees planted, 1 mid-sized car emits 10,168.3 lbs CO2/year (Annual 509 gallons, 22.2mpg, 11,300 miles), 6,813 kwh/house/year

Appendix – Supporting Data

- *Exhibits 1 – Report Period Savings Summary*
- *Exhibit 2 - Average Utility Rates*
- *Exhibit 3 - Lighting Summary*
- *Exhibit 4 – Controls Summary*
- *Exhibit 5 – Variable Speed Pumping Summary*
- *Exhibit 6 – Auxiliary Conditioning Summary*
- *Exhibit 7 – Chiller Replacement Summary*
- *Exhibit 8 – Cooling Tower Replacement Summary*
- *Exhibit 9 – Methodology*
- *Exhibit 10 - Attachment*

Johnson Controls

Community College of Philadelphia

Exhibit 1
Report Savings Summary
Year 1: September 2008 - August 2009

FIMs Facility Improvement Measures	Installation Period Jan 2007 - Aug 2008		Year 1 Sep 2008 - Aug 2009	
	Measured	Non-Measured	Measured	Non-Measured
Parking Garage				
Lighting	$25,820		$26,850	
Gym				
Rebuild Existing AHU	$509		$12,098	
CBI				
Auxiliary Conditioning	$1,419		$16,592	
Mint, Bonnell and West				
Cooling Tower Replacement	$6,488		$10,404	
Chiller Replacement	$45,208		$55,659	
Variable Speed Pumping	$5,805		$11,514	
Metasys Control	$2,816		$76,279	
NON-MEASURED SAVINGS				
Summer Use Electric Domestic Hot Water Boilers		$19,764		$25,566
Demand Response Program				$50,000
Operational and Maintenance Savings				$15,000

	Installation Period		Year 1		Totals
Sub Totals	$88,065	$19,764	$209,396	$90,566	$407,791
JCI Guarantee	$0	$0	$205,756	$90,566	$296,322
Over Performance/(Under Performance)	$88,065	$19,764	$3,640	$0	$111,469

Johnson Controls

Community College of Philadelphia

Exhibit 2
Average Utility Rates
Year 1: September 2008 - August 2009

	Average Electric Energy Rate		Average Electric Demand		Average Natural Gas Rate (ANGR)		Average Water/Sewer Rate (AWR)	
	Contract	Actual	Contract	Actual	Contract	Actual	Contract	Actual
	$/kWh	$/kWh	$/kW	$/kW	$/therm	$/therm	$/kgal	$/kgal
CBI	$0.0424	$0.0360	$14.54	$14.33	$1.339	$0.997	$4.39	
Main Complex	$0.0633	$0.0578	$14.54	$14.33	$1.339	$0.997	$4.39	

Johnson Controls

Community College of Philadelphia

Exhibit 3
Lighting Savings Summary
Year 1: September 2008 - August 2009

	Electrical Energy Rate	Total kWh Saved	Electrical Demand Rate	Saved kW/mon	Electric Savings	Demand Savings	Net Savings
	$/kWh		$/kW		$	$	$
COMMUNITY COLLEGE OF PHILADELPHIA	$0.0633	279,613	$14.54	48	$17,712	$8,290	$26,002
POLE LIGHTING	$0.0633	10,074	$14.54	1	$638	$209	$848
						Total	$26,850

Exhibit 3A
Lighting Savings Summary -Part 1 (continued)
Lighting Savings Before Adjustment for Lighting-Heating Interaction
Lighting Formulas

NAS = {(EAEC - NAEC) + (EADC – NADC)}

Where:
NAS: Net annual savings ($/yr)
EAEC: Existing annual electrical cost ($/yr)
NAEC: New annual electrical cost ($/yr)
EADC: Existing annual demand cost for the existing lighting system ($/yr)
NADC: New annual demand cost for the new lighting system ($/yr)

$EFW_i = EMCW_i + NF_i$
EADC = {EFW_i *NM * EDR}

Where:
EFW_i: Existing fixture kilo-wattage for each fixture type (kW per fixture type)
$EMCW_i$: Existing measured circuit kilo-wattage for each fixture type (kW)
NF_i: Number of fixtures on circuit for each type
NM: Number of months per year
EDR: Electrical demand rate ($/kW)
EADC: Existing annual demand cost for the existing lighting system ($/yr)

$NFW_i = NMCW_i + NF_i$
NADC = {NFWi * NM * EDR}

Where:
NFW_i: New fixture kilo-wattage for each fixture type (kW per fixture type)
$NMCW_i$: New measured circuit kilo-wattage for each fixture type (kW)
NF_i: Number of fixtures on circuit for each type
NM: Number of months per year
EDR: Electrical demand rate ($/kW)
NADC: New annual demand cost for the new lighting system ($/yr)

EAEC = {EFW_i * EABH * EER}

Where:
EAEC: Existing annual electrical cost for the existing lighting system ($/yr)
EFW_i: The sum of the existing fixture kW for all existing fixture types (kW)
EABH: Existing annual burn hours as defined in Exhibit 5 of this document
EER: Electrical energy rate ($/kWh)

