

CCPS Energy Initiatives

Presented to the Environmental Advisory Council
of Carroll County

CCPS Facilities Background

- * 8 High Schools
- * 9 Middle Schools
- * 23 Elementary Schools
- * 3 Dedicated Use Schools
- * 4.6 M Square Feet
- * Ranging in age from 85 to one year

Operational Background

Energy needs should be easy to understand since schools open and close at set times, are closed on weekends, holidays and over the summer.

Well, not really...

There are many factors that influence energy use at a particular school, such as;

Operational Background

- * Before and After School Child Care
- * Summer isn't a time to set back
- * Extra curricular activities
- * 2nd and 3rd shift custodial coverage
- * Outside user groups
- * Heating & Cooling Degree Days
- * New schools, additions and relocatables

Operational Background

Expectations Change

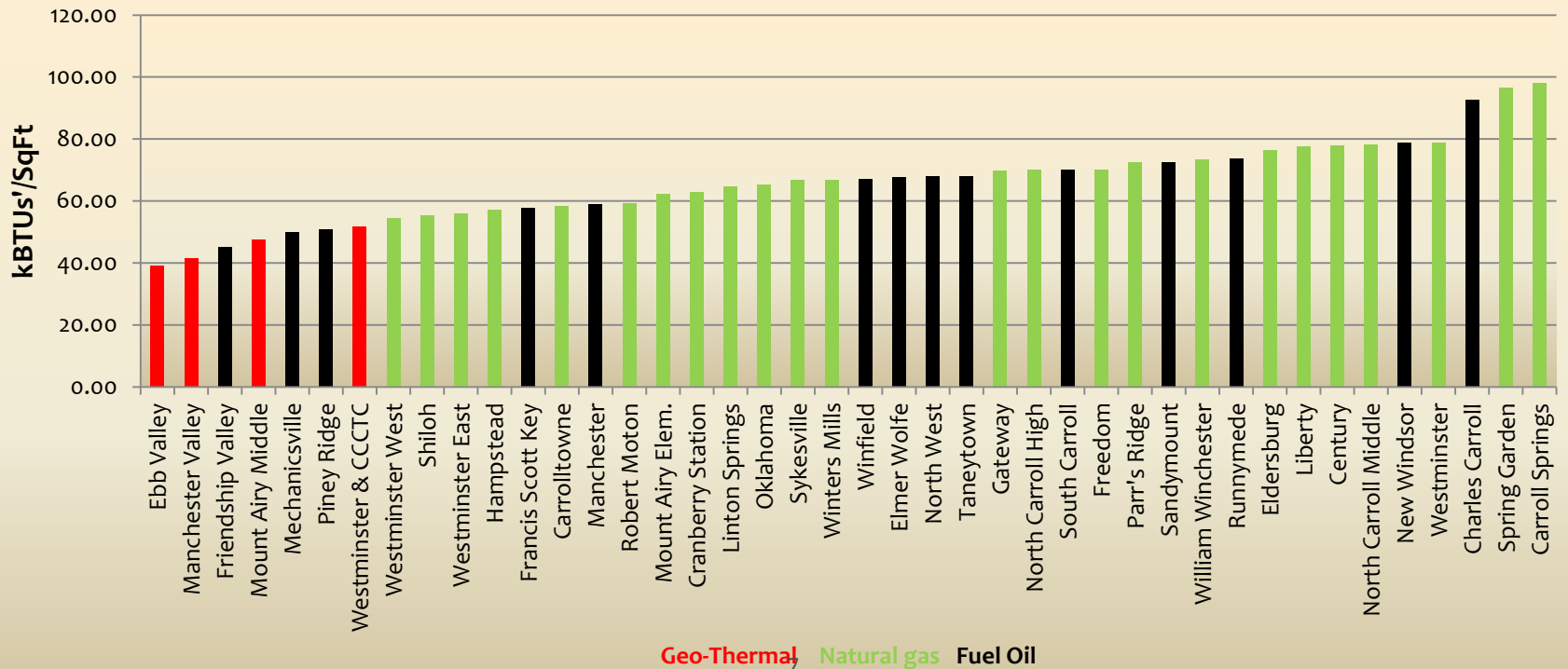
- * Outdoor air requirements increased
- * Dehumidification
- * Gym A/C
- * Need to cool during heating season
- * IAQ (Human Comfort)

