



Columbus Eye Physicians PC

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Success Story

HVAC Optimization Increases Energy Savings & Office Comfort

In October 2009, the Eye Physicians Clinic and Surgery Center (Eye Physicians PC), Control Management, Inc. (CMI) and partners took on the challenge to reduce energy consumption and noise issues from the heating and cooling system within the Eye Physicians PC building.

To maximize impact, CMI leveraged the support of a contracting team and the EnergyWise HVAC Optimization Program offered by Loup Power District partnered with Nebraska Public Power District (NPPD). This program, designed to support projects that lower energy use and increase occupant comforts, provided added incentive for Eye Physicians PC to upgrade their current HVAC system.

"I have been very satisfied with this whole experience from both a financial and environmental per-

spective," said Richard W. Meyer, O.D., President, Eye Physicians PC.

"By making the changes that CMI recommended, we have seen our electrical bills and usage decrease up to 50% and our gas bills and usage decrease up to 75%. In addition, our office is much

more peaceful. The changes that were made really cut down on the "white noise" that was created by air moving through the heating, ventilation and air conditioning systems. The whole process has really opened my eyes. Making some simple changes drastically effected the efficiency of our building."

Eye Physician PC's initial projected return on investment was 4.3 years, and current results indicate the possibility of beating the projection by one full year.

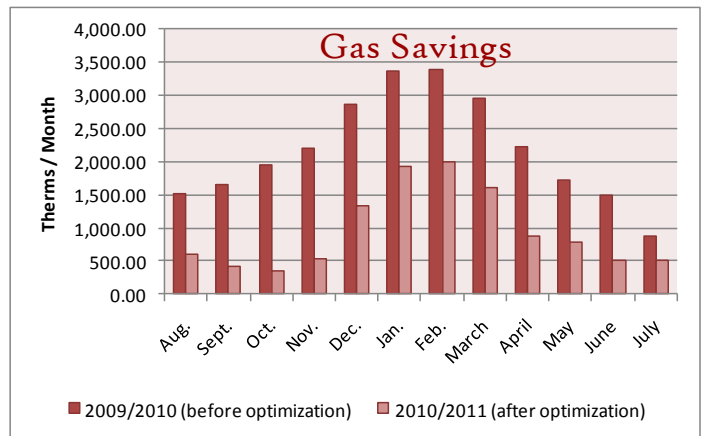
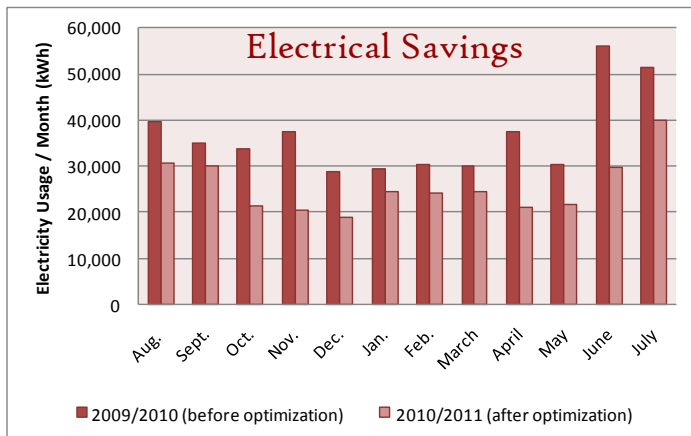
"By making the changes CMI recommended, we have seen our electrical bills and usage decrease up to 50% and our gas bills and usage decrease up to 75%"


Project Overview:

Name: Eye Physicians Clinic and Surgery Center

Location: Columbus, Nebraska
 Year Opened: 2006
 Facility Size: 16,000 sq. ft.
 Employees: approx. 25
 Project Began: June 2010
 Project Completion: August 2010

Annual Energy savings:
 30% electrical savings
 55% gas savings





Columbus Community Hospital

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Providing an optimal environment of care while being environmentally responsible.

In May 2011, Columbus Community Hospital (CCH) completed a \$185,000 project upgrade in the HVAC system to improve energy and operating costs. The hospital partnered with Control Management, Inc. (CMI). The improvements are estimated to save more than \$70,000 annually, which would pay for the project in 3 years.

