

SCORE/CitySmart: Lessons from the Institutional Sector

September 22, 2015

ACEEE National Conference on Energy
Efficiency as a Resource

- Why should institutional customers be targeted?
 - What has worked in SCORE/CitySmart (and what hasn't)?
 - What insights can historical program data provide?
 - How might SCORE/CitySmart evolve?
-

Objectives

Targeting Public Sector Buildings

- Traditionally under-served by C&I programs
- Large building portfolio under single operator
- Predictable budgets for capital improvements
- Institutions are influential voices in the community

SCORE/CitySmart

- Financial analysis and cash incentives
- Technical assistance
- Communications



General HVAC Recommendations

DESIGN GUIDELINES FOR ENERGY EFFICIENT HVAC SYSTEMS

Among the benefits of energy efficient heating, ventilation, and air conditioning (HVAC) equipment are lower operational costs and a positive environmental impact. Our trusted recommendations for energy-efficient HVAC equipment, intended for use in both retrofit and new construction applications, are based on reliable information provided by Consortium for Energy Efficiency's (CEE) and New Building Institute's (NBI) Core Performance Guides.

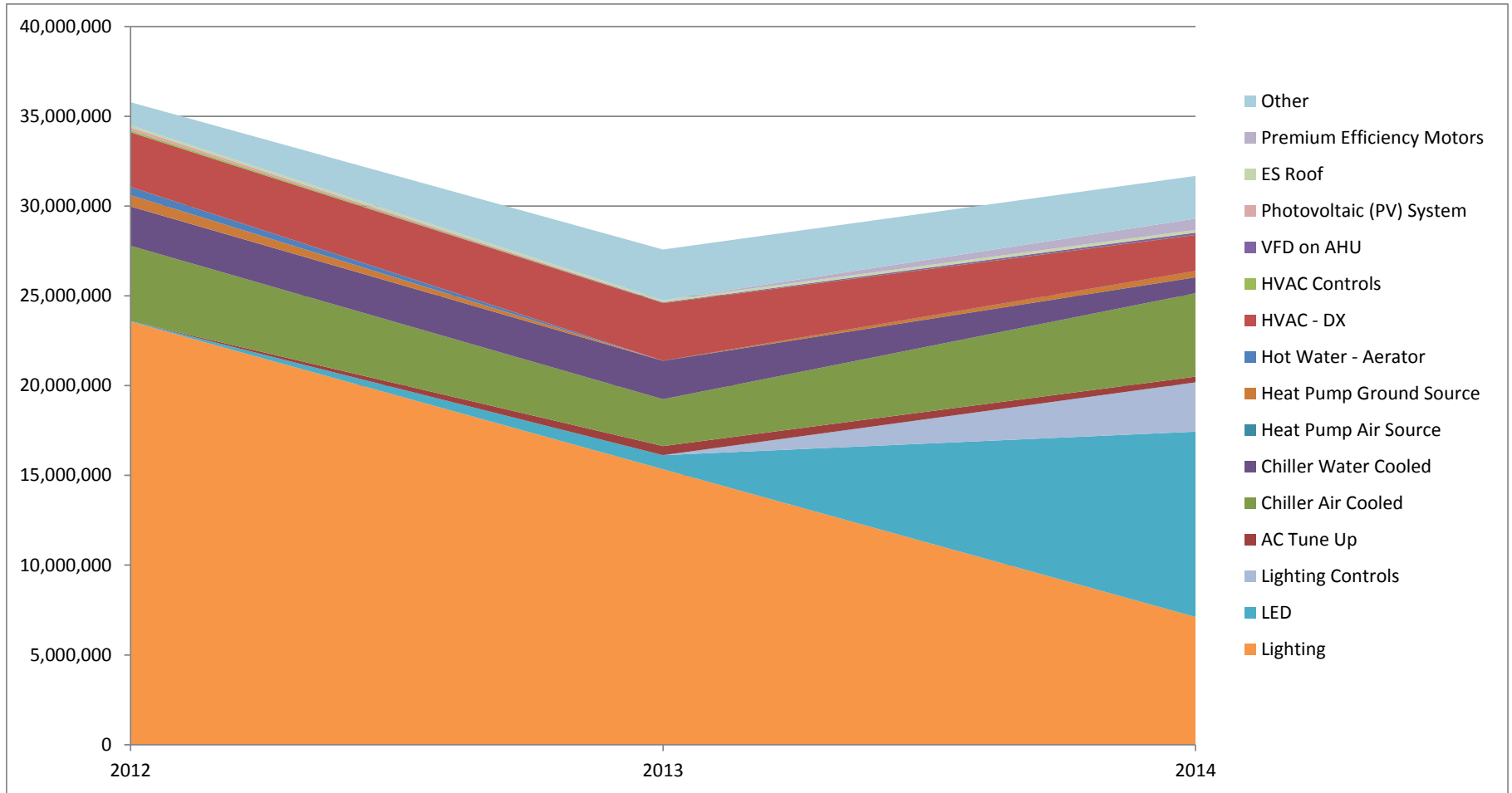
Through your electric utility's energy efficiency programs, CLEAResult helps building owners, architects and engineers evaluate the benefits of energy efficiency. Building owners are encouraged to assess and address their energy use through a variety of program-related services, ranging from energy performance benchmarking and energy master planning, to technical assistance and public relations support. The third-party recommendations in this document are provided at no cost through your electric utility, and are not intended to substitute for the services of paid professionals.