Current Energy Situation

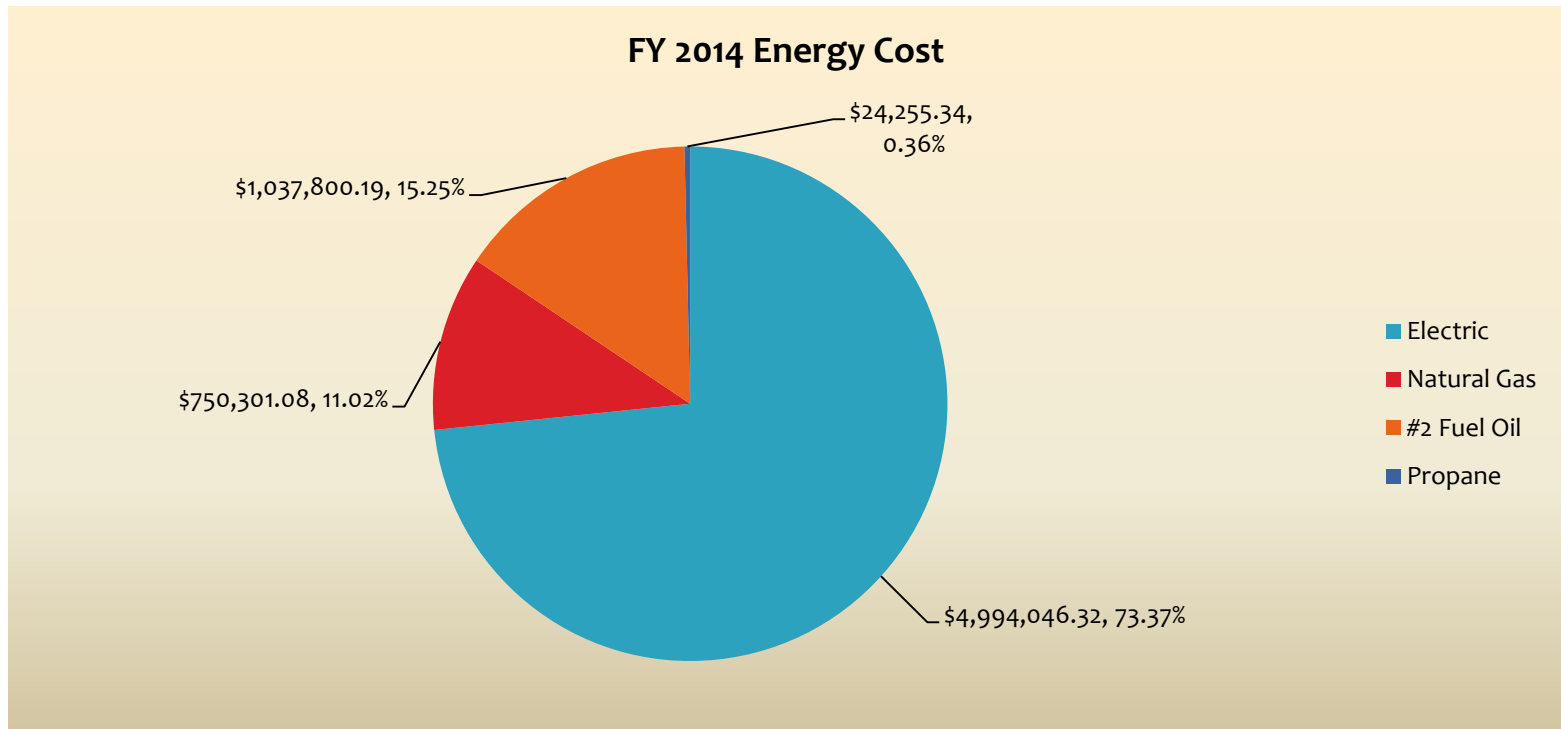
- * When discussing energy of various forms use BTU
- * CCPS uses three main energy sources:
 - * Electricity
 - * Fuel Oil
 - * Natural Gas

Current Energy Situation

Energy Use per School - FY 2015



Why Target Electricity?



What is Energy Performance Contracting?

