



# Using ENERGY STAR for Building Performance Labeling

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Loudoun County Public Schools  
MWCOCG – EAC October 20, 2011



# LCPS is using PM to track and reduce energy consumption

- 42 LCPS buildings have earned an ENERGY STAR label for energy performance
- LCPS named Partner of the Year for 2010 & 2011.
- LCPS recognized as a 10% Leader in 2009
- 3 LCPS schools recognized “Designed to earn ENERGY STAR”

# Why Energy Conservation works

- It's good for the bottom line. Spend less money for energy, and that money is available for other uses.
- It's good for the environment and can be converted into specific environmental equivalents.
- <http://www.epa.gov/coalbed/resources/converter.html>

# Benchmarking

- Needs to be completely objective
- Simplicity is important for widespread use
- Ease of access is valuable
- Starting with energy use is the simplest way to make certain that all the data is standardized.
- Comparing a local or regional set of buildings to a national database (CBECS).
- PM accounts for weather differences with weather normalization

# VEPGA Master Account Sharing

- **Save Energy, Save Money with ENERGY STAR®**  
*Improve Efficiency, Share with VEPGA, Work Together for Higher Achievement*
- **Why Benchmark with Portfolio Manager?**  
EPA's ENERGY STAR Portfolio Manager is an energy management and tracking tool available at no cost to all VEPGA members. Benchmarking your facilities in Portfolio Manager allows you to:
  - Track the energy and water consumption of all of your buildings in an easily accessible, no-cost tool.
  - Share your facilities' data with a VEPGA Master Account for quick and easy reporting.
  - Create custom reports to document reductions in energy and water use, greenhouse gas emissions, and utility costs for an individual building or an entire portfolio.
  - Justify received funding by demonstrating the energy and cost-saving results of investments in energy efficiency.
  - Aggregate data from VEPGA members' facilities to identify best practices and strategies for improved energy management.
  - Earn the nationally recognized ENERGY STAR for your top-performing buildings.

# Non-debateable results

- The energy used at a site is quantifiable
- The influence of the weather is normalized for all buildings
- Regional comparisons allowing for an apples to apples look at our buildings
- Spaces that are not able to be compared to CBECS can still be compared to local equivalent buildings.
- Renewable Energy Credits can be accounted for.
- All conversion factors are standardized for all users.

# Portfolio Manager:

- LCPS started utilizing this tool in the spring of 2008
- Currently has data for all LCPS facilities and a history of energy use going back to 1993.



[Home](#) > My Portfolio

Portfolio Averages	
Baseline Rating: 56 Facilities Included: 80	Current Rating: 73 Facilities Included: 80
Change from Baseline: Portfolio Adjusted Percent Energy Use (%): -11.3% Facilities Included: 83	
Averages are weighted by Total Floor Space. <a href="#">More about Baselines</a> <a href="#">More about Change from Baseline: Adjusted Energy Use</a>	

# Guidelines for Energy Management:

- The guidelines reinforce the current activity in each area of our program.
- Provide LCPS with a focus on the process of energy management.







# STATEMENT OF ENERGY PERFORMANCE

## 03-ARCOLA ES

Building ID: 1432920  
 For 12-month Period Ending: March 31, 2009<sup>1</sup>  
 Date SEP becomes ineligible: July 29, 2009

Date SEP Generated: June 29, 2009

**Facility**  
 03-ARCOLA ES  
 41740 Tall Cedars Parkway  
 Aldie, VA 20105

**Facility Owner**  
 Loudoun County Public Schools  
 21000 Education Court  
 Ashburn, VA 20148  
 571-252-1150

**Primary Contact for this Facility**  
 John Lord  
 21000 Education Court  
 Ashburn, VA 20148  
 571-252-1150  
 john.lord@loudoun.k12.va.us

**Year Built:** 2007  
**Gross Floor Area (ft<sup>2</sup>):** 90,201

**Energy Performance Rating<sup>2</sup> (1-100)** 80

Site Energy Use Summary <sup>3</sup>	
Electricity (kBtu)	2,955,452
Natural Gas (kBtu) <sup>4</sup>	3,004,897
Total Energy (kBtu)	5,960,349