SCORE/CitySmart Evolution

- Customization: SCORE Lite / Small SCORE
- New technologies and practices / more M&V
- Program outreach and marketing
 - Trade allies
 - Cohort meetings

2012-2014 Texas SCORE/CitySmart Program Savings (kWh) by Measure



Benchmarking & Energy Master Planning

Benchmarking Report

Easy and efficient way to review the results of our facility & portfolio analysis

CLEAResult

**Sample Organization
Energy benchmarking report**

Sponsored by Utility • Provided by CLEAResult • Date

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PREPARED FOR
Sample Organization
Physical Address
City, State, Zip Code
Phone Number

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Energy benchmarking report Date

COMPARISON WITH LOCAL ORGANIZATIONS

The bar graph below compares your organization's overall energy use (kBtu/sq ft) to other similar organizations in your immediate local area only. Your overall energy use index (EUI) is highlighted in orange. Lower EUI bars indicate lower energy use / better performance.

Energy use index (kBtu/sq ft)

Sample Organization

Energy benchmarking report Date

Energy performance benchmarking analysis

Organization-wide summary / Sample Organization

CLEAResult benchmarks	Median*	Your buildings	Excellent	Above avg	Poor
Energy use index (kBtu/sq ft)	47.8	43.2	0	8	16
Energy cost index (\$/sq ft)	\$1.06	\$0.66	0	10	20
Energy cost per occupant	\$153	\$122	0	10	20
EPA portfolio manager score	87	89	0	10	20

* Median for a similar profile of similar building type in your climate region.

Building characteristics	Monthly utility data				Annual energy use/cost summary				
	Month	kWh	kW	Therms	Cost				
Climate region	DFW	Jan-14	214,567	961	\$11,675	14,090	\$9,383	Usage- Electricity (kWh)	2,469,484
Type of building	All Schools	Feb-14	193,093	961	\$10,843	20,000	\$9,671	Usage- Gas (therms)	65,072
Type of heating system	N/A	Mar-14	173,076	775	\$9,771	18,100	\$7,820	Usage- Electricity (MMBtu)	6,528
Year built	N/A	Apr-14	172,233	821	\$10,036	11,840	\$6,528	Usage- Gas (MMBtu)	4,027
Floor area (sq. ft.)	383,894	May-14	171,187	767	\$19,228	3,360	\$2,695	Usage- Total energy (MMBtu)	17,035
Number of occupants	2,112	Jun-14	158,728	735	\$17,651	500	\$1,397	Usage- Electricity % of total	50%
Number of PCs	630	Jul-14	189,718	850	\$21,280	360	\$1,325	Cost- Electricity (\$)	\$205,047
On-site cooling?	No	Aug-14	358,878	1,059	\$39,716	600	\$1,443	Cost- Gas (\$)	\$53,584
Monthly energy use (MMBtu) average		Sep-14	269,651	1,387	\$33,379	610	\$1,656	Cost- Total energy (\$)	\$268,631
		Oct-14	187,626	838	\$10,561	1,700	\$1,691	Cost- Electricity % of total	79%
		Nov-14	160,028	880	\$10,738	7,020	\$4,416	Electricity cost per kWh	\$0.08
		Dec-14	187,679	841	\$10,341	7,230	\$5,343	Gas cost per therm	\$0.63

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Energy benchmarking report Date

Detailed energy performance analysis of individual buildings¹

The Energy Performance Benchmarking Analysis charts on the following pages summarize the utility data, operating characteristics, and energy performance of your particular buildings. Below are descriptions and sample parts that illustrate how to interpret the charts.

