



WKU®

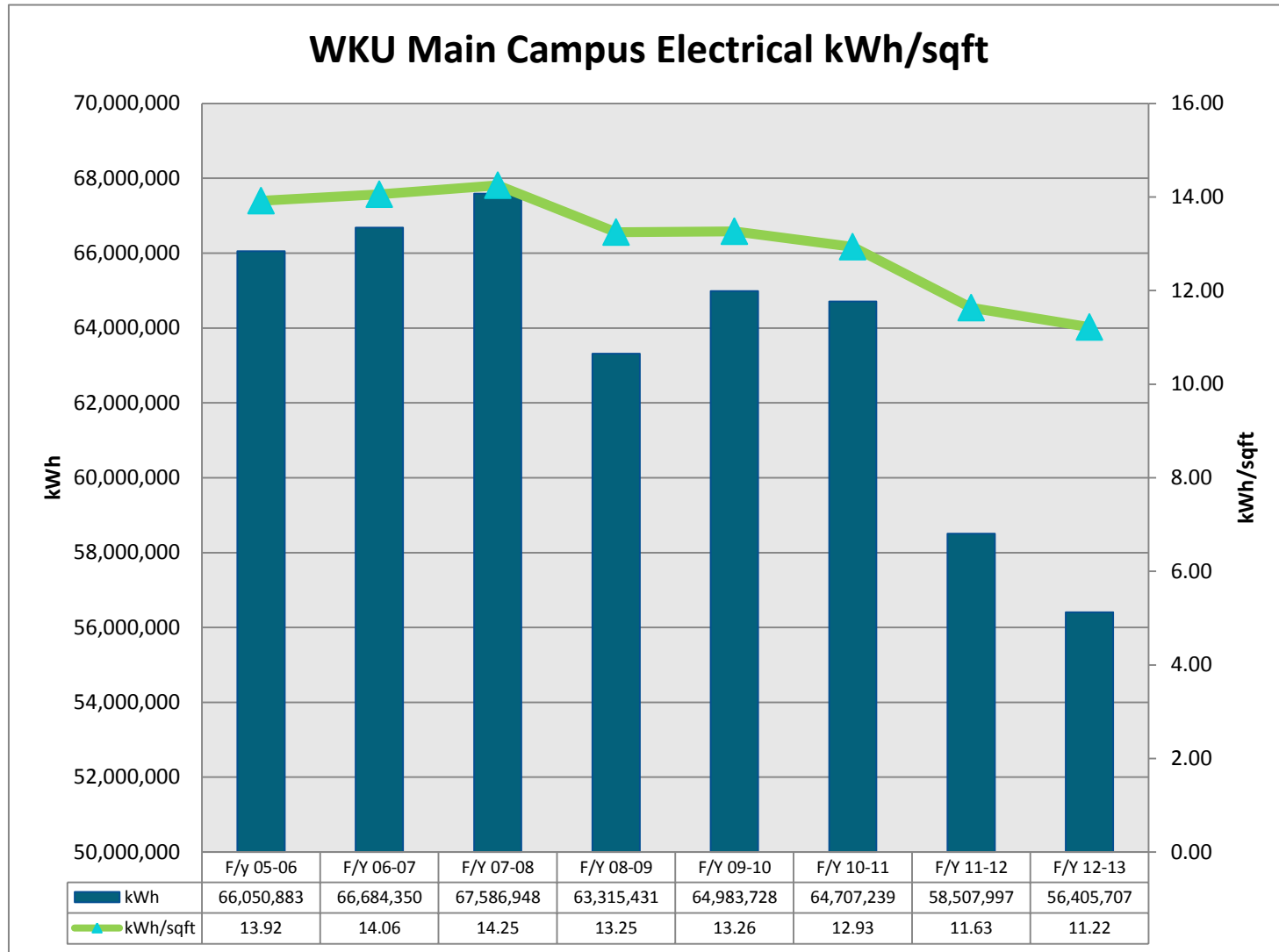
Reduced kWh used per square foot by 21% since 2008.

Overall the campus used 16% less than in 2008.