"We're excited to create an efficient, comfortable, and safe environment of care for both our patients and staff," said Mike Hansen, Columbus Community Hospital CEO. "Upgrading technology and generating energy savings is a win-win situation. We are committed to providing an optimal environment of care while being environmentally responsible."

The hospital also received an initial check for

\$24,079 from the EnergyWise program offered by Loup Power District partnered with Nebraska Public Power District (NPPD). "HVAC systems can account for a large amount of the energy used in hospital buildings. Compared to Commercial Buildings, hospitals consume 250% more energy. Our goal is to support our customers to become more efficient" said Rick Cheloha, Certified Energy Manager, Loup Power District. "The EnergyWise HVAC Optimization Incentive Program is designed to support projects that lower energy use and improve occupant comfort. Our incentive helps with making the payback for such projects even more attractive." A final incentive check of \$6,020 was paid after one year and verification that optimizations have been effective and sustained.

Customer Overview:

Columbus Community Hospital

Location: Columbus, Nebraska

Year Opened: 2002

Facility Size: 153,000 sq.ft. Hospital & 40,000 sq.ft. MOB

Employees: approx. 500

Project Started: Spring 2010

Project Completed: Spring 2011

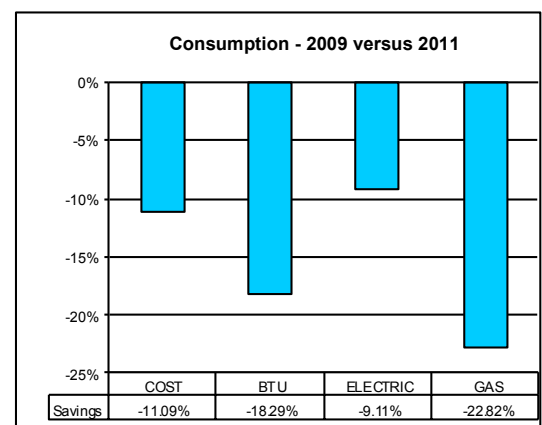
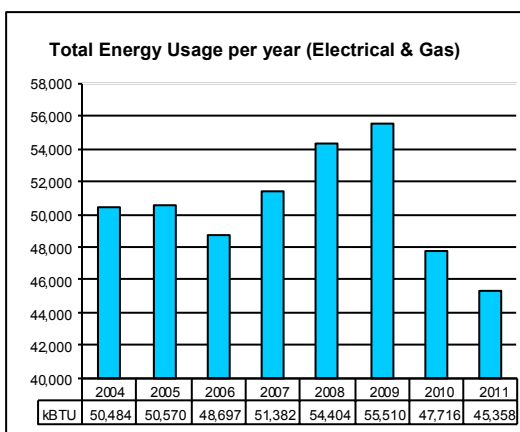
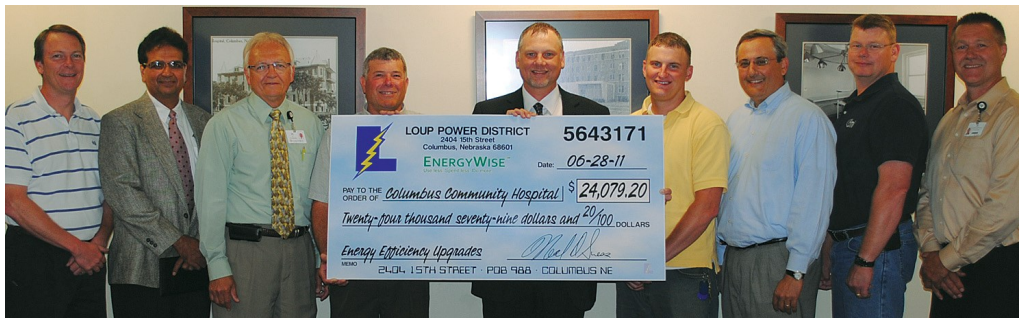
HVAC SYSTEM OPTIMIZATION PROGRAM

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Columbus United Federal Credit Union
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Success Story

HVAC optimizations to improve comfort and save energy.



Columbus United Federal Credit Union (CUFCU) and Control Management, Inc. (CMI) partnered on a project designed to improve comfort and provide energy savings.

The building was a bit over one year old and the construction warranty had just expired, but there were still comfort issues. CUFCU contacted CMI to help them resolve the situation.

