

BATTLE OF THE BUILDINGS

TEAM CHALLENGE

EPA's NATIONAL BUILDING COMPETITION



2014 WRAP-UP REPORT

EPA's 2014 ENERGY STAR® National Building Competition: Team Challenge!

Building on four years of success

In 2014, based on the success of the past four battles, EPA hosted the fifth-annual ENERGY STAR National Building Competition: Battle of the Buildings – but with a twist! In 2014, for the first time ever, five or more buildings could compete as part of a team to slim down their energy and water “wastelines”. More than 100 teams and 5,500 buildings showed up to battle the scale and each other as they competed to find out who would become the nation’s biggest energy loser. The 2014 class of competitors represented more than 25 different types of commercial buildings and hailed from all 50 states, Puerto Rico, and the District of Columbia, making it a truly nationwide competition.

The ground rules

Teams competed to save energy, water, and money, and fight climate change. Competitors worked off the waste through improvements in energy and water efficiency with help from EPA’s ENERGY STAR and WaterSense® programs.

All competitors tracked their monthly energy and water consumption using EPA’s online energy tracking tool, ENERGY STAR Portfolio Manager®. At competition launch, midpoint, and end, they reported their progress. At the end, the winner was the team that demonstrated the largest percentage reduction in “energy weight,” defined as their energy use, adjusted for weather and the square footage of the team, during the 2014 calendar year as compared to the 2013 calendar year. Energy use reductions were required to be verified by a licensed Professional Engineer or Registered

Architect at the end of the competition for each competitor that received recognition from EPA.

Many were winners...but only one was the biggest energy loser

So, just how much did the biggest energy loser save? Team Going Blue for Woodville, from Woodville, Alabama took home the gold by cutting its energy use by 25 percent in one year! The team was made up a community center, chapel, co-op building, the town hall, and a wastewater treatment plant. But the team wasn’t alone at the finish line – 61 buildings cut energy use and 57 buildings cut water use by more than 20% in just 12 months.

Altogether, competitors saved a combined total of more than 2 billion kBtus of energy and an estimated \$50 million on utility bills. Competitors also reduced water use by more than 250 million gallons. These energy and water savings have a significant, positive impact on the environment. Buildings and plants contribute 50 percent of all U.S. greenhouse gas (GHG) emissions, and these competitors demonstrate that teamwork, best practices, and new technologies can deliver real reductions. In fact, this year’s competitors reduced their annual greenhouse gas emissions equal to that of the annual electricity use of more than 35,000 homes.

Learn from this talented field

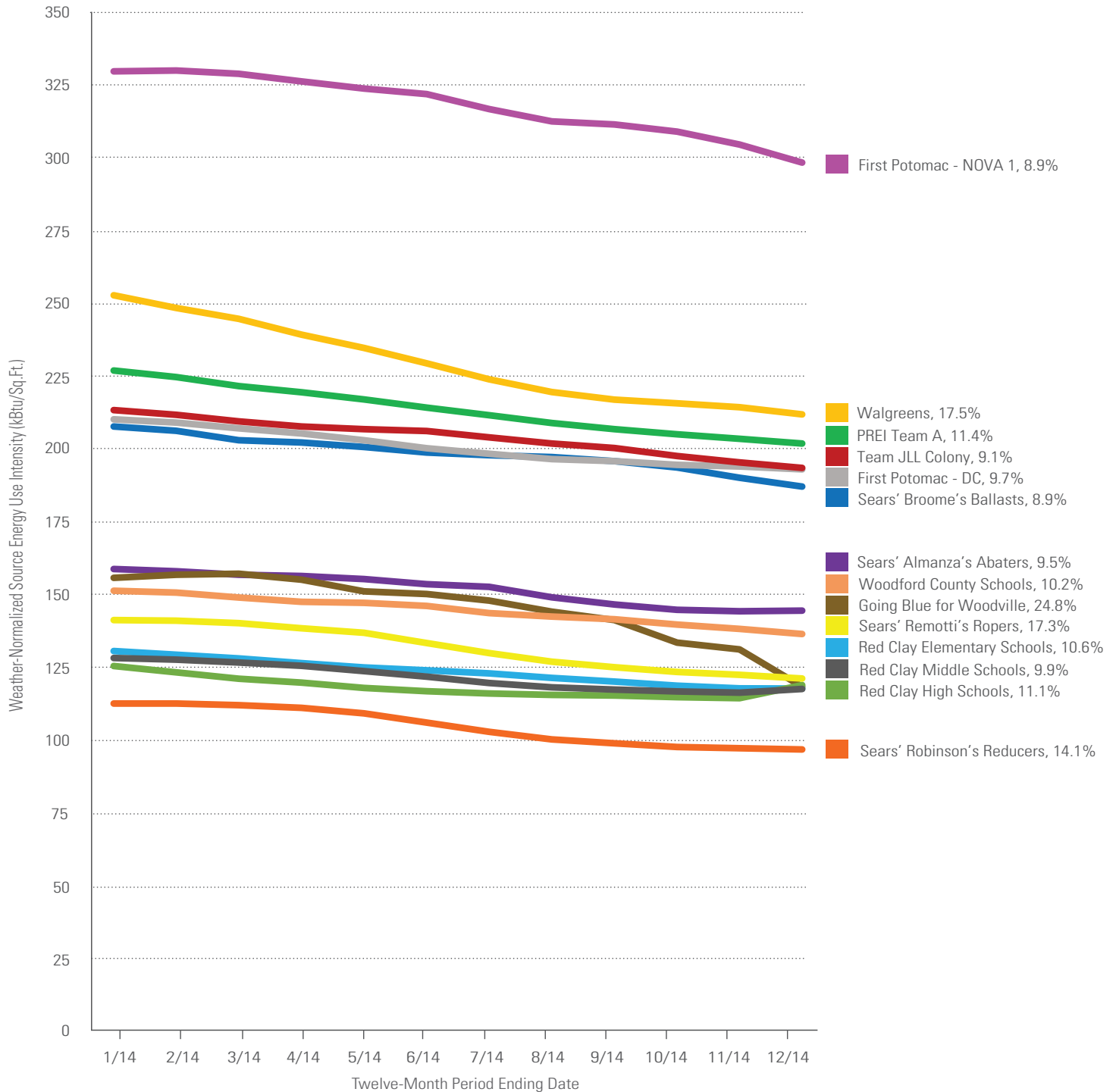
From improvements in operations and maintenance to upgrades in equipment and technology, competitors pulled out all the stops to improve efficiency. Get their best energy-saving advice and check out their successful strategies in the following pages.