Energy Intensity <sup>5</sup>	
Site (kBtu/ft <sup>2</sup> /yr)	66
Source (kBtu/ft <sup>2</sup> /yr)	144

Emissions (based on site energy use)	
Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	608

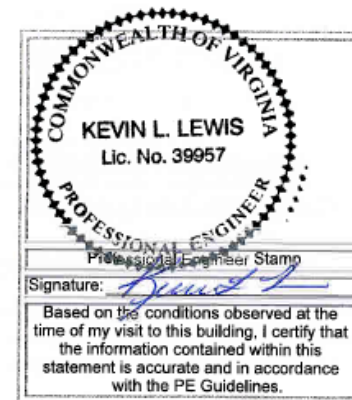
**Electric Distribution Utility**  
 Virginia Electric & Power Co

National Average Comparison	
National Average Site EUI	88
National Average Source EUI	193
% Difference from National Average Source EUI	-25%
Building Type	K-12 School

**Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:**

Ventilation for Acceptable Indoor Air Quality	Yes
Acceptable Thermal Environmental Conditions	Yes
Adequate Illumination	Yes

Notes:  
 1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.  
 2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.  
 3. Values represent energy consumption, annualized to a 12-month period.  
 4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.  
 5. Values represent energy intensity, annualized to a 12-month period.  
 6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.



**Professional Engineer**  
 License Number: 39957  
 State: VA  
 Kevin Lewis  
 21000 Education Court  
 Ashburn, VA 20148  
 571-252-1150

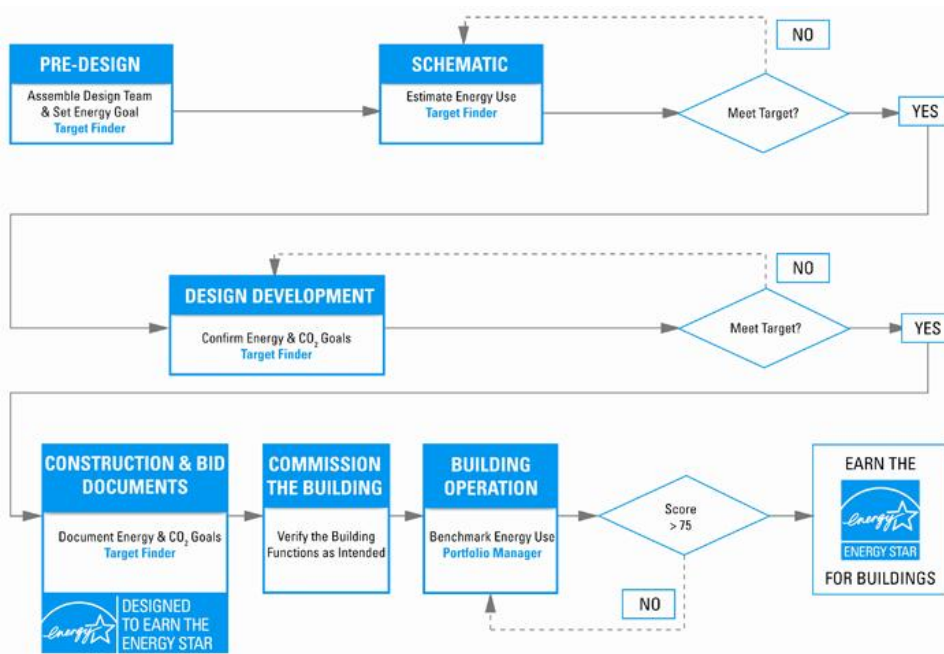
- Statement of Energy Performance
- The Perfect Building Energy Performance label.
- Energy
- Environmental
- National Ranking
- 3<sup>rd</sup> Party Review

# ENERGY STAR Label:

- LCPS has 42 buildings that have earned the ENERGY STAR Label.
- The ENERGY STAR Label is a powerful tool to inspire building administrators.




# New Building Design Guidance:



- The processes outlined in the New Building Design Guidance are utilized by LCPS.
- The inclusion of energy consumption and efficiency as a part of building designs is an integral part of ensuring that new buildings are constructed in accordance with School Board Policy 6-41.