CMI formulated a plan to improve the environment for the staff and customers of CUFCU but also to save energy to help pay for the improvements.

“CMI listened to our concerns and understood our issues. They resolved our comfort issues quickly and became a

great partner to work with” said Peg Niedbalski, Senior Vice President.

CUFCU and CMI also leveraged incentives from Loup Power District (LPD) and Nebraska Public Power District (NPPD). “Leveraging the “EnergyWise” HVAC optimization program can be applied no matter what the size or age of the facility.” Rick Cheloha, Certified Energy Manager, Loup Power District.

The result of the incentives was an initial check for \$2,648 from LPD. After a year, the project reduced energy consumption by 31%. LPD’s final check for the verified performance of the project is \$662 for a total incentive of \$3310.

“ The project not only provided our staff and members a better environment, but also provided a great return on investment. Our goal is to be a great place to work and a great place for our members to bank” Brian Christensen, President.

Customer Overview:

Columbus United Federal Credit Union

Location: Columbus, Nebraska

Year Opened: 2010

Facility Size: approx. 5,800 sq. ft.

Project Started: Sep 2011

Project Completed: Dec 2011

2011 Energy Usage: 157,320 KWH

2012 Energy Usage: 107,800 KWH

Annual Energy Savings: 31%

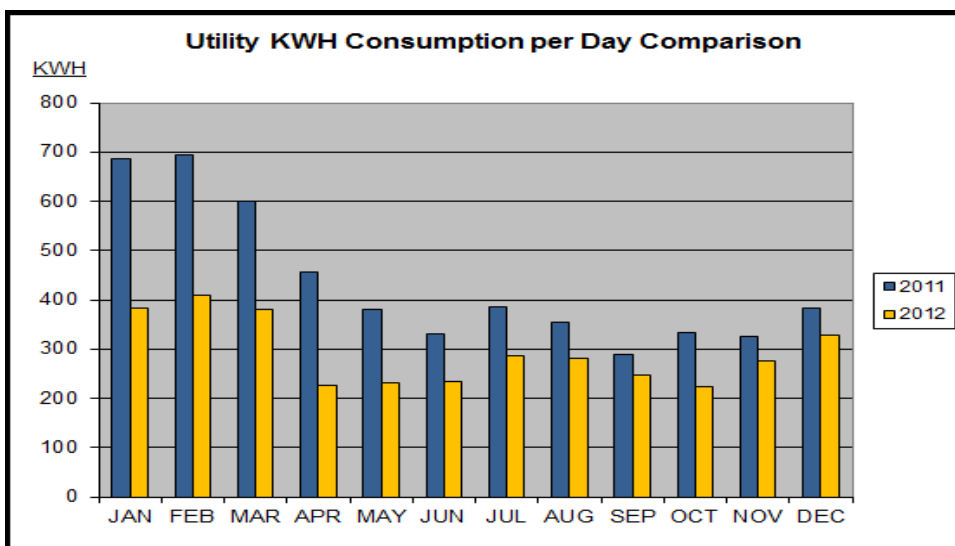


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Case Study: Holdrege Middle School - HVAC System Optimization

Holdrege Public Schools
Holdrege, NE

Engineer: Kucirek Engineering, Inc
Contractor: Mid-States Automation & Control

Description of Facility: 49,894 sq. ft. Middle School

The school was primarily served by a single variable air volume (VAV) system with fan powered terminal boxes and hot water reheat. Gymnasium and locker rooms are served by single zone constant volume air handling units. Heating provided by natural gas boiler. Chilled water provided by an air-cooled chiller. Direct digital control system.

Energy Conservation Measures completed: Conversion of fan powered VAV terminal boxes to single duct VAV terminal boxes, conversion of pneumatic controlled smoke dampers to DDC control and removal of air compressor, optimization of duct static pressure controller and supply fan for single duct VAV system.