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BATTLE TO THE FINISH

The 12-month path to energy savings for the competition's top teams.



How were competitors judged?

Competitors were judged on their percentage-based reduction in weather-normalized source energy use intensity. The competition period ran from January 1, 2014 – December 31, 2014.

What is energy use intensity?

EUI is calculated as annual kBtu/square footage. Generally, a low EUI signifies good energy performance, although certain building types will always use more energy than others.

THE WINNING TEAM IS...

Going Blue for Woodville

Town of Woodville, Ala.



RECOGNITION:
 #1 Team Energy Reduction
 20% Energy Reduction

SAVINGS:
 25% Energy Savings
 \$2,000 Estimated Cost Savings
 17 MtCO₂e Greenhouse Gas Emissions Prevented



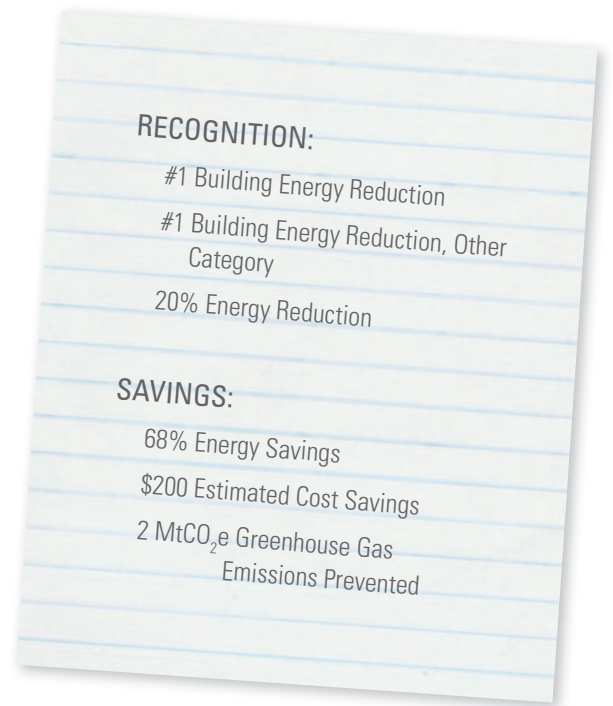
TOP TEAM ENERGY REDUCTION

Rank	Team Name	Organization	Energy Reduction
1	Going Blue for Woodville	Town of Woodville	24.8%
2	Walgreens	Burton Energy Group	17.5%
3	Remotti's Ropers	Sears Holdings Corporation	17.3%
4	Robinson's Reducers	Sears Holdings Corporation	14.1%
5	PREI Team A	PREI	11.4%
6	Red Clay High Schools	Red Clay Consolidated School District	11.1%
7	Red Clay Elementary Schools	Red Clay Consolidated School District	10.6%
8	Woodford County Schools	Woodford County Schools	10.2%
9	Red Clay Middle Schools	Red Clay Consolidated School District	9.9%
10	First Potomac - DC	First Potomac Realty Trust	9.7%
11	Almanza's Abaters	Sears Holdings Corporation	9.5%
12	Team JLL Colony	Jones Lang LaSalle	9.1%
13	Broome's Ballasts	Sears Holdings Corporation	8.9%
14	First Potomac - NOVA 1	First Potomac Realty Trust	8.9%

THE WINNING BUILDING IS...

Woodville Chapel

Town of Woodville, Ala.



TOP BUILDING ENERGY REDUCTION

Rank	Competitor	City	Type	Energy Reduction
1	Woodville Chapel	Woodville, Ala.	Other	68.4%
2	CCI Center	Pittsburgh, Pa.	Office	61.4%
3	Putnam Foundation, Timken Museum of Art	San Diego, Calif.	Entertainment/Public Assembly	50.2%
4	Verizon, Inglewood, Calif.	Inglewood, Calif.	Retail	46.5%
5	Garden House at Harry P. Leu Gardens	Orlando, Fla.	Entertainment/Public Assembly	45.3%
6	13461 Sunrise Valley Drive	Herndon, Va.	Office	40.1%
7	Verizon, Montclair, Calif.	Montclair, Calif.	Retail	39.6%
8	TD University	Mt Laurel, N.J.	Office	37.2%
9	Verizon, Arvada, Colo.	Arvada, Colo.	Retail	36.3%
10	Cupples Station	Saint Louis, Mo.	Office	34.9%
11	460 East Swedesford Road	Wayne, Pa.	Office	33.2%
12	13645 Dulles Technology Drive	Herndon, Va.	Office	30.6%
13	Tysons International	Vienna, Va.	Office	29.8%
14	Memorial Hermann Sugar Land Medical Plaza 1	Sugar Land, Texas	Medical office	29.8%
15	13655 Dulles Technology Drive	Herndon, Va.	Office	28.9%

STORIES BEHIND THE BATTLE: TEAMS



Pictured: Going Blue for Woodville's Energy Team

Going Blue for Woodville

Town of Woodville, Ala.

RECOGNITION:

#1 team energy reduction

20% energy reduction

SAVINGS:

25% energy savings

\$2,000 estimated cost savings

17 MtCO₂e greenhouse gas emissions prevented

TEAM STATS:

Team represented by 5 buildings

Ending EUI: 118 kBtu/Sq. Ft.

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“No project was the decision of a single person, it was a team approach. The project leader, electricians, mayor and his council were all involved with decisions at many levels.”

Small town, huge savings

The Town of Woodville, Alabama has a population of only 741. This tight-knit community came together over the course of the competition to improve the energy efficiency of town buildings. The team consisted of the town hall, a community center, a co-op building, a chapel, and a wastewater treatment plant.

Team *Going Blue for Woodville* put their trust in the team process and were even able to get their local utility on board. Through being realistic about costs and knowing their baseline data, they were able to set energy saving goals and shoot for the stars.

Full steam ahead

Woodville's team started the competition by receiving a grant from Alabama Department of Economic and Community Affairs to retrofit their single-phase power wastewater treatment plant to three-phase power. Using this momentum, the team moved ahead and tackled each team building, one at a time. No building was too small, and some of the greatest successes came with the smallest buildings. Among the team's successful approaches to energy management were the installation of LED lights and timers, Wi-Fi programmable thermostats, and generally leveraging technology as a tool to do more with less.

STORIES BEHIND THE BATTLE: TEAMS



Walgreens

Burton Energy Group

RECOGNITION:

#2 team energy reduction

SAVINGS:

18% energy savings

\$1,481,000 estimated cost savings

7,341 MtCO₂e greenhouse gas emissions prevented

TEAM STATS:

Team represented by 5 buildings

Ending EUI: 212 kBtu/Sq. Ft.