# Target Finder:

- Current prototypes are undergoing significant changes.
- Each of the prototype school plans will go through the Target Finder process as part of their evolution.



**TARGET FINDER**

[PRINT](#)
[FAQ](#)
[FREQUENTLY ASKED QUESTIONS](#)
[CONTACT US](#)
[HELP](#)

Return to ENERGY STAR Web site > Target Energy Performance Results

### Target Energy Performance Results

NOTE: Values are 100% electricity and 0% other energy source. The Target & Top 10% energy use for this facility are calculated based on fuel mix of input estimated energy use.

Target Energy Performance Results (estimated)			
Energy	Design	Target	Top 10%
Energy Performance Rating (1-100)	84	90	90
Energy Reduction (%)	31	39	39
Source Energy Use Intensity (kBtu/Sq. Ft./yr)	115.1	100.9	100.9
Site Energy Use Intensity (kBtu/Sq. Ft./yr)	34.4	30.2	30.2
Total Annual Source Energy (kBtu)	20,625,309.3	18,080,856.2	18,080,856.2
Total Annual Site Energy (kBtu)	6,175,242.3	5,413,430.0	5,413,430.0
Total Annual Energy Cost (\$)	\$ 123,975	\$ 108,681	\$ 108,681
<b>Pollution Emissions</b>			
CO2 Emissions (tons/year)	1,040.2	912.0	912.0
CO2 Emissions Reduction (%)	31%	39%	39%

The design achieved a rating of 75 or higher.

**Facility Information** [Edit](#)

**LCMS Prototype**  
 South Riding, VA 20152  
 United States

Facility Characteristics <span style="float: right;"><a href="#">Edit</a></span>		Estimated Design Energy <span style="float: right;"><a href="#">Edit</a></span>			
Space Type	Gross Floor Area (Sq. Ft.)	Energy Source	Units	Estimated Total Annual Energy Use	Energy Rate (\$/Unit)
Parking*		Electricity	kWh	1,809,860	\$ 0.069/kWh
K-12 School	179,270				
<b>Total Gross Floor Area</b>	179,270				
* not included in total					

Source: Data adapted from DOE-EIA. See EPA Technical Description.

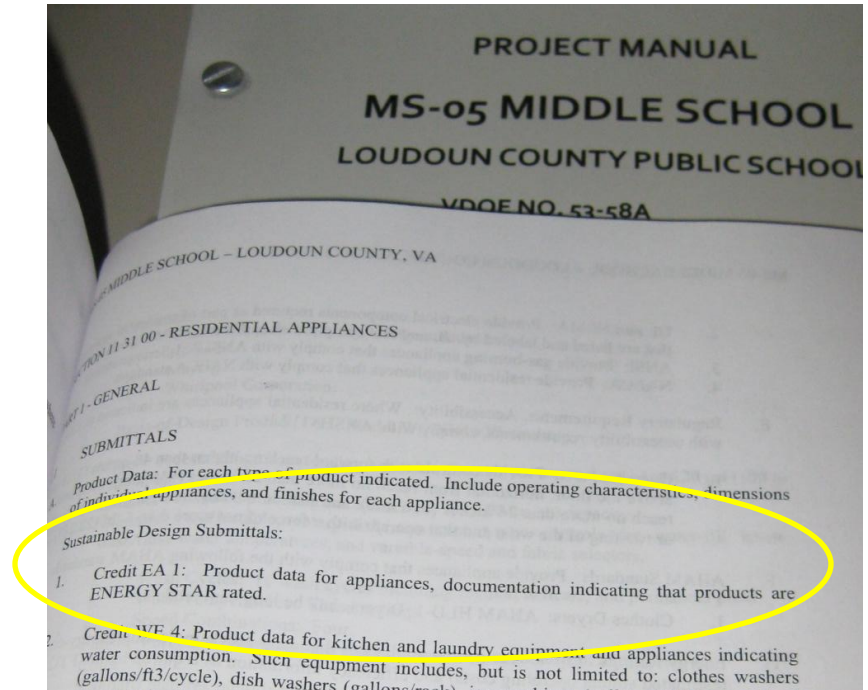
# Designed to Earn the ENERGY STAR:

- All new LCPS prototype plans will be required to meet the Designed to Earn the ENERGY STAR Standard.