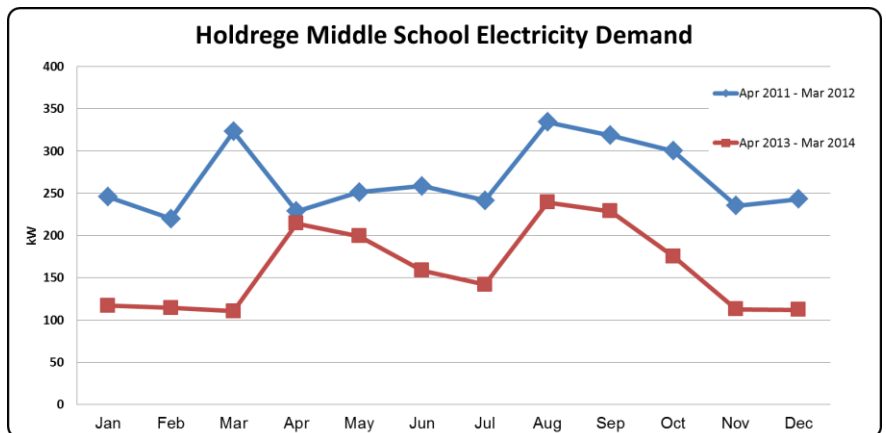
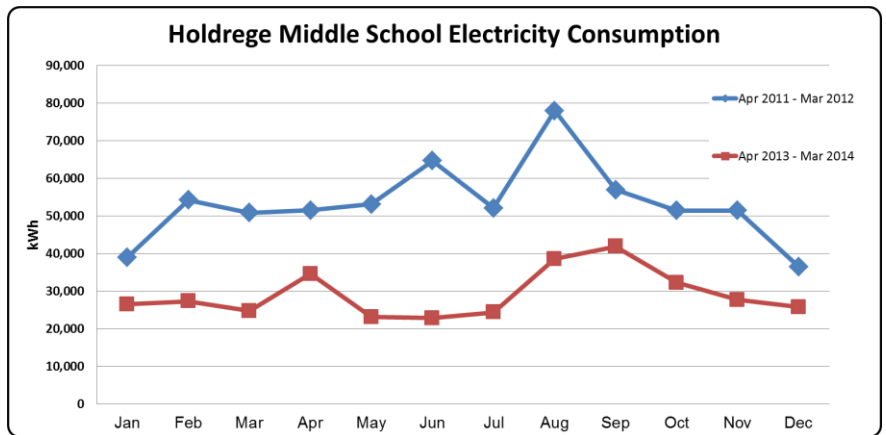
Note: A lighting upgrade was completed in 2012, prior to this HVAC Optimization. The estimated savings (127,000 kWh) and actual savings from the lighting project are reflected in the charts and table below.

Energy Consumption Comparison

The charts below compare baseline energy consumption to post-HVAC System Optimization energy consumption:

Building Energy Performance

The table below shows the energy savings as estimated in the Technical Energy Analysis, dated September 13, 2012, compared to the actual savings realized during the first year of operation following implementation of the Energy Conservation Measures described above.



	Estimated Savings	Actual Savings	Actual Savings from 2011/2012 to 2013/2014
Electricity Consumption (kWh)	183,108	290,320	45%
Electric Demand Reduction (kW)*	37	106	40%
Natural Gas Consumption (Therms)**	-	2,657	20%

*Electric Demand Reduction is the average kW demand reduction per month.