EPA 2012 report
average office space:
17 kWh/sqft

LEED buildings:
13 kWh/sqft

-WKU main campus:
11.22 kWh/sqft

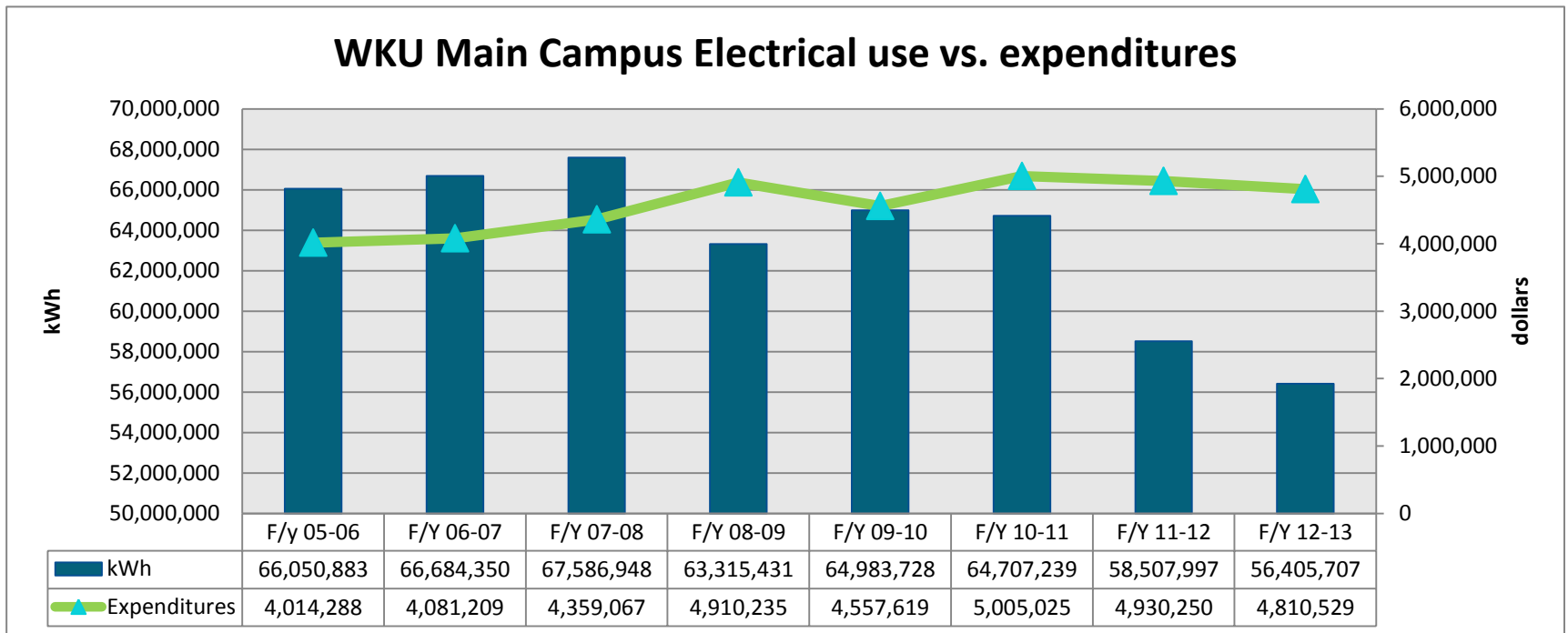


Clear goals, sound strategies.

Commitment in the WKU Strategic Plan:

6 year goal to continue to improve/lower kWh usage per square foot by 2% annually through further efficiencies and conservation efforts.

Key to success – reinvestment of savings for further energy efficiency and conservation efforts.



WKU Energy Policy

Created and adopted in early 2009.