# ENERGY STAR Qualified Products and Procurement:

- LCPS currently has a practice of purchasing ENERGY STAR appliances whenever they can fulfill the program requirement for that application.
- This is currently listed in design specifications.



# ENERGY STAR Online Training:

- LCPS participated in the ENERGY STAR procurement, Target Finder, and Partner of the Year application online webinars.

The screenshot shows a window titled "Network Recording Player - Recognizing Success: Expanding your Energy Management Program with ENERGY STAR". The window has a menu bar with "File", "View", "Info", and "Help". Below the menu bar, it displays "Meeting Number: 713 253 474", "Date: Tuesday, March 30, 2010", and "Time: 2:02 PM, Local Time (GMT -05:00)".

The main content area displays the Loudoun County Public Schools logo, which is a circular seal with a shield in the center, surrounded by the text "Loudoun County Public Schools" and "Established in 1870". Below the logo, the text reads:

**ENERGY STAR PROGRAM**  
Implementation in  
**Loudoun County Public Schools**  
March 30th, 2010

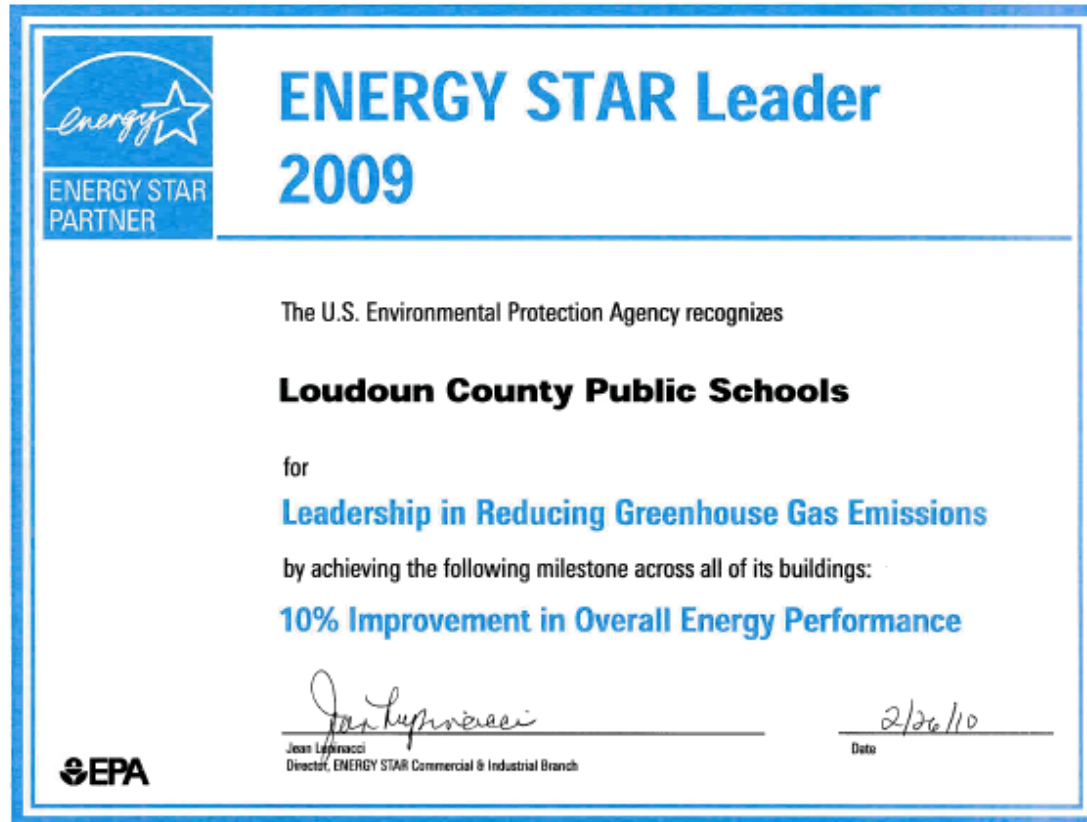
The bottom section of the slide is a blue banner with several logos and text:

- Energy Education logo: "Energy Education Empowering Your Vision."
- ENERGY STAR AWARD 2010 PARTNER OF THE YEAR logo.
- Text: "Michael Barancewicz & John Lord", "The Loudoun County Public Schools", "Energy Education Team".
- ENERGY EDUCATION TEAM logo.