A typical Energy Performance Contracting project is delivered by an Energy Service Company (ESCO) and consists of the following elements:

- * **Turnkey Service** – The ESCO provides all of the services required to design and implement a comprehensive project at the customer facility, from the initial energy audit through long-term Measurement and Verification (M&V) of project savings.
- * **Energy Conservation Measures** – The ESCO tailors a comprehensive set of measures to fit the needs of a particular facility, and can include energy efficiency, renewable energy, distributed generation, water conservation and sustainable materials and operations.
- * **Project financing** – The ESCO arranges for long-term project financing that is provided by a third-party financing company. Financing is typically in the form of an operating lease or municipal lease.
- * **Energy Savings Guarantee** – The ESCO provides a guarantee that the savings produced by the project will be sufficient to cover the cost of project financing for the life of the project.
- * **Improved Indoor Air Quality** – Cost avoidance is not the only benefit.

Why JCI as ESCO?

- * HVAC controls are critical for energy efficiency and IAQ.
- * All CCPS facilities utilize JCI Energy Management System for HVAC controls.
- * JCI and CCPS have long term relationship.

EPC Not New to CCPS

- * The Phase I initiated in 1994.
- * Phases I – III overlapped as opportunities emerged.
- * Contracts concluded in 2004.
- * The accumulated projected cost avoidance \$5.77M.
- * The accumulated actual cost avoidance \$5.82M.

EPC Not New to CCPS

- * Scope of Work for Phases I – III
 - * Lighting retrofits
 - * Installation of centralized energy management system
 - * Water heater fuel conversions
 - * Energy efficient motor installations
 - * Variable speed drive conversions
 - * Programmable thermostats for relocatables

Where Are We Now?

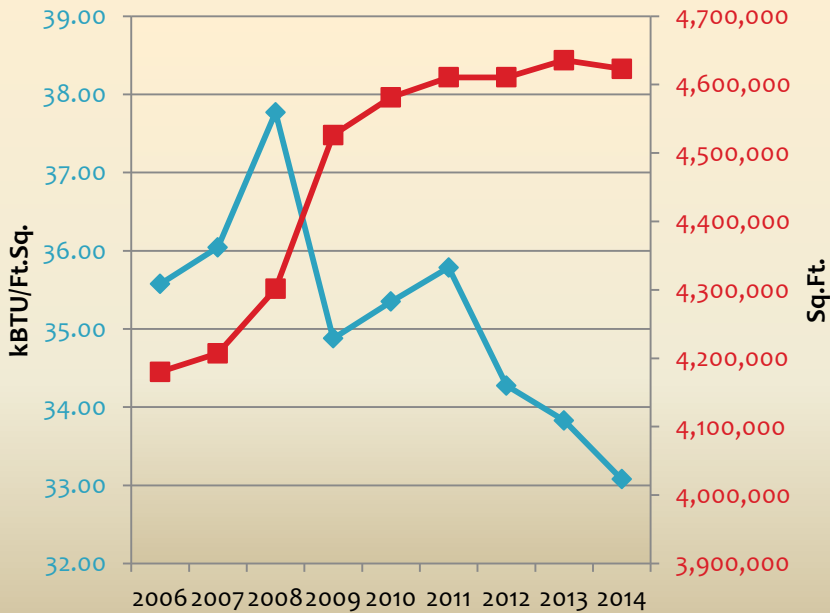
- * Phase IV initiated in 2004.
- * Scope of Work for Phase IV
 - * More lighting retrofits
 - * Energy management system upgrades
 - * Variable frequency drive installations and upgrades
 - * Utility bill pay and management services
 - * New window systems at three schools
 - * New HVAC systems at three schools
 - * Water fixture upgrades

Where Are We Now?