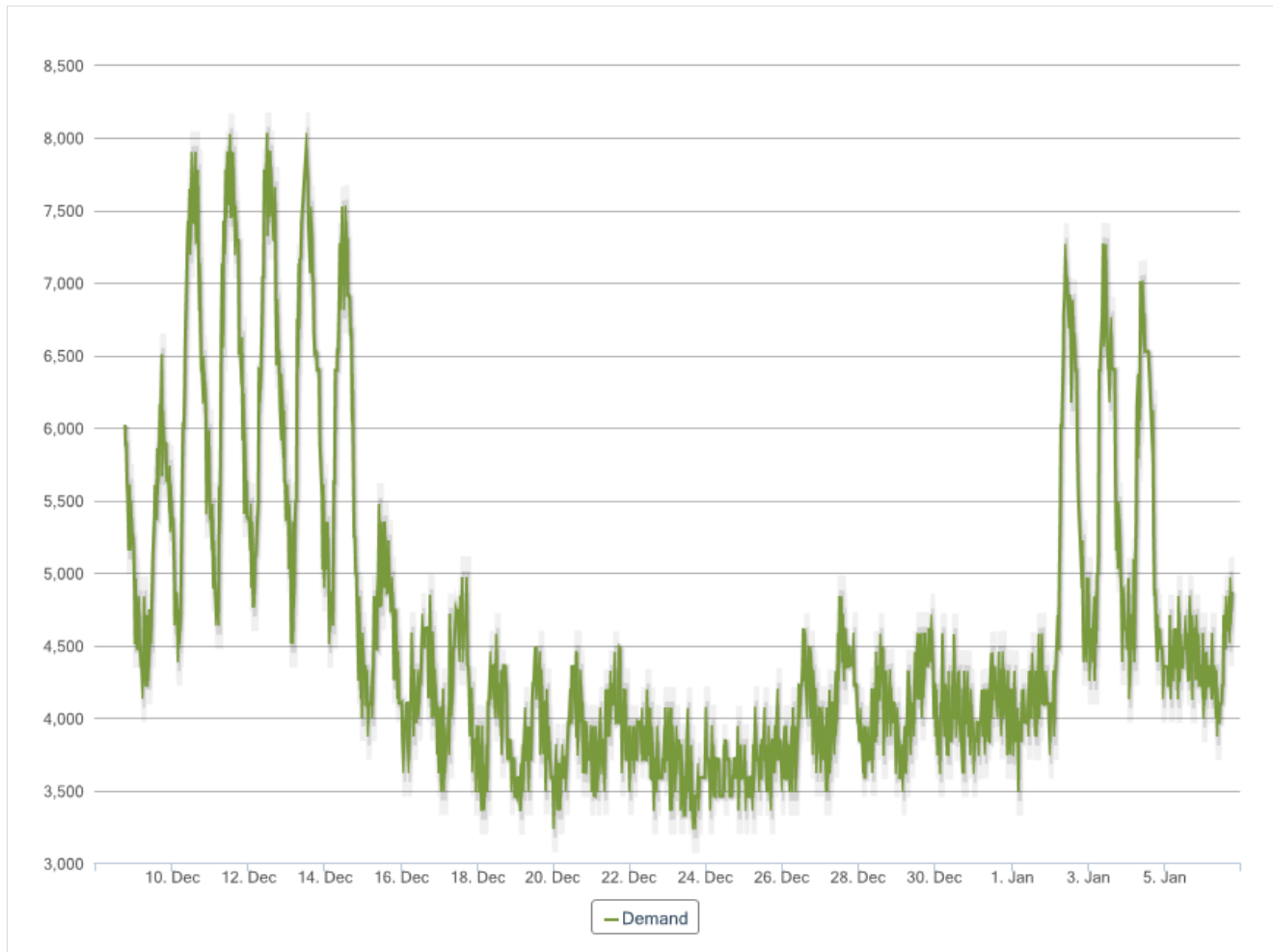
Collaborative effort that included faculty, students and other stakeholders

Guides responsible energy use at WKU.

http://www.wku.edu/policies/csf_policies/energy_policy_90400.pdf

Conservation Vacation

Initiated in 2008, every subsequent year WKU has further reduced the amount of energy consumed over the Winter Break.



Energy Savings Performance Contract

- WKU entered its second ESPC with Johnson Controls Inc., in 2009.
- Energy conservation measures fully implemented July 01, 2012.
- \$9.6 million in energy efficiency construction with annual guaranteed savings of \$1 million.
- Lighting retrofits/replacements in 38 buildings.
- Upgraded HVAC and controls in 21 buildings.
- Water conservation measures in 27 buildings.
- 80-panel solar array for swimming pool supplemental heating.
- Five rain water-harvesting systems, allowing for combined collection of up to 80,000 gallons of water at one time.
- **First year actual savings were reported as \$1,309,537, exceeding guarantee by 30%.**

“Smart Scheduling”

Initiated in 2009:

- Summer consolidation of courses in the most efficient buildings utilizing the ASTRA academic scheduling software.
- Adjusted summer work schedule allows for temperature setbacks during afternoon peak energy use (when cost is highest).
Summer 2013 – adjusted staff hours to 7:30-4:00 M-Th and 7:30-12:30 on Fridays. Results: reduced energy use by 8%, reduced energy costs by 6%.