The bottom of the window shows a playback control bar with a progress indicator at 00:21:11 / 01:06:50.

# ENERGY STAR Leaders:

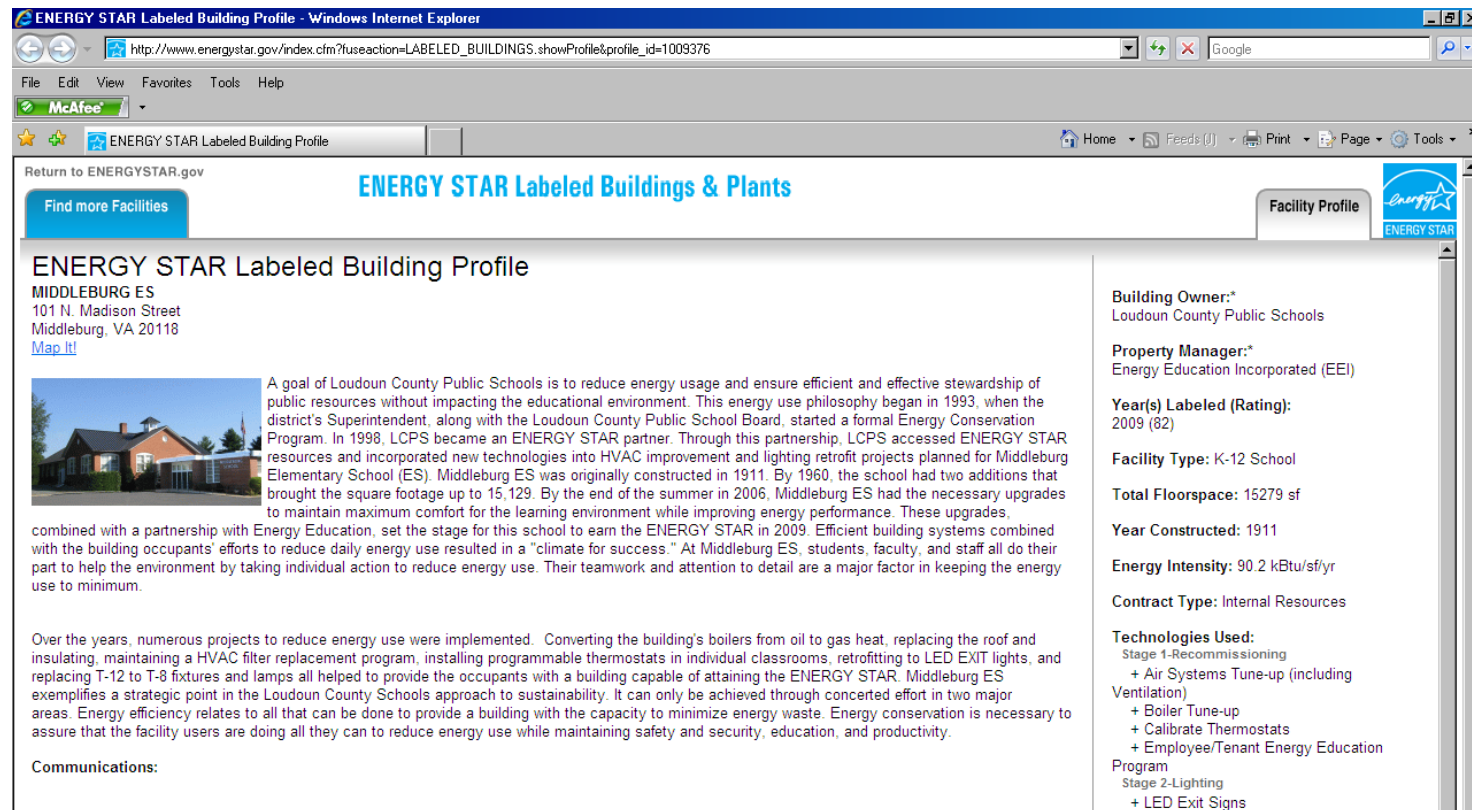
- The ability to track year-to-year progress in the leaders account has been motivational and has inspired the school system to strive for even greater future gains.