NAEC = {ΣNFW_i * PABH * EER}

Where:
NAEC: New annual electrical cost for the new lighting system ($)
ΣNFW_i: The sum of the new fixture kW for all new fixture types (kW)
PABH: Post retrofit annual burn hours as defined in Exhibit 5 of this document
EER: Electrical energy rate ($/kWh)

Johnson Controls

Community College of Philadelphia

Exhibit 4
Control System Savings Summary
Year 1: September 2008 - August 2009

	Electrical Energy Rate (EER)	Electrical Energy Savings (EES)	Electrical Demand Rate (EDR)	Demand Reduction (NABDR)	Average Natural Gas Rate (ANGR)	Fossil Fuel Savings (AFFS)	Net Annual Savings (NAS)
	$/kWh	kWh	$/kW	kW/yr	$/therm	therms	$/year
MINT, BONNELL & WEST	$0.0633	289,876	$14.54		$ 1.339	43,254	$76,279
GYMNASIUM	$0.0633	33,538	$14.54	97	$ 1.339	6,395	$12,098
					Total		$88,377

Strategy #	Control Strategy
1	Variable Frequency Drives (VFDs) on Air Handling Units (AHUs); Discharge Air Temperature reset; Demand Control Ventilation
2	Rebuild Gym AHUs

Strategy #1 is based on the assumption that VFDs will replace vane axial variable pitch blades and have the capability to reset discharge air temperature and reduce outside air during unoccupied periods. The calculations are based on common ASHRAE formulas and are mutually agreed upon. Johnson Controls will program control strategy and make sure they are functional

Strategy #2 is based on the assumption that gym air handlers will be repaired and upgraded with new motors and VFDs. The calculations are based on common ASHRAE formulas and are mutually agreed upon. Johnson Controls will program control strategy and make sure they are functional.

The savings determined for the various control strategies are shown in the following tables. These savings are mutually agreed. If trend and totalization reports show that control strategies are not being followed at the fault of JCI, the savings will be adjusted to reflect actual operating conditions.

For Mint, Bonnell and West:

Control Strategy	Annual Electric Savings, kWh/yr	Monthly Demand Reduction, kW/month	Net Annual Demand Billed Reduction, kW/yr**	Annual Fuel Savings, therms/yr
1	289,876		--	43,254

For Gym:

Control Strategy	Annual Electric Savings, kWh/yr	Monthly Demand Reduction, kW/month	Net Annual Demand Billed Reduction, kW/yr**	Annual Fuel Savings, therms/yr
2	33,538	8.8	97.0	6,395

The net annual savings will be calculated as:

NAS = EES x EER + NABDR x EDR + AFFS x ANGR

Where:
NAS: Net annual savings ($/yr)
EES: Electrical energy savings (kWh/yr)
EER: Electrical energy rate ($/kWh)
NABDR: Net annual billed demand reduction (kW/yr)
EDR: Electric demand rate ($/kW)
FFS: Annual fossil fuel savings (therms/yr)
ANGR: Average natural gas rate ($/therm)

Johnson Controls

Community College of Philadelphia

Exhibit 5
Variable Speed Pumping Savings Summary
Year 1: September 2008 - August 2009

	Electrical Energy Rate (EER)	Electrical Energy Savings (EES)	Electrical Demand Rate (EDR)	Monthly Demand Reduction (NABDR)	Net Annual Savings (NAS)
	$/kWh	kWh	$/kW	kW/yr	$/year
MINT, BONNELL & WEST	$0.0633	108,302	$14.54	320	$11,514
					$11,514

Baseline energy consumption was determined using a bin methodology calculation and assuming constant flow. The energy savings are as follows:

Location	Electric Savings, kWh/yr	Demand Savings, kW/mon	Demand Savings, kW/yr
Mint, Bonnell, West	108,302	29.7	320

The net annual savings will be calculated as follows:

NAS = EES x EER + NABDR x EDR

Where:
NAS: Net annual savings ($/yr)
EES: Electrical energy savings (kWh/yr)
EER: Electrical energy rate ($/kWh)
NABDR: Net annual billed demand reduction (kW/yr)
EDR: Electric demand rate ($/kW)

Johnson Controls

Community College of Philadelphia

Exhibit 6
Auxiliary Conditioning Savings Summary
Year 1: September 2008 - August 2009

	Electrical Energy Rate (EER)	Electrical Energy Savings (EES)	Net Annual Savings (NAS)
	$/kWh	kWh	$/year
Center for Business	$ 0.0424	390,983	$16,592
			$16,592

The energy savings are as follows:

Location	Electric Savings, kWh/yr
CBI	390,983

The net annual savings will be calculated as follows:

NAS = EES x EER

Where:
NAS: Net annual savings ($/yr)
EES: Electrical energy savings (kWh/yr)
EER: Electrical energy rate ($/kWh)