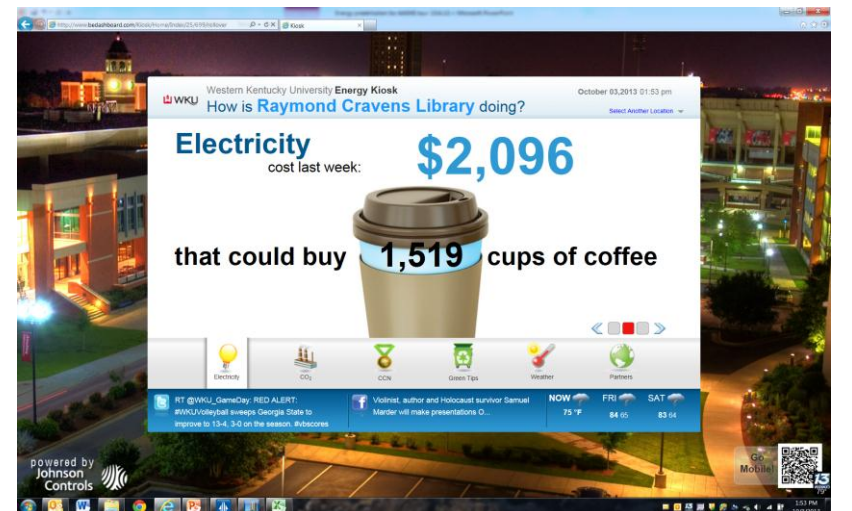
Comprehensive Energy Management

Panoptix analytical software interfaces with building automation systems, utility metering, and building sub-meters. This is currently installed in 39 buildings with the Downing Student Union scheduled to come on in early 2014.

The continuous commissioning feature for HVAC has already allowed for identification and correction of inefficiencies with a cost offset of more than \$200,000.

The **energy dashboard** displays real-time energy use in 22 academic buildings, 16 resident halls, and main campus aggregate. The dashboard is accessible publicly, and may be used for engagement and awareness activities.

<http://www.wku.edu/energykiosk>
Western Kentucky University: Impacting Organizational Culture with the Panoptix® Platform



Student Engagement and Awareness

Each year, Residence Halls compete to Reduce their Use. In 2012, WKU joined the largest campus energy conservation competition, Campus Conservation Nationals.

In a regional competition between UK, U of L and Berea, WKU reduced the most energy used during the 3-week competition, winning Bluegrass Unplugged!



BLUEGRASS UNPLUGGED

3/23 - 4/12



CAMPUS
CONSERVATION
NATIONALS 2013

Central Steam Plant Upgrade

Transition from coal to natural gas in 2012, increasing combustion efficiency from 65% to 85% and significantly reducing greenhouse gas emissions.

Completely funded by re-invested utility savings



Identifying additional efficiency opportunities

Projects completed in 2013:

- Re-lamped the Glasgow Regional Campus building with 2700 reduced wattage lamps, reducing the lighting load by 33,696 kWh annually, saving \$3,235.
ROI = 1.7 years
- Re-lamped the Clinical Education Building with 500 lamps, reducing that lighting load by 6,240 kWh annually, saving \$600.
ROI = 1.4 years
- Installed an additional 255 occupancy sensors in 9 buildings.
ROI = less than 3 years
- Replaced 82 parking area and wall mounted fixtures with induction lighting at the Glasgow Campus, reducing area lighting load by 42% or 44,676 kWh annually, saving \$4,289.
- A weatherization project, initiated in 2010, has recently been completed. In 27 buildings we have installed:
 - 2250 sq. ft. of blown insulation.
 - 1043 door sweeps replaced.
 - 17,731 linear ft. of door weather stripping replaced.
 - 72,890 linear ft. or 13.8 miles of caulking and glazing.
 - 8.020 linear ft. of 2 part foam sealant.

Identifying additional efficiency opportunities

A project is currently underway on the main Campus, South Campus, and Research & Development campus to replace 361 HID parking area light fixtures.

These will be replaced by 317 LED fixtures with integrated Wi-Fi for controllability.

This project will reduce lighting load by 54% or 506,241 kWh annually, saving \$43,537.

This presentation can be downloaded as a pdf from the WKU Sustainability webpage here:

http://www.wku.edu/sustainability/documents/energy_presentation.pdf