“Make sure to have a qualified, experienced, and committed team to plan, execute, and provide measurement and verification of the results.”

Everyone benefits from teaming up

The Walgreens team consists of 5 warehouses in four states. Competing as a team allowed Walgreens to witness what a comprehensive energy efficiency program could achieve, and illustrated the power long term planning. Rather than just complete one individual project or several specific energy conservation measures at a couple of locations, the team competition underscored the value of deploying a comprehensive strategy across a portfolio of buildings to maximize energy and dollar savings.

Educate staff, save money

Walgreens held an energy fair with information displays, giveaways, and multiple vendors who interacted with staff at each facility. Staff were educated about the company's energy saving projects through their immediate shift supervisors, taught about common easy energy savings measures, and the importance of energy efficiency to the company. Additionally, monitors throughout the facilities were used to display messaging on energy efficiency and the energy performance of the specific facility once the energy efficiency projects were completed.

Core improvement projects included installation and networking of new EMS systems for each facility in order to control operations and continuously monitor for optimal performance. Other improvements focused mainly on lighting, HVAC and optimizing the EMS.

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Learn more about EPA's National Building Competition
at energystar.gov/BattleOfTheBuildings



STORIES BEHIND THE BATTLE: TEAMS



Pictured: Remotti's Ropers Energy Team

Sears Holdings Corporation

RECOGNITION:

- #3 team energy reduction, Remotti's Ropers
- #4 team energy reduction, Robinson's Reducers
- #11 team energy reduction, Almanza's Abaters
- #13 team energy reduction, Broome's Ballasts

SAVINGS:

See table.

TEAM STATS:

See table.

"The process of having a competitive challenge, even though friendly, enables us as a team to stay focused on goals."

Four of the nine teams Sears Holdings Corporation entered to the competition are being recognized as top energy saving teams. Remotti's Ropers, Robinson's Reducers, Almanza's Abaters, and Broome's Ballasts finished among the top 15 out of a field of more than 100 teams. These winning teams consisted of 5 retail stores each, all of which are located in Florida.

Embracing the competitive edge

The teams stayed focused throughout the competition by embracing a spirit of internal competition within the company. The knowledge that their competitors were making even the smallest changes to save energy pushed each team to go the extra mile.

Finding the hidden energy waste

Through the use of a company-wide EMS monitoring system, the teams shared reports on consumption and peak loads with all facility personnel. While the teams had open/close schedules in place for a number of years, this allowed personnel to make valuable discoveries regarding actual open/close behavior, and to share these discoveries across the Sears Holdings Corporation portfolio. This also informed updates to system settings that resulted in significant energy savings.

Team Name	Team Savings			Team Stats	
	Energy Savings	Estimated Cost Savings	Emissions Prevented (MtCO ₂ e)	No. of Buildings	Ending EUI (kBtu/Sq.Ft.)
Remotti's Ropers	17%	\$120,700	862	5	119
Robinson's Reducers	14%	\$112,700	873	5	97
Almanza's Abaters	10%	\$75,300	540	5	145
Broome's Ballasts	9%	\$24,600	297	5	146

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STORIES BEHIND THE BATTLE: TEAMS



Red Clay Consolidated School District

RECOGNITION:

- #6 team energy reduction, Red Clay High Schools
- #7 team energy reduction, Red Clay Elementary Schools
- #9 team energy reduction, Red Clay Non-School Buildings

SAVINGS:

See table.

TEAM STATS:

See table.

For additional information, contact:

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“Winning became a habit, and small wins combined to create big wins..”

Red Clay Consolidated School District in Wilmington, Delaware, had three teams finish in the top 15. George McDowell, the lead for all teams, said that “once staff within the district began working toward the common goals of reducing environmental impact and energy costs, and improving the health and wellness of students and staff, they innately began supporting and sharing information with each other in ways they had not thought to previously.”

Students make a difference

Students also contributed to the teams’ successes by participating as part of a BTU Crew. This group conducted energy experiments in their classrooms and analyzed results. The students also tracked sources of energy waste and suggested ways of reducing energy use. The program gave students the guidance and tools to contribute to team savings.

You can always find more savings

Although 24 of the District’s schools had earned the ENERGY STAR, the District never stopped looking for ways to improve the energy efficiency of these schools. The District partnered with Trane to implement an \$18.5 million energy savings performance contract. Energy saving projects included building automation system upgrades and integration, installing a high efficiency chiller, new boilers, kitchen hood sensors, and making improvements to the building envelope.

Team Name	Team Savings			Team Stats	
	Energy Savings	Estimated Cost Savings	Emissions Prevented (MtCO ₂ e)	No. of Buildings	Ending EUI (kBtu/Sq.Ft.)
Red Clay High Schools	11%	\$95,200	552	6	114
Red Clay Elementary Schools	11%	\$68,400	543	13	118
Red Clay Non-School Buildings	10%	-\$10,100*	176	5	117

* Competition cost savings is based on site energy consumption, but the calculation for percentage energy savings is based on change in weather normalized source energy use intensity. This team reduced its weather normalized source energy consumption but increased site energy use from 2013 to 2014.

STORIES BEHIND THE BATTLE: TEAMS



Pictured: Simmons Elementary Student Energy Team

Woodford County Schools

Woodford County Schools

RECOGNITION:

#8 team energy reduction

SAVINGS:

10% energy savings

\$62,400 estimated cost savings

504 MtCO₂e greenhouse gas emissions prevented

TEAM STATS:

Team represented by 7 buildings

Ending EUI: 137 kBtu/Sq. Ft.

“Getting everyone on the same page as it relates to saving energy is critical to the success of the project.”

Saving money for education

The Woodford County Board of Education knows that every dollar saved on energy can be applied to the classroom and educating their students. With this in mind, all school members - from the building administration, the teachers, the staff, and even the students - participated in the competition. The team consisted of four elementary schools, a middle school, a high school, and the school district office.

Energy saving as part of the curriculum

Success came through embracing simple changes, like turning off the lights, shutting outside windows and doors, and also engaging all 4,000 students in the district in discussions about how to save energy.

Each school formed student energy teams that helped find energy savings.

And the teams provided weekly reports to the building administrators, providing real-time data that could be used to encourage energy-conserving behavior by everyone in the school.

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STORIES BEHIND THE BATTLE: TEAMS

FIRST POTOMAC REALTY TRUST

First Potomac Realty Trust

RECOGNITION:

#10 team energy reduction, First Potomac – DC

#14 team energy reduction, First Potomac – NOVA1

SAVINGS:

See table.

TEAM STATS:

See table.