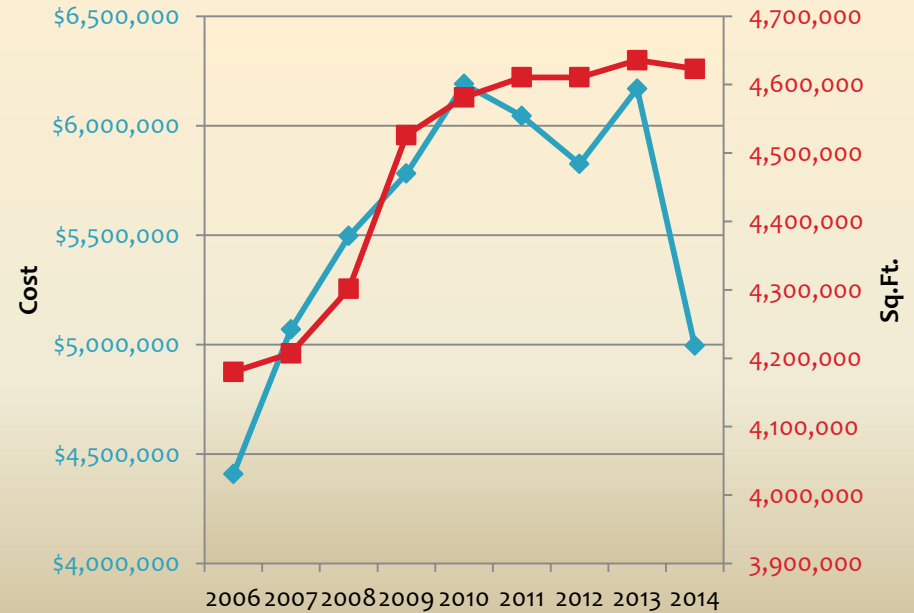
- * Project Financial Overview
 - * Project Cost \$9.4M
 - * 15 Year Energy & Operational Cost Avoidance \$10.8M
- * Through Year 6 Performance
 - * Guaranteed Cost Avoidance \$3.9M
 - * Actual Cost Avoidance \$5.5M

Show Me the Money!