Johnson Controls

Community College of Philadelphia

Exhibit 7
Chiller Replacement Savings Summary
Year 1: September 2008 - August 2009

	Electrical Energy Rate (EER)	Electric Savings (CES)	Electrical Demand Rate (EDR)	KW Saved (NABDR)	Net Savings (NAS)
	$/kWh	kWh/yr	$/kW	kW/yr	$
MINT, BONNELL & WEST	$0.0633	335,210	$14.54	2,367	$55,659
Total					$55,659

JCI will monitor the chiller data points including flow, entering and leaving chilled water temperatures, and chiller power using Metasys building automation system. The data will be collected on a regular basis and analyzed to determine the chiller load and power at each point in time. The energy savings are as follows:

Avg Monthly Demand Reduction, kW/mon	Peak Demand Reduction, kW/mon	Net Annual Billed Demand Reduction, kW/yr
207	250	2,367

The net annual savings will be calculated as follows:

$$CES = \Sigma(ECPC - NCPC) \times Time_i$$

Where:
CES: Chiller energy savings (kWh/yr)
ECPC: Existing chiller power consumption (kW)
NCPC: New chiller power consumption (kW)
$Time_i$: Time intervals (typically 1 hour)

$$NAS = CES \times EER + NABDR \times EDR$$

Where:
NAS: Net Annual Savings ($)
CES: Chiller energy savings (kWh/yr)
EER: Average electric energy rate ($/KWh)
NABDR: Net annual billed demand reduction (kW/yr)
EDR: Electric demand rate ($/kW)

Johnson Controls

Community College of Philadelphia

Exhibit 8
Cooling Tower Replacement Savings Summary
Year 1: September 2008 - August 2009

	Electrical Energy Rate (EER)	Electric Savings (EES)	Electrical Demand Rate (EDR)	KW Saved (NABDR)	Net Savings (NAS)
	$/kWh	kWh	$/kW	kW/yr	$
MINT, BONNELL & WEST	$0.0633	117,872	$14.54	202	$10,404
				Total	**$10,404**

Baseline energy consumption was determined using a bin methodology calculation and assuming the condenser water temperature was set at 83 ^{0}F. The energy savings are as follows:

Location	Electric Savings, kWh/yr	Demand Savings, kW/mon	Demand Savings, kW/yr
Mint, Bonnell, West	117,872	18.7	202.0

The net annual savings will be calculated as follows:

NAS = EES x EER + NABDR x EDR

Where:
NAS: Net annual savings ($/yr)
EES: Electrical energy savings (kWh/yr)
EER: Electrical energy rate ($/kWh)
NABDR: Net annual billed demand reduction (kW/yr)
EDR: Electric demand rate ($/kW)

Johnson Controls

Community College of Philadelphia

Exhibit 9
Measurement & Verification Methodology
Year 1: September 2008 - August 2009

Option A - Partially Measured Retrofit Isolation

Savings are determined by partial field measurement of the energy use of the system(s) to which an ECM was applied, separate from the energy use of the rest of the facility. Measurements will be short-term with only one-time measurements in the pre & post-retrofit installation period.

Partial measurement means that some but not all parameter(s) will be stipulated. Careful review of ECM design and installation will ensure that stipulated values fairly represent the probable actual value. Stipulations will be shown in the M&V Plan along with analysis of the significance of the error they may introduce.

Engineering calculations using short-term pre & post-retrofit measurements and stipulations. The finding of these pre & post-retrofit measurements calculations of savings will then be stipulated for the life of the contract.

Option B - Retrofit Isolation

Savings are determined by field measurement of the energy use of the systems to which the ECM was applied, separate from the energy use of the rest of the facility. Short-term, long-term or continuous measurements are taken throughout the pre & post-retrofit period of the contract.

Engineering calculations using short term, long-term or continuous pre & post-retrofit measurements will be used to calculate the savings for the life of the contract.

Cost Avoidance Acceptance Letter

PERFORMANCE PERIOD YEAR 1

Community College of Philadelphia Energy Performance Project

In reviewing the documents presented to me by Johnson Controls Inc., I am in agreement that the Community College of Philadelphia has realized a combined utility and operation cost avoidance of $299,962 for the performance period year 1 of the Performance Contract.

The amount of the savings in Year 1 exceeds Year 1 guarantee savings of $296,322 by **$3,640**.

The charts contained in the report show the calculations and savings data to support the savings numbers shown above. These charts show the energy units and the agreed upon method used to calculate the cost avoidance for Year 1.

Charts found in Value Report:

Performance Period Year 1 Performance Summary

As per the contract, if the cost avoidance for any guarantee period is less than the guaranteed amount for that period, Johnson Controls, Inc. will at the customer's option either:

a. Pay the customer the difference as a shortfall compensation, for that period,
or
b. Provide the equivalent amount of good and services.

Please sign below to indicate your acceptance of the Cost Avoidance Calculations for the time period of September 2008 to August 2009.

Haiyan Zhao _____Date
For: Johnson Controls, Inc.

Harry Moore _____Date
For: Community College of Philadelphia