“Identify priorities that match and support your company’s goals. Leverage these priorities to implement efficiency projects and emphasize coordination across similar project types.”

Planning comes first

Two of First Potomac’s teams ranked among the top 15 competition finishers. The organization found a huge benefit in the planning process associated with energy management projects. Through this planning, they were able to assess projects at a portfolio-wide scale which enabled coordination, more effective budgeting, and more readily transferable lessons learned among buildings operations staff and contractors.

Saving energy to save money

The primary tool for engagement was the potential for cost savings, and the property staff was encouraged to leverage existing projects and in-house expertise to identify feasible opportunities to save energy and cut operating expenses.

Many properties specifically focused on upgrading equipment, with emphases on lighting retrofits (e.g. stairwell lighting, motion sensor installations), HVAC improvements (variable air volume and induction unit upgrades), and improving large equipment efficiency by installing variable frequency drives.

Team Name	Team Savings			Team Stats	
	Energy Savings	Estimated Cost Savings	Emissions Prevented (MtCO ₂ e)	Team Buildings	Final EUI (kBtu/Sq.Ft.)
First Potomac – DC	10%	\$112,100	632	5	192
First Potomac – NOVA1	9%	\$70,100	497	5	299

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STORIES BEHIND THE BATTLE: TEAMS



Frisco Independent School District

RECOGNITION:

- #1 team water reduction, Frisco High Schools
- #2 team water reduction, Frisco Non-School Buildings
- #3 team water reduction, Frisco Middle Schools

SAVINGS:

See table.

TEAM STATS:

See table.

Located in Frisco, Texas, Frisco Independent School District (ISD) submitted four teams to the competition, grouping their high schools, middle schools, elementary schools, and non-school buildings in separate teams. Three of their teams finished in the top 3 of the water efficiency portion of the competition.

Small but mighty team

With only two technicians available for repairing and scheduling the irrigation systems at more than 70 buildings within Frisco ISD, water conservation can be a challenge. To help with the workload, the irrigation technicians collaborate with the energy management team and make sure to discuss water savings at their monthly meetings.

Smart programming

To achieve their highly impressive water savings, Frisco ISD implemented an automated line-of-sight radio control system for their irrigation systems throughout their building portfolio. Frisco ISD also used information from sensors indicating rain and soil conditions to moderate its water use.

Team Name	Team Savings		Team Stats	
	Water Savings	Estimated Cost Savings	Team Buildings	Ending WUI (kGal/Sq.Ft.)
Frisco High Schools	44%	\$213,100	6	15
Frisco Non-School Buildings	42%	\$40,600	12	11
Frisco Middle Schools	39%	\$144,300	13	14

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STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: CCI Center

CCI Center

Conservation Consultants Inc. (CCI)
Pittsburgh, Pa.

RECOGNITION:

#2 building energy reduction
#1 building energy reduction, office category
20% energy reduction

SAVINGS:

61% energy savings
\$3,100 estimated cost savings
24 MtCO₂e greenhouse gas emissions prevented

BUILDING STATS:

Type: Office
Ending EUI: 21 kBtu/Sq. Ft.

For additional information, contact:

Indigo Raffel
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(412) 773-7152

“The insulation and tenant behavior in our building allows our building to operate at 40% less energy use than a comparable 11,500 square foot building.”

Experts in energy management

Conservation Consultants Inc. (CCI) is a non-profit organization with a mission to promote responsible energy use in homes and other buildings. So when they acquired the CCI Center, they used their expertise in conducting energy audits for clients and applied this to their own office building. CCI and its tenants instituted a policy of being as sustainable and energy efficient as possible, which has translated into substantial reductions in energy use.

Staying engaged and on track

Upon acquisition of the building, CCI performed a retrofit to improve the building envelope by installing insulation. The team also participated in the Southwestern Pennsylvania regional Green Workplace Challenge, sponsored by Sustainable Pittsburgh. Participation in this friendly regional competition provided CCI with incentives to stay on track with its energy benchmarking, prompted them to perform an energy audit on their own building, encouraged them to revisit HVAC maintenance and temperature settings, and served to galvanize the CCI staff to focus hard on improving energy efficiency.

STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: Putnam Foundation, Timken Museum of Art

Putnam Foundation, Timken Museum of Art

Putnam Foundation
San Diego, Calif.

RECOGNITION:

#3 building energy reduction
#1 building energy reduction, entertainment/
public assembly category
20% energy reduction

SAVINGS:

50% energy savings
\$29,500 estimated cost savings
80 MtCO₂e greenhouse gas emissions
prevented

BUILDING STATS:

Type: Entertainment/Public Assembly
Ending EUI: 194 kBtu/Sq. Ft.

For additional information, contact:

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“The Timken Museum, located within Historic Balboa Park in San Diego, California, may now be the most technologically advanced facility in the entire park for driving energy reductions.”

Experiencing art in a new light

The Timken Museum displays priceless works of art from a permanent collection, as well as pieces borrowed from other museums around the world. Embarking on a program for energy efficiency improvements within the museum presented its own set of challenges, due to curatorial requirements and presentation standards. To navigate these challenges, the museum sought out a lighting designer with particular museum lighting expertise and a knack for inventiveness. The designer guided the museum team through the selection and relamping of the existing 50 year old gallery light fixtures, converting them from flood lights to advanced LED lighting. They also installed new timers, dimmers, and sensors integrated into a new lighting control system. This has resulted in extraordinary reductions in both energy use and electricity costs and provided a welcoming and aesthetically accurate viewing experience to museum patrons from around the world.

Going beyond lighting

In addition to converting both interior and exterior lighting to LEDs, the museum's HVAC controls were replaced, upgraded, commissioned, and extended to include boiler operation which prevented the boiler from running continuously throughout the day. Additionally, new temperature and humidity sensors were installed throughout the galleries, a supplemental rooftop air-conditioning unit was connected to the new control system, and updated technology was installed to allow for automated demand response from the local utility.

STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: The Garden House at Harry P. Leu Gardens

The Garden House at Harry P. Leu Gardens

City of Orlando
Orlando, Fla.

RECOGNITION:

#5 building energy reduction
20% energy reduction

SAVINGS:

45% energy savings
\$16,700 estimated cost savings
86 MtCO₂e greenhouse gas emissions prevented

BUILDING STATS:

Type: Entertainment/Public Assembly
Ending EUI: 117 kBtu/Sq. Ft.

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“Measuring the power consumption real time and comparing the use to other similar occupancies or facilities will determine where changes are needed.”