# Building Profiles & Leaders' Stories:

- Building profiles & stories for ENERGY STAR labeled facilities allow LCPS to consider approaches taken by other schools systems.



The screenshot shows a web browser window displaying the ENERGY STAR Labeled Building Profile for Middleburg ES. The browser's address bar shows the URL: [http://www.energystar.gov/index.cfm?fuseaction=LABELED\\_BUILDINGS.showProfile&profile\\_id=1009376](http://www.energystar.gov/index.cfm?fuseaction=LABELED_BUILDINGS.showProfile&profile_id=1009376). The page features a navigation bar with "Find more Facilities" and "Facility Profile" buttons. The main content area is titled "ENERGY STAR Labeled Building Profile" and includes the following information:

**ENERGY STAR Labeled Building Profile**  
MIDDLEBURG ES  
101 N. Madison Street  
Middleburg, VA 20118  
[Map It!](#)

 A goal of Loudoun County Public Schools is to reduce energy usage and ensure efficient and effective stewardship of public resources without impacting the educational environment. This energy use philosophy began in 1993, when the district's Superintendent, along with the Loudoun County Public School Board, started a formal Energy Conservation Program. In 1998, LCPS became an ENERGY STAR partner. Through this partnership, LCPS accessed ENERGY STAR resources and incorporated new technologies into HVAC improvement and lighting retrofit projects planned for Middleburg Elementary School (ES). Middleburg ES was originally constructed in 1911. By 1960, the school had two additions that brought the square footage up to 15,129. By the end of the summer in 2006, Middleburg ES had the necessary upgrades to maintain maximum comfort for the learning environment while improving energy performance. These upgrades, combined with a partnership with Energy Education, set the stage for this school to earn the ENERGY STAR in 2009. Efficient building systems combined with the building occupants' efforts to reduce daily energy use resulted in a "climate for success." At Middleburg ES, students, faculty, and staff all do their part to help the environment by taking individual action to reduce energy use. Their teamwork and attention to detail are a major factor in keeping the energy use to minimum.

Over the years, numerous projects to reduce energy use were implemented. Converting the building's boilers from oil to gas heat, replacing the roof and insulating, maintaining a HVAC filter replacement program, installing programmable thermostats in individual classrooms, retrofitting to LED EXIT lights, and replacing T-12 to T-8 fixtures and lamps all helped to provide the occupants with a building capable of attaining the ENERGY STAR. Middleburg ES exemplifies a strategic point in the Loudoun County Schools' approach to sustainability. It can only be achieved through concerted effort in two major areas. Energy efficiency relates to all that can be done to provide a building with the capacity to minimize energy waste. Energy conservation is necessary to assure that the facility users are doing all they can to reduce energy use while maintaining safety and security, education, and productivity.