**As a result of optimization of air handling units and terminal boxes, natural gas savings were also realized.



HVAC System Efficiency Improvements

Nebraska Public Power District General Office Building

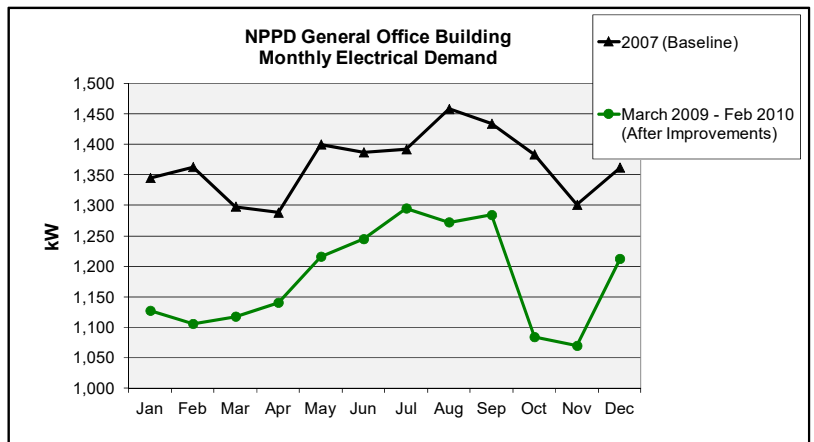
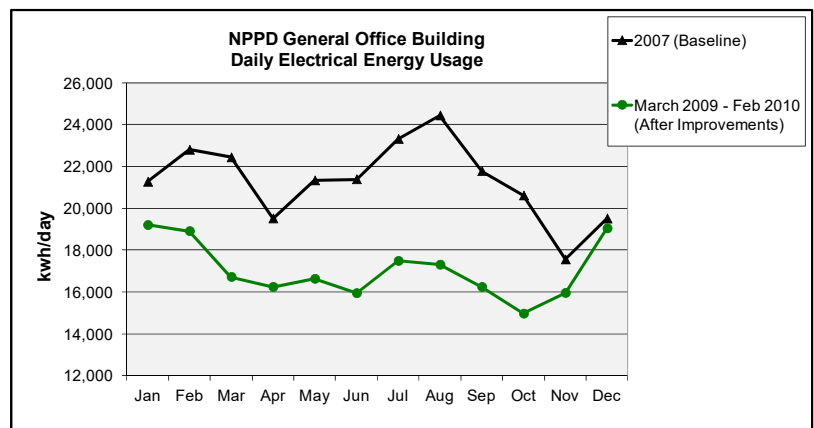
Project Overview

The Nebraska Public Power District recognized a two part need in their 204,000 square foot office building located in Columbus. Part 1 – Chiller Replacement: The three chillers that supplied air-conditioning for the building were in need of repair and beyond their useful lives, so the decision was made to replace them with one central air-cooled chilled water plant. Midwest Mechanical was awarded the bid for the chiller work. Part 2 – Air Distribution System Optimization: The main air-handling systems and variable air volume terminal boxes were in need of optimization. The services of the University of Nebraska’s Energy Systems Laboratory were utilized to complete this work.

Summary of Building Energy Performance

The charts on the right compare “before and after” energy consumption. The optimization began in August of 2008, and was completed in February 2009.

The table below shows estimated energy savings compared to the actual savings realized during the first year of operation following implementation of both Parts 1 and 2 of the efficiency improvements.



	Estimated Savings	Actual Savings	Percent of Estimated Savings Realized
Annual Electricity Consumption	1,317,000 kWh	1,517,000 kWh	115%
Average Monthly Electric Demand	250 kW	187 kW	75%

Project Energy Savings: 20% of total building energy consumption

Project Demand Savings: 14% of total building demand

Total Dollar Savings (1st year): \$76,000

The air distribution system optimization work was completed at a cost \$146,000. Annual savings due to optimization is estimated at \$38,000, yielding a simple payback of 3.8 years.



York General Health Care Services

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Success Story

Energy efficiency pays, in more ways than one!



In May 2012, York General Health Care Services (YGHCS) completed a HVAC System project upgrade in the Medical Office Building (MOB) to improve energy usage, operating costs, and comfort. The hospital partnered with Control Management, Inc. (CMI) and Nebraska Public Power District (NPPD).

YGHCS has discovered that Energy efficiency pays, in more ways than one. Together with CMI and NPPD, YGHCS recently completed an energy efficiency audit and implemented an EnergyWise program to attain savings at the Medical Office Building.

On Tuesday morning, October 2, 2012, NPPD General Manager of Retail Tim Arlt



and York Account Manager Craig Vincent presented an EnergyWise incentive check of \$11,437 to YGHCS Board President Chuck Harris. The incentive check is a payment for the successful completion of an Energywise HVAC System Optimization project at the Medical Office Building.

Through the first year of the project, energy savings for the facility exceeded expectations with 711,400 KWH of electricity saved. That's a savings of \$51,111 over a twelve month period.

"YGHCS is a large electric user and an important NPPD customer" Vincent pointed out. "NPPD is pleased they partnered with us on this energy efficiency initiative and we're very excited at the success they've achieved in reducing energy usage. We hope this success will motivate other customers to follow the same path."