Collaborating to achieve results

Through operational improvements and equipment replacement, the four-person team at Harry P. Leu Gardens accomplished large energy savings without sacrificing occupant comfort.

Optimizing systems for efficiency

Most of the energy savings achieved at this facility came from the Leu Gardens HVAC replacement project. This project involved changing out older, inefficient direct expansion compressor run units with high efficiency scroll chillers and an air handler with variable frequency drive (VFD). Furthermore, a new building energy controls system was installed to monitor occupancy so that when areas were not in use for an extended period of time, the space temperature setpoint was automatically set back. The team also re-insulated the mechanical room roofing, and implemented other architectural enhancements such as new double pane low-emissivity glazing on new doors that open into the mechanical room.

STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: Cupples Station 1

Cupples Station 1

DTZ

St. Louis, Mo.

RECOGNITION:

#10 building energy reduction

20% energy use reduction

SAVINGS:

35% energy savings

\$84,800 estimated cost savings

920 MtCO₂e greenhouse gas emissions prevented

BUILDING STATS:

Type: Office

Ending EUI: 322 kBtu/Sq. Ft.

For additional information, contact:

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“Take a look at your systems and see where costs can be saved.”

Making simple changes

By analyzing building systems and making basic changes, such as switching to more energy-efficient LED light bulbs throughout the office, and setting automatic timers for lights, Cupples Station 1 was able to reduce its energy use by more than 30% in one year.

Seeking efficiency

The property management team and maintenance staff worked together to reduce energy costs. Besides the switch to LED lightbulbs, the office also ensured HVAC components throughout the building were running as efficiently as possible.

They also optimized the efficiency of low flow water systems which was another contributor toward improved energy efficiency.

STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: The Energy Team at 13461 Sunrise Valley Drive

13461 Sunrise Valley Drive

Liberty Property Trust
Herndon, Va.

RECOGNITION:

#6 building energy reduction
20% energy reduction

SAVINGS:

40% energy savings
\$188,700 estimated cost savings
1,215 MtCO₂e greenhouse gas emissions prevented

BUILDING STATS:

Type: Office
Ending EUI: 212 kBtu/Sq. Ft.

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“Invest first in your people. Until buildings can fine-tune and maintain themselves, energy savings will rely heavily on good people.”

Tapping into internal expertise

Most of the energy efficiency work was performed by Liberty Property Trust’s engineering teams, who had the requisite skills and motivation to tackle what was essentially a 12-month process. By performing the work in-house, not only were they able to forego significant consultant and subcontractor costs, but they also gained the additional benefit of accountability and pride amongst the teams. Liberty Property Trust’s collaboration with its tenants to change set points was also crucial for achieving energy savings.

Preventing problems before they occur

In-house retro-commissioning of the existing mechanical equipment accounted for most of the energy saved. While the base building design and equipment were sufficient for efficient operations, age had taken its toll. Thus, the team worked to ensure maintenance was up to standards and fine-tuned the sequence of operations. In addition to the retro-commissioning project, three other strategies led to the team’s success: placing a greater emphasis on preventive maintenance; investing in a real-time electric monitoring network; and committing to a daily routine of active energy management. Liberty Property Trust has now made a commitment to the “new normal” of active monitoring and adjustment to systems instead of reacting to a monthly or quarterly utility bill.

STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: Findley Elementary

Findley Elementary

Des Moines Public Schools

Des Moines, Iowa

RECOGNITION:

#1 building energy reduction, education category

20% energy reduction

SAVINGS:

29% energy savings

\$33,700 estimated cost savings

58 MtCO₂e greenhouse gas emissions prevented

BUILDING STATS:

Type: Education

Ending EUI: 95 kBtu/Sq. Ft.

“Establish a team of committed individuals and partners, set realistic goals and develop a road map that will allow you to meet your objectives.”

Dynamic approaches lead to big savings

Findley Elementary recognized from the start that a successful energy management program must be dynamic and willing to evolve and adjust while determining the best approaches to successful energy management. By setting clear goals, the committed team at Findley Elementary was able to achieve more than 25 percent energy savings in just one year.

Improved systems

The most significant factor leading to these substantial savings was the installation of a hybrid geothermal and variable refrigerant flow heating and cooling system. This system replaced the building’s outdated steam heating system and now provides cooling throughout the entire facility. It is also managed by means of a building automation system, which is controlled from a central location, and coincides with scheduled building activities and usage. It also allows for the identification of potential system problems and the evaluation of energy-usage trends.

The team also installed high efficiency windows and doors, low wattage fluorescent LED lighting with occupancy controls, and improved building envelope insulation.

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STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: Memorial Hermann Sugar Land Medical Plaza 1

Memorial Hermann Sugar Land Medical Plaza 1

Memorial Hermann Healthcare System
Sugar Land, Texas

RECOGNITION:

#1 building energy reduction, medical office category

20% energy reduction

SAVINGS:

30% energy savings

\$143,000 estimated cost savings

1,043 MtCO₂e greenhouse gas emissions prevented

BUILDING STATS:

Type: Medical office

Ending EUI: 374 kBtu/Sq. Ft.

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“Make sure that your building systems are clean and operating as designed. This will give you a true baseline to work from.”

Making smart adjustments

As a first step, all the building variable air volume terminal unit minimums were reset from 50% to 10% of design airflow. This alleviated the need for zone reheat without affecting building humidity or comfort. The thermostat settings were also verified and calibrated, and the comfort control temperatures on the zone thermostats were changed to plus or minus 2 degrees rather than 5 degrees.

Optimizing building systems

The building system start and stop times for the HVAC system were reviewed against the building operating hours. After the comparison was completed, the building support systems were optimized to reduce the length of time the HVAC and lighting systems were turned on. Additionally, the operation sequence and lead/lag time of the building chillers was reviewed and optimized.

STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: Whole Foods Market Gateway

Whole Foods Market Gateway

Whole Foods Market®
Austin, Texas

RECOGNITION:

#1 building energy reduction, supermarket category

20% energy reduction

SAVINGS:

20% energy savings

\$35,200 estimated cost savings

330 MtCO₂e greenhouse gas emissions prevented

BUILDING STATS:

Type: Supermarket

Ending EUI: 711 kBtu/Sq. Ft.

“It is too expensive NOT to manage your electricity usage! Cutting your energy usage reduces your cost and your carbon footprint; it’s good for your bottom line and the environment.”

Walking the walk

Whole Foods Market’s strong performance in the competition demonstrates that a strategic energy management program is neither too complicated nor too expensive, and is worth the effort. Through a full lighting upgrade, the team embraced the Whole Foods Market Core Value of environmental stewardship, and the store is now completely lit with beautiful, bright, and inviting light provided by energy-efficient LED lightbulbs.