Annual Electrical Energy

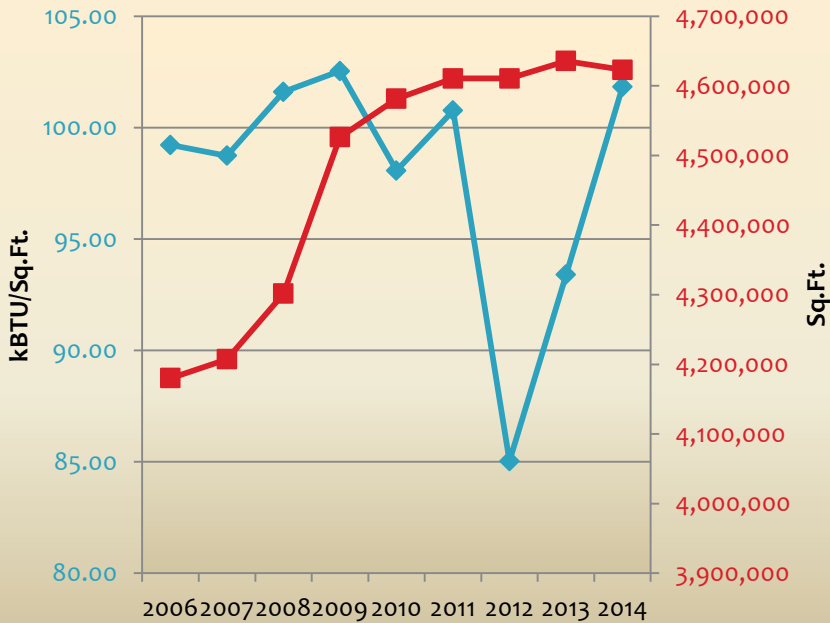


Annual Electrical Cost

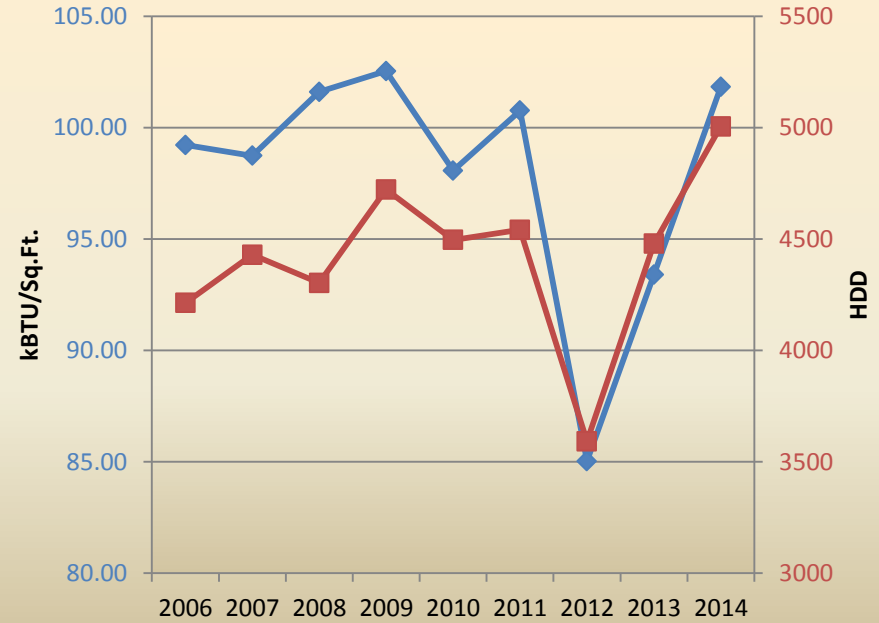


How Are We Doing Overall?

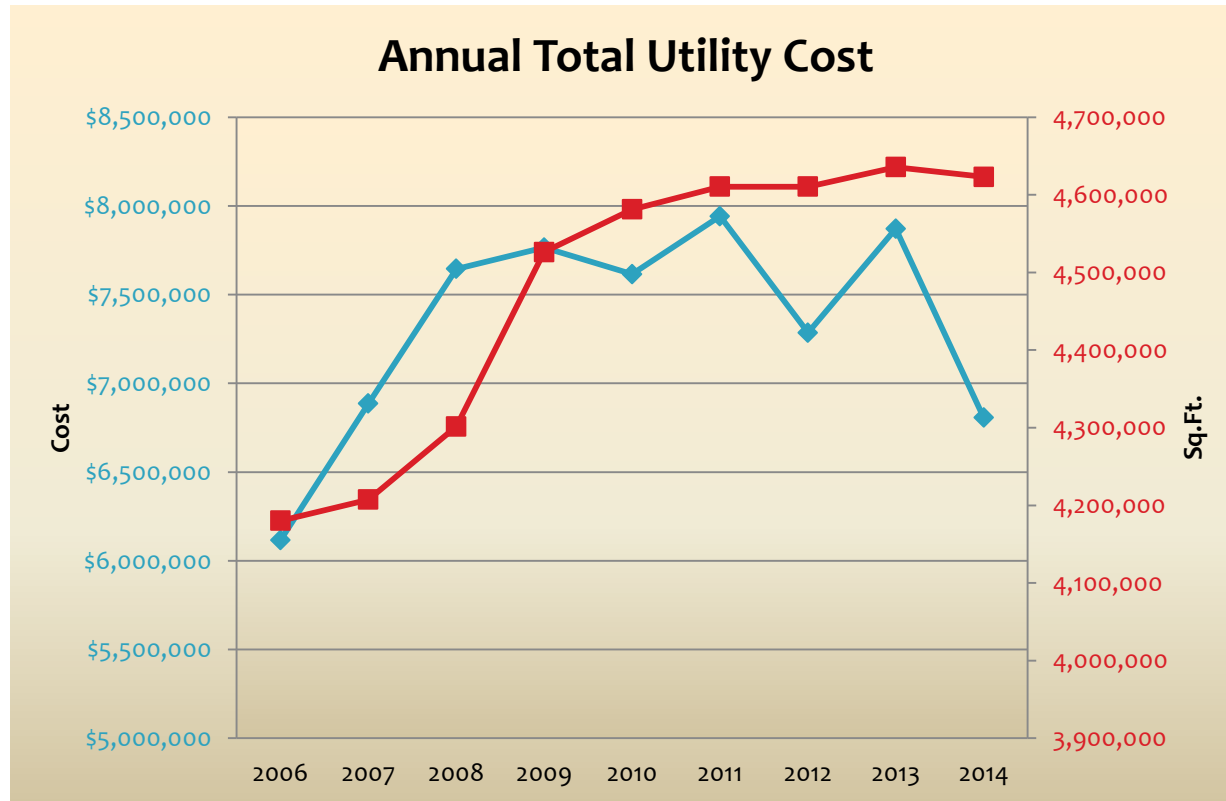
Annual Total Energy



Annual Total Energy VS HDD



How Are We Doing Overall?



So, It's Miller Time, Right?

- * Energy Efficiency Initiative (EEI)
- * High efficiency equipment replacement
- * Informal Re-Commissioning
- * Studying Formal Re-Commissioning
- * Evaluating alternative energy sources
- * Incorporating high efficiency standards into new construction and modernizations
- * Discussing a Phase V EPC



Questions?