CLEAResult benchmarks

CLEAResult benchmarks	Median*	Your building
Energy use index (kBtu/sq ft)	46.3	37.1

The first column is the median for each energy performance metric for your particular climate region and building type, followed by your building's calculated benchmarks.

Energy performance color scale

The scales illustrate where your building ranks compared to the median with respect to each energy benchmark. The median for each performance metric is colored dark blue and your building's energy benchmarks are colored orange. The color-coded scale shows the range of values in our database for each particular energy performance metric. The scale moves from those buildings performing well (green) to average (yellow) to poorly (red). Please notice where your building's falls on this continuum.

Building characteristics

Building characteristics typically includes the type of building, year built, gross floor area, and any particular operating characteristics solicited by EPA Portfolio Manager to produce an energy performance rating.

Building characteristics	
Climate region	Climate
Type of building	Blg type 2
Type of heating system	Gas
Year built	1991

Monthly utility data

For each billing period, this includes electric usage (kWh), electric demand (kW), total current electric charges (\$), natural gas consumption (therms), and total current natural gas charges (\$).

Month	kWh	kW	Cost	Therms	Cost
Dec-12	21,300	96	\$1,196	980	\$597
Jan-13	20,240	100	\$1,106	910	\$568

Annual energy use/cost summary

Annual electric and natural gas totals are reported for the current year. Electricity's respective contributions to overall energy usage¹ cost as well as the respective annual unit costs of electricity and natural gas are also reported in these columns.

Annual energy use/cost summary	
Usage- Electricity (kWh)	252,242
Usage- Gas (therms)	4,892
Usage- Electricity (MMBtu)	881
Usage- Gas (MMBtu)	456
Usage- Total energy (MMBtu)	1,387

¹ This report compares energy use based on utility bills and is not the result of an engineering assessment. The analysis is purely mathematical and is not meant to provide a subjective assessment of how buildings are managed or operated. Most of the indicators do not adjust for individual building conditions, and therefore should be used only as a tool in combination with knowledge of facility operations.

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Energy Master Planning Workshop

- Planning & decision-making
- Evaluation, assessment & monitoring
- Funding resource efficiency
- Facility operations
- Occupant awareness



Workshop Scorecards

PLANNING & DECISION MAKING

4

- Energy Efficiency & reducing costs are a high priority in our organization
- Our Senior Management view energy costs as a manageable expense
- We have a written energy policy & action plan that's reviewed regularly
- We have management support to identify & install energy efficiency improvements
- We have a prioritized list of energy efficiency projects that are reviewed often
- We have identified the individual (s) who are responsible for energy management within our organization

3

- Energy efficiency & reducing costs are a high priority in our organization
- Our Senior Management view energy costs as a manageable expense
- We have a written energy policy
- We have a prioritized list of potential energy efficiency projects

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- Reducing costs are a high priority in our organization
- We have management support to identify energy efficiency projects

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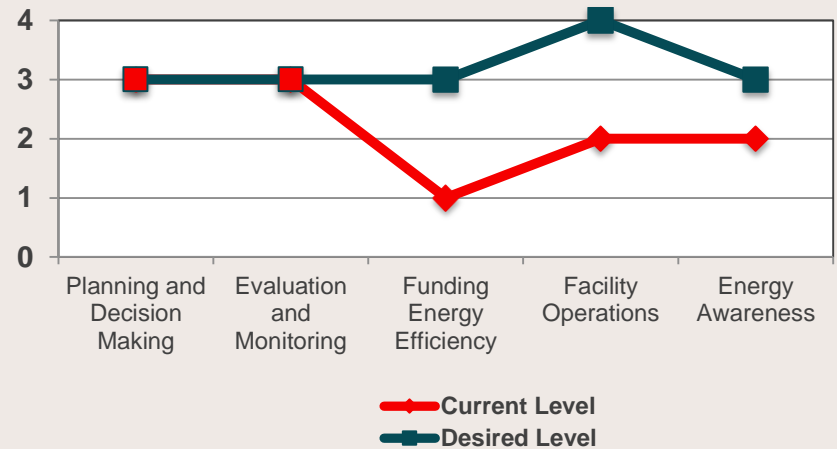
- Reducing costs are a high priority in our organization

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- Energy efficiency is never discussed within our organization

Scorecard informs the plan

- Promotes participation/engagement
- Easily identifies strengths & weaknesses
- Mechanism for ongoing evaluation
- Provides visual summary of gaps