Additionally, the lighting upgrade reduced maintenance, waste, and labor costs because the new fixtures will last 7 to 10 years.

A focus on controls

By submetering the main power feed, refrigeration racks, lighting and HVAC systems, the team established an energy usage baseline for the store and conducted a comprehensive analysis of energy consumption. The team worked with experts to create a full list of possible energy efficiency improvements and a phased plan to complete those projects. Through projects like replacing older refrigeration and cooling controllers, the team was able to immediately lower energy and maintenance costs.

For additional information, contact:

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(512) 431-0360

STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: Sixth Avenue West

Sixth Avenue West

Transwestern
Golden, Colo.

RECOGNITION:

#3 building water reduction
#1 water reduction, office category
20% water reduction

SAVINGS:

75% water savings
\$170,400 estimated cost savings

BUILDING STATS:

Type: Office
Ending WUI: 37 kGal/Sq. Ft.

“Small leaks use a lot of water over time... these are easy fixes and save a lot of water!”

On the lookout for leaks

The team at Sixth Avenue West took a methodical and detail-oriented approach when searching for water savings opportunities; they combed through the inside and outside of their building, looking for any small leaks that wasted water.

Small changes add up

After discovering a number of leaks in the irrigation system and even a crack in the main line, the team identified and repaired these problems. The team at Sixth Avenue West also shut off irrigation to an area that was already receiving sufficient water, repaired a leaking back flow, and fixed dripping faucets and several running toilets. These relatively small and simple improvements added up to substantial water savings overall.

For additional information, contact:

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(303) 779-3053

STORIES BEHIND THE BATTLE: INDIVIDUAL BUILDINGS



Pictured: Pleasant Hill Elementary School

Pleasant Hill Elementary School

Des Moines Public Schools
Des Moines, Iowa

RECOGNITION:

#7 building water reduction
20% water reduction

SAVINGS:

68% water savings
\$4,100 estimated cost savings

BUILDING STATS:

Type: Education
Ending WUI: 6 kGal/Sq. Ft.

“Des Moines Public Schools has made a concerted effort to incorporate educational programming that emphasizes the importance of environmental stewardship.”

Engaging students and staff

Des Moines Public Schools recognizes that the key to smart water use is occupant behavior, which is why the school district has worked to integrate environmental stewardship into classroom activities across all grade levels. The heightened awareness that these efforts have brought to both staff and students has resulted in reduced energy and water consumption in many of the district's buildings.

Designing for water efficiency

The school district completed a major mechanical system renovation project at Pleasant Hill Elementary School which had a profound impact on water consumption. The renovation included removing and replacing the steam boiler heating system with a closed-loop geothermal system. Additionally, restroom fixtures were updated with automatic flush valves and faucets, and food service preparatory activities were relocated to a centralized district-wide nutrition center.

For additional information, contact:

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TOP TEAM FINISHERS

These competitors were verified to have reduced their team energy or water “weight” the most, on a percentage basis, over the course of the year-long competition.

TOP TEAM ENERGY REDUCTION

Rank	Team Name	Organization	% Reduction	Net Cost Savings	GHG reduction (MtCO ₂ e)
1	Going Blue for Woodville	Town of Woodville	24.8%	\$2,000	17
2	Walgreens	Burton Energy Group	17.5%	\$1,481,000	7,341
3	Remotti's Ropers	Sears Holdings Corporation	17.3%	\$120,600	862
4	Robinson's Reducers	Sears Holdings Corporation	14.1%	\$112,700	873
5	PREI Team A	PREI	11.4%	\$364,800	1,377
6	Red Clay High Schools	Red Clay Consolidated School District	11.1%	\$95,200	552
7	Red Clay Elementary Schools	Red Clay Consolidated School District	10.6%	\$68,400	543
8	Woodford County Schools	Woodford County Schools	10.2%	\$62,400	504
9	Red Clay Middle Schools	Red Clay Consolidated School District	9.9%	-\$10,100*	176
10	First Potomac - DC	First Potomac Realty Trust	9.7%	\$112,100	632
11	Almanza's Abaters	Sears Holdings Corporation	9.5%	\$75,300	540
12	Team JLL Colony	Jones Lang LaSalle	9.1%	\$276,700	1,763
13	Broome's Ballasts	Sears Holdings Corporation	8.9%	\$24,600	297
14	First Potomac - NOVA 1	First Potomac Realty Trust	8.9%	\$70,100	497

TOP TEAM WATER REDUCTION

Rank	Team Name	Organization	% Reduction	Net Cost Savings
1	Frisco High Schools	Frisco Independent School District	44.3%	\$213,100
2	Frisco Non-School Buildings	Frisco Independent School District	41.9%	\$40,600
3	Frisco Middle Schools	Frisco Independent School District	39.2%	\$144,300

* Competition cost savings is based on site energy consumption, but the calculation for percentage energy savings is based on change in weather normalized source energy use intensity. This team reduced its weather normalized source energy consumption but increased site energy use from 2013 to 2014.

TOP BUILDING ENERGY REDUCTION

These competitors were verified to have reduced their “energy weight” the most, on a percentage basis, over the course of the year-long competition.

Rank	Competitor	Location	Type	% Reduction	Cost Savings	GHG reduction (MtCO ₂ e)
1	Woodville Chapel	Woodville, Ala.	Other	68.4%	\$200	2
2	CCI Center	Pittsburgh, Pa.	Office	61.4%	\$3,100	24
3	Putnam Foundation, Timken Museum of Art	San Diego, Calif.	Entertainment/ Public Assembly	50.2%	\$29,500	80
4	Verizon, Inglewood, Calif.	Inglewood, Calif.	Retail	46.5%	\$3,300	12
5	Garden House at Harry P. Leu Gardens	Orlando, Fla.	Entertainment/ Public Assembly	45.3%	\$16,700	86
6	13461 Sunrise Valley Drive	Herndon, Va.	Office	40.1%	\$188,700	1,215
7	Verizon, Montclair, Calif.	Montclair, Calif.	Retail	39.6%	\$3,200	12
8	TD University	Mt Laurel, N.J.	Office	37.2%	\$89,800	449
9	Verizon, Arvada, Colo.	Arvada, Colo.	Retail	36.3%	\$4,100	37
10	Cupples Station	Saint Louis, Mo.	Office	34.9%	\$84,800	920
11	460 East Swedesford Road	Wayne, Pa.	Office	33.2%	\$32,500	195
12	13645 Dulles Technology Drive	Herndon, Va.	Office	30.6%	\$13,000	84
13	Tysons International	Vienna, Va.	Office	29.8%	\$96,300	620
14	Memorial Hermann Sugar Land Medical Plaza 1	Sugar Land, Texas	Medical office	29.8%	\$143,000	1,043
15	13655 Dulles Technology Drive	Herndon, Va.	Office	28.9%	\$27,500	176

TOP BUILDING WATER REDUCTION

These competitors were verified to have reduced their “water weight” the most, on a percentage basis, over the course of the year-long competition.