**Communications:**

**Building Owner:\***  
Loudoun County Public Schools

**Property Manager:\***  
Energy Education Incorporated (EEI)

**Year(s) Labeled (Rating):**  
2009 (82)

**Facility Type:** K-12 School

**Total Floorspace:** 15279 sf

**Year Constructed:** 1911

**Energy Intensity:** 90.2 kBtu/sf/yr

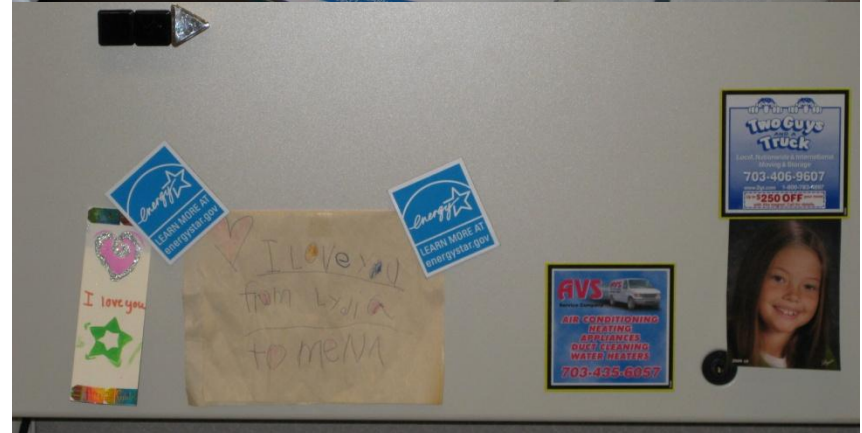
**Contract Type:** Internal Resources

**Technologies Used:**

- Stage 1- Recommissioning
  - + Air Systems Tune-up (including Ventilation)
  - + Boiler Tune-up
  - + Calibrate Thermostats
  - + Employee/Tenant Energy Education Program
- Stage 2- Lighting
  - + LED Exit Signs

# ENERGY STAR Publications:

- ENERGY STAR materials are used within LCPS to communicate the ENERGY STAR program, inspire participation, and spark interest in learning more.



# ENERGY STAR Partner of the Year:

To be recognized as a leader amongst peers on a national level is a very powerful statement of commitment to cost containment and environmental stewardship.



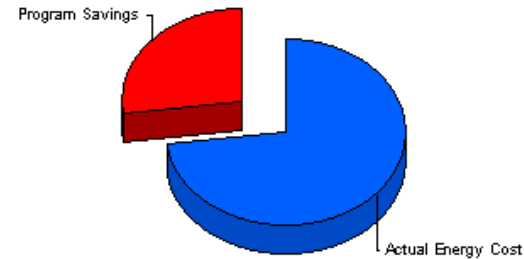
# Cost Containment & Environmental Impact

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## Cumulative Cost Savings

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Expected Energy Costs	\$157,536,366
Actual Energy Cost	\$115,075,285
<hr/>	
Program Savings	\$42,461,081
Savings Percent	26.95%



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## Cumulative Greenhouse Gas Reduction

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**Energy Reduction Impact:** 2,406,747 MMBTU 756,859 equiv. metric tons of CO<sub>2</sub>

This is equivalent to the following:

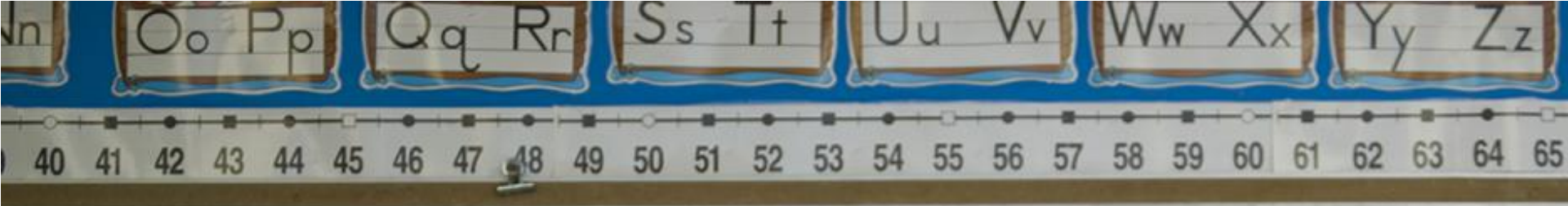
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Passenger cars not driven for one year:	135,846
Tree seedlings grown for 10 years:	19,358,943

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## Cumulative Energy Savings

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# Why is this important to the Citizens of Loudoun County?



\$42 million would allow LCPS to hire 703 teachers for 1 year based on the FY2010 average salary of \$59,734.

# Why is this important to the Citizens of Loudoun County?



\$42 million would allow LCPS to teach 3500 students for 1 year based on the FY2010 cost per pupil of \$11,997.

# Why is this important to the Citizens of Loudoun County?



- The \$42 million is enough to cover the costs of building J. Michael Lunsford Middle School.

# STEWARDSHIP STATEMENT



Loudoun County Public School's commitment to the environment is expressed through the actions we have taken over the years. For a school system to achieve this level of action during times of unprecedented growth is unique. We believe that having a commitment to healthy, safe, and environmentally friendly schools is an essential part of achieving...

**A CLIMATE FOR SUCCESS.**