Energy Master Plan Example

The Plan is a starting point for consensus and uniform action



Sample Organization energy master plan

Sponsored by Energy TX • Requested by CLEAResult • June 5, 2014

MARKET BASKET STORES EFFICIENCY OPPORTUNITY:

15% Energy reduction for facilities benchmarked through the Commercial Solutions Program

\$335,695 In annual combined energy cost savings

708 Passenger vehicles taken off the road annually (environmental benefits equivalent)

Additional opportunities include:

- Utility-paid cash incentives for implementing energy efficiency projects
- Improved usability and comfort in our stores and offices
- Positive public relations in the community, including press releases and incentive check presentations for any projects completed in the Commercial Solutions Program

Current building benchmark assessment

Based on the utility bills and building information we provided, the Commercial Solutions Program compared our energy use to other grocery and commercial facilities in Texas and the U.S. The benchmarking process revealed that our buildings are performing above average overall, meaning we are using less energy per square foot than other grocery stores in our same climate region. More detailed assessments of each individual building can be found in the Benchmarking Report Appendix.

- Compared to the median, Market Basket is spending 21 cents per square foot less than other grocery stores in our same weather region, which saved us approximately \$19,020 in annual energy costs.
- By reducing our current electricity consumption alone by 15 percent, we could save another estimated \$314,566 in annual utility bills at the buildings included in the benchmarking analysis.

Energy performance benchmarking analysis

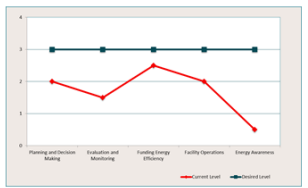
Organization-wide summary / Market Basket

CLEAResult benchmarks	Market*	Your stores
Energy use index (kBtu/sq ft)	208.3	248.8
Energy cost index (\$/sq ft)	\$4.60	\$4.56
Energy cost per square foot	\$4.82	\$5.130
WPA portfolio manager score	50	54

* Index for a similar profile of grocery stores / food markets in your climate region

Energy management scorecard assessment

In addition to facility performance benchmarking, our energy management methods were also benchmarked against recognized best practices in the following key focus areas: planning and decision making, evaluation and monitoring, funding energy efficiency, facility operations, and energy awareness. The chart to the right summarizes the outcome of the workshop's energy performance best practices scorecards. The red line represents our current level of achievement and the blue line represents our desired level. Strengths in each category, along with specific short and long term strategies to help us achieve our desired levels in each category, are identified in the appendix.



Set goals

The goal of implementing the energy master plan is to avoid spending more money on energy than necessary. We attempted to quantify the bottom-line effect of improving the energy performance of our buildings. For the 17 sites that we included in the benchmarking analysis, the chart below estimates how much reducing our electricity consumption would save us in electricity utility bills.

Annual electricity consumption (kWh)	Percent reduction	Electricity saved (kWh)	Our avoided rate per kWh	Annual electricity bill savings
31,040,378	10%	3,104,038	\$0.07	\$217,283
	20%	6,208,076		\$434,565
	30%	9,312,113		\$651,848

Create an action plan

In benchmarking our procedures against recognized "best practices," we confirmed a number of areas in which we want to improve our energy management methods. The appendix provides a complete breakdown of short- and long-term steps toward improving energy management in each focus area. However, the table below identifies the highest priority "next steps" for Market Basket:

Focus area	Target audience	Priority action item
Evaluation & Monitoring / Energy Awareness	Administrative and executive staff, store managers	Report monthly energy usage (kWh), demand (kW), and themes along with energy costs to all staff, including store managers, and review formally at least quarterly. Compare energy usage to prior month along with same month year-to-year comparison (i.e. example January 2014 to January 2013).
Facility Operations/ Energy Awareness	Executive staff and facilities personnel, store managers	Develop and enforce written guidelines that outline operating rules (such as building usage, operating hours and building set points) and conduct biannual facility walk-throughs to identify saving opportunities.