Rank	Competitor	Location	Type	% Reduction	Cost Savings
1	Acker Special Programs Center	Frisco, Texas	Education	85.1%	\$1,800
2	Student Opportunity Center	Frisco, Texas	Education	77.6%	\$9,400
3	Sixth Avenue West	Golden, Colo.	Office	75.0%	\$170,400
4	Nichols Elementary	Frisco, Texas	Education	73.6%	\$19,600
5	Vandeventer Middle School	Frisco, Texas	Education	70.1%	\$26,000
6	Comstock Elementary	Mckinney, Texas	Education	68.7%	\$14,300
7	Pleasant Hill	Des Moines, Iowa	Education	68.1%	\$4,100
8	Roach Middle School	Frisco, Texas	Education	65.0%	\$18,300
9	Griffin Middle School	Frisco, Texas	Education	64.4%	\$13,300
10	Phillips Elementary	Frisco, Texas	Education	64.2%	\$19,600
11	Hunt Middle School	Frisco, Texas	Education	61.0%	\$16,900
12	Career and Technology Ed. Center	Frisco, Texas	Education	59.5%	\$15,700
13	Administration Annex	Frisco, Texas	Office	58.5%	\$1,800
14	Scoggins Middle School	Mckinney, Texas	Education	58.1%	\$14,000
15	Central Administration Building	Frisco, Texas	Office	57.0%	\$6,300

TOP IN CATEGORY ENERGY AND WATER REDUCTION

These individual building competitors were verified to have reduced their “energy weight” or “water weight” by more than any other building in their respective categories, on a percentage basis, over the course of the year-long competition.

TOP ENERGY REDUCTION BY CATEGORY

Type	Competitor	Location	% Reduction	Cost Savings	GHG reduction (MtCO ₂ e)
Education	Findley Elementary	Des Moines, Iowa	28.8%	\$33,700	58
Entertainment/ Public Assembly	Putnam Foundation, Timken Museum of Art	San Diego, Calif.	50.2%	\$29,500	80
Hotel	Loews Ventana Canyon Resort	Tucson, Ariz.	9.3%	\$142,600	556
Library	LS00401 Brandon	Brandon, Fla.	35.2%	\$26,100	188
Lodging	Greenberg Hall	New York, N.Y.	21.0%	\$54,800	207
Medical office	Memorial Hermann Sugar Land Medical Plaza 1	Sugar Land, Texas	29.8%	\$143,000	1,043
Office	CCI Center	Pittsburgh, Pa.	61.4%	\$3,100	24
Other	Woodville Chapel	Woodville, Ala.	68.4%	\$200	2
Retail	Verizon, Inglewood, Calif.	Inglewood, Calif.	46.5%	\$3,300	12
Supermarket	Whole Foods Market Gateway	Austin, Texas	20.0%	\$35,200	330
Warehouse	610012 - Moreno Valley, CA	Moreno Valley, Calif.	25.6%	\$360,900	1,213

TOP WATER REDUCTION BY CATEGORY

Type	Competitor	Location	% Reduction	Cost Savings
Education	Acker Special Programs Center	Frisco, Texas	85.1%	\$1,800
Office	Sixth Avenue West	Golden, Colo.	75.0%	\$170,400
Other	Transportation West	Frisco, Texas	25.9%	\$800

BUILDING ENERGY REDUCTION OF 20 PERCENT OR MORE

These individual building competitors were verified to have reduced their “energy weight” by 20 percent or more over the course of the year-long competition.

Competitor	Location	Type	% Reduction	Cost Savings	GHG reduction (MtCO ₂ e)
Woodville Chapel	Woodville, Ala.	Other	68.4%	\$200	2
CCI Center	Pittsburgh, Pa.	Office	61.4%	\$3,100	24
Putnam Foundation, Timken Museum of Art	San Diego, Calif.	Entertainment/PA	50.2%	\$29,500	80
Verizon, Inglewood, Calif.	Inglewood, Calif.	Retail	46.5%	\$3,300	12
The Garden House at Harry P. Leu Gardens	Orlando, Fla.	Entertainment/PA	45.3%	\$16,700	86
13461 Sunrise Valley Drive	Herndon, Va.	Office	40.1%	\$188,700	1215
Verizon, Montclair, Calif.	Montclair, Calif.	Retail	39.6%	\$3,200	12
TD University	Mt Laurel, N.J.	Office	37.2%	\$89,800	449
Verizon, Arvada, Calif.	Arvada, Colo.	Retail	36.3%	\$4,100	37
LS00401 Brandon	Brandon, Fla.	Library	35.2%	\$26,100	188
Cupples Station	Saint Louis, Mo.	Office	34.9%	\$84,800	920
460 East Swedesford Road	Wayne, Pa.	Office	33.2%	\$32,500	195
13645 Dulles Technology Drive	Herndon, Va.	Office	30.6%	\$13,000	84
Tysons International	Vienna, Va.	Office	29.8%	\$96,300	620
Memorial Hermann Sugar Land Medical Plaza 1	Sugar Land, Texas	Medical office	29.8%	\$143,000	1043
SW00901 Southeast County Landfill	Lithia, Fla.	Public services	29.8%	\$12,800	91
13655 Dulles Technology Drive	Herndon, Va.	Office	28.9%	\$27,500	176
Findley Elementary	Des Moines, Iowa	Education	28.8%	\$33,700	58
Wastewater Treatment Plant	Woodville, Ala.	Treatment Plant	27.9%	\$1,500	13
2845 - Sears Holding Corp.	Athens, Ga.	Retail	27.5%	\$20,700	167
SARASOTA, FL-0907	Sarasota, Fla.	Retail	27.5%	\$52,000	372
CO0261 - HIDDEN LAKE MEDICAL OFFICES	Westminster, Colo.	Medical office	27.1%	\$38,300	340
Verizon, Middletown, N.Y.	Middletown, N.Y.	Retail	27.0%	\$2,600	10
FM00101 Fleet Central	Tampa, Fla.	Other	26.5%	\$13,500	97
1754 - Sears Holding Corp.	Gaithersburg, Md.	Retail	26.2%	\$38,800	235
Portrait Building	Washington, D.C.	Office	26.1%	\$43,900	262
FR01101 Brandon	Brandon, Fla.	Public services	25.9%	\$3,400	24
Verizon, Tigard, Ore.	Tigard, Ore.	Retail	25.8%	\$2,300	14
CA1631 - COLTON MEDICAL OFFICES	Colton, Calif.	Medical office	25.8%	\$18,500	55
610012 - Moreno Valley, CA	Moreno Valley, Calif.	Warehouse	25.6%	\$360,900	1213

BUILDING ENERGY REDUCTION OF 20 PERCENT OR MORE (continued)

Competitor	Location	Type	% Reduction	Cost Savings	GHG reduction (MtCO ₂ e)
1354 - Sears Holding Corp.	Willow Grove, Pa.	Retail	25.1%	\$46,500	261
Verizon, Downingtown, Penn.	Downingtown, Pa.	Retail	24.9%	\$1,700	13
1264 - Sears Holding Corp.	Hicksville, N.Y.	Retail	24.6%	\$54,900	496
2023 - Sears Holding Corp.	Concord, N.H.	Retail	24.4%	\$21,700	94
Verizon, Los Angeles, Calif.	Los Angeles, Calif.	Retail	24.2%	\$2,200	8
PR 35 North Lake, LLC	Pasadena, Calif.	Office	24.0%	\$75,700	207
Verizone, Dekalb, Ill.	Dekalb, Ill.	Retail	24.0%	-\$5,000	-22
1088 - Sears Holding Corp.	Glendale, Calif.	Retail	24.0%	\$35,900	131
Bayshore Tech Park - 2000 Bridge Parkway	Redwood City, Calif.	Office	23.9%	\$41,100	127
International Center (013)	Missoula, M.T.	Office	23.8%	\$5,600	17
CO0101 - WHEAT RIDGE MEDICAL OFFICES	Wheat Ridge, Colo.	Medical office	23.3%	-\$11,100	-72
CN3759 - GALVESTON MEDICAL RECORDS	Redwood City, Calif.	Medical office	23.2%	\$7,700	27
1750 H Street NW	Washington, D.C.	Office	22.9%	\$51,900	312
GRETNA, LA-2702	Gretna, La.	Retail	22.7%	\$65,100	401
CS00162 Children Svcs Clinical	Tampa, Fla.	Other	22.6%	\$200	1
CN3164 - 601 VAN NESS - OCC MED MEDICAL OFFICES	San Francisco, Calif.	Medical office	22.4%	\$13,200	35
Verizon, Staten Island, N.Y.	Staten Island, N.Y.	Retail	22.3%	\$3,000	11
Bayshore Tech Park - 1400 Bridge Parkway	Redwood City, Calif.	Office	22.1%	\$26,200	82
CS0164 Children Svcs Dorm	Tampa, Fla.	Lodging	22.1%	\$300	3
CN7201 - FRESNO MEDICAL OFFICES I - FIRST ST.	Fresno, Calif.	Medical office	22.1%	\$41,000	133
Woodville Town Hall	Woodville, Ala.	Entertainment/PA	22.0%	\$200	2
BISHOP, CA-1385	Bishop, Calif.	Retail	22.0%	\$7,700	24
Enterprise Center 4100	Chantilly, Va.	Office	21.8%	\$45,200	290
4311 - Sears Holding Corp.	Brandon, Fla.	Retail	21.0%	\$36,800	265
Greenberg Hall	New York City, N.Y.	Lodging	21.0%	\$54,800	207
Forest Park Medical Center	Dallas, Texas	Hospital	20.7%	\$395,300	503
CA6271 - BAKERSFIELD SAN DIMAS MEDICAL OFFICES	Bakersfield, Calif.	Medical office	20.6%	\$8,900	29
FR01701 Ruskin	Ruskin, Fla.	Public services	20.5%	\$3,500	25
01505 - 400-445 Lakeside Dr	Horsham, Pa.	Office	20.2%	\$19,200	115

BUILDING ENERGY REDUCTION OF 20 PERCENT OR MORE (continued)

Competitor	Location	Type	% Reduction	Cost Savings	GHG reduction (MtCO ₂ e)
CO0451 - KEN CARYL MEDICAL OFFICES	Littleton, Colo.	Medical office	20.2%	\$17,300	100
Whole Foods Market Gateway	Austin, Texas	Supermarket	20.0%	\$35,200	330

BUILDING WATER REDUCTION OF 20 PERCENT OR MORE

These individual building competitors were verified to have reduced their “water weight” by 20 percent or more over the course of the year-long competition.

Competitor	Location	Type	% Reduction	Cost Savings
Acker Special Programs Center	Frisco, Texas	Education	85.1%	\$1,800
Student Opportunity Center	Frisco, Texas	Education	77.6%	\$9,400
Sixth Avenue West	Golden, Colo.	Office	75.0%	\$170,400
Nichols Elementary	Frisco, Texas	Education	73.6%	\$19,600
Vandeventer Middle School	Frisco, Texas	Education	70.1%	\$26,000
Comstock Elementary	Mckinney, Texas	Education	68.7%	\$14,300
Pleasant Hill	Des Moines, Iowa	Education	68.1%	\$4,100
Roach Middle School	Frisco, Texas	Education	65.0%	\$18,300
Griffin Middle School	Frisco, Texas	Education	64.4%	\$13,300
Phillips Elementary	Frisco, Texas	Education	64.2%	\$19,600
Hunt Middle School	Frisco, Texas	Education	61.0%	\$16,900
Career and Technology Ed. Center	Frisco, Texas	Education	59.5%	\$15,700
Administration Annex	Frisco, Texas	Office	58.5%	\$1,800
Scoggins Middle School	Mckinney, Texas	Education	58.1%	\$14,000
Central Administration Building	Frisco, Texas	Office	57.0%	\$6,300
Robertson Elementary	Little Elm, Texas	Education	54.9%	\$8,600
Heritage High School	Frisco, Texas	Education	53.6%	\$48,100
Fisher Elementary	Frisco, Texas	Education	52.2%	\$5,300
Carroll Elementary	Frisco, Texas	Education	50.6%	\$7,400
Lone Star High School	Frisco, Texas	Education	50.3%	\$31,100
Wester Middle School	Frisco, Texas	Education	49.2%	\$21,200
Jefferson High School	Cedar Rapids, Iowa	Education	48.9%	\$26,600
Anderson Elementary	Plano, Texas	Education	48.4%	\$5,100
Gunstream Elementary	Frisco, Texas	Education	47.7%	\$4,500
Maus Middle School	Frisco, Texas