"The Project was a success. The Building is easier to operate, more comfortable, and more efficient".
Bob Ailor, Director of Facilities

Customer Overview:

York General Health Care Services

Location: York, Nebraska

Year Opened: 2004

Facility Size: 57,000 sq.ft. MOB

Project Started: Oct 2011

Project Completed: Jul 2012

2011 Energy Usage:
2,126,900 KWH

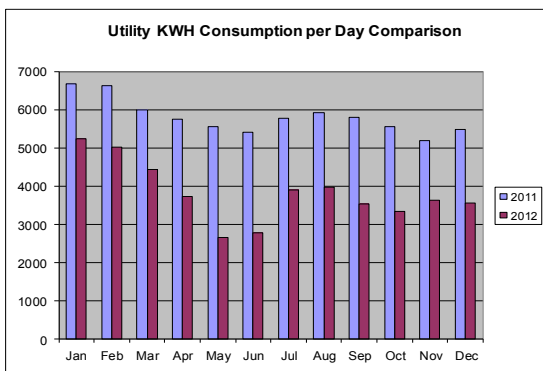
2012 Energy Usage:
1,415,300 KWH

Annual Energy Savings: 34.5%

2011 Peak Summer Demand:
480 KW

2012 Peak Summer Demand:
364 KW

Peak Demand Reduction: 24%



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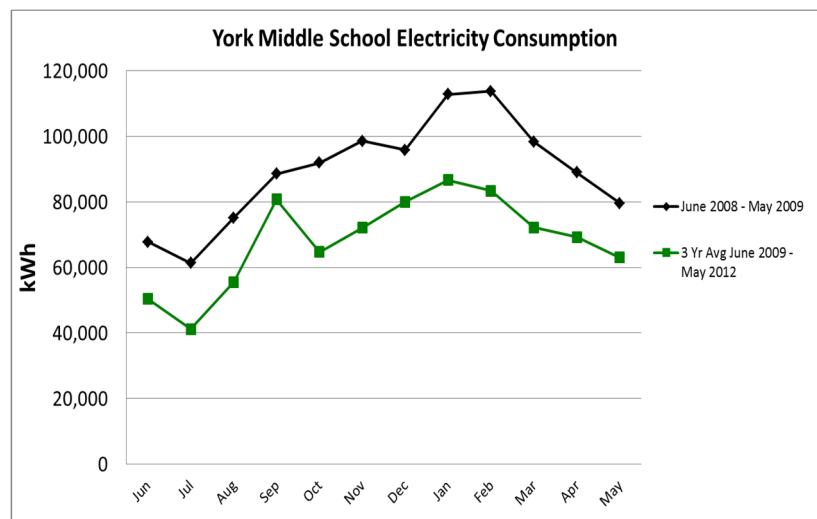
York Middle School Energy Efficiency

Project Overview

York Middle School educates over 250 6th – 8th grade students in York, Nebraska. The middle school building was constructed in 2007, and utilizes many energy efficient technologies, including: ground source heat pumps serving the heating and cooling needs of the entire facility; energy recovery ventilators for delivery of outside air; circulating pumps with variable frequency drives; energy management system (EMS) to schedule operation of the equipment and to allow adjustment of temperature settings; and occupancy sensors to control classroom lighting.

Even with these energy efficient technologies in place, the school's energy performance did not meet the expectations of administrative staff. Initial benchmarking in May 2009 using the ENERGY STAR Portfolio Manager tool returned a baseline rating of 67 – above the national average but not high enough to earn the ENERGY STAR label. The Nebraska Public Power District (NPPD) conducted a survey – a process that revealed that efficiency gains could be realized through improved operations and other low cost practices.

Optimized HVAC scheduling, temperature setpoint changes, and improved control of circulating pump variable frequency drives were among various measures that were recommended to produce energy savings. The energy savings amounted to a 22% reduction in total electricity consumption from June 2009 – February 2010, as compared to the same period the year before. By early 2010, only 9 months after the initial benchmarking, York Middle School earned ENERGY STAR by achieving a performance rating of 80 in Portfolio Manager. This dramatic increase in energy efficiency translates into real savings for York Public Schools.



Summary of Building Energy Performance

The chart above compares “before and after” energy consumption, revealing significant energy savings.

The table below shows the actual savings realized during the first year of operation following implementation of the Energy Conservation Measures.

	June 2008 – May 2009 (Baseline Period)	June 2009 – May 2010 (Post Implementation)	Savings
Annual Electricity Consumption	1,073,000 kWh	857,800 kWh	215,200 kWh
Annual Electricity Cost*	\$58,769	\$46,530	\$12,239

*Calculated using 2009 – 2010 average price for electricity