Energy efficiency design specifications

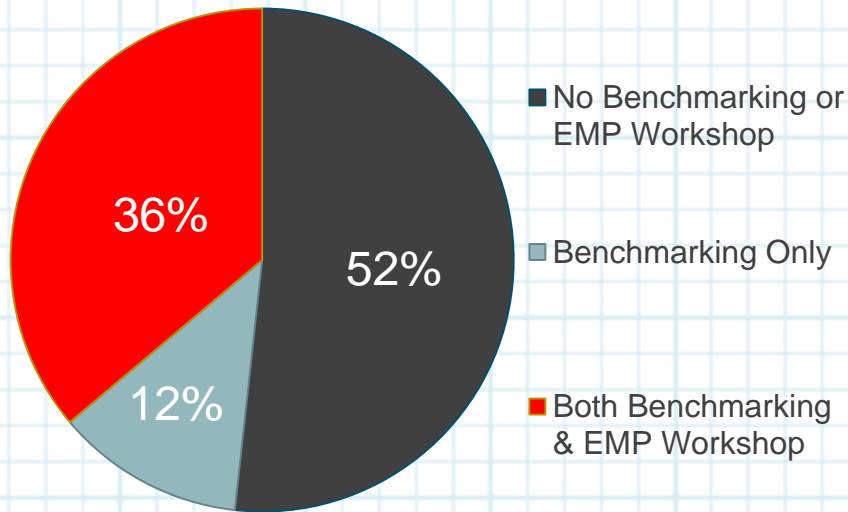
By continuing to refine our energy management practices at all organizational levels, we will ensure that we are getting the most out of our existing equipment and facilities. We will also position ourselves to identify, evaluate, and move forward with new energy efficiency investments on shorter timelines.

New construction, renovations, outdated and/or failing equipment, and routine change-outs all present opportunities for increasing energy efficiency in our buildings. Unfortunately, many potential efficiency opportunities are left unrealized or delayed considerably. When less efficient equipment is installed or left in place, we incur higher utility costs over the life of the equipment. By taking the lifecycle cost and cost of delaying efficiency into consideration during our project evaluations, we will equip ourselves to make sound financial decisions.

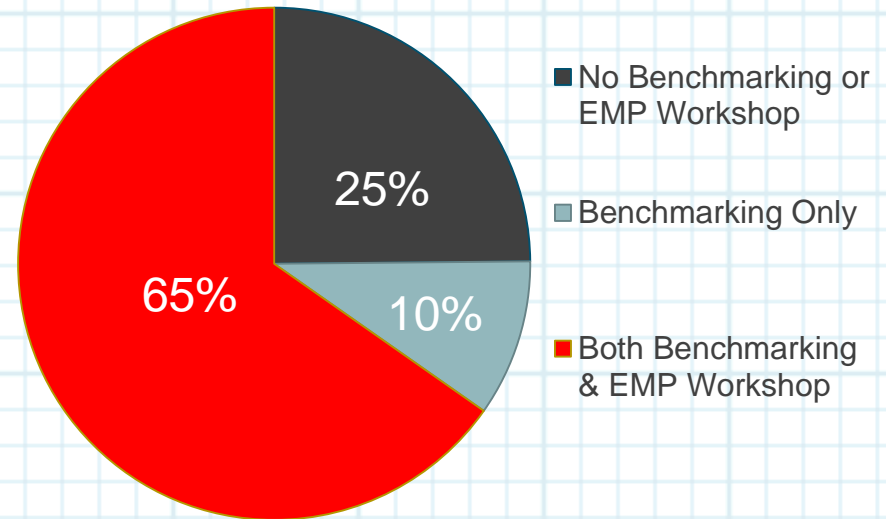
Working with the Commercial Solutions Program, we have identified the strategies listed on the following page for achieving energy efficiency. We will evaluate the feasibility of each strategy separately, and consider incorporating into written guidelines or minimum specifications for energy-consuming equipment. By having our own target design specifications, we will ensure that energy efficiency is always a consideration in our buildings.

Benchmarking & Master Planning Influencing Activity Stats

Program Participation



Incentives Paid to Participants w/ BM/EMP



Resource Management

What is Resource Management Services (RMS)?

- Energy reduction across an organization by leveraging:
 - Technical Expertise
 - Behavior Science
 - Technology
- Focus on energy waste but can also include water and other waste
 - Resource Management vs. Energy Management

Results, to date

	School 1 57 kBTU/sqft	School 2 71 kBTU/sqft	School 3 55 kBTU/sqft
Resource Mgmt Team?	yes	yes	yes
Spring Shutdown plan impact	no	yes	no
Summer shutdown plan impacted?	yes	yes	yes
Walkthroughs conducted?	yes	yes	yes
Recommendations for deeper O&M?	delivered	delivered	delivered
Staff engagement?	underway	underway	underway
Student engagement?	planning for Fall	planning for Fall – working to get superintended engaged	underway
YTD change in usage* *(March through July)	-6.3%	-5.8%	-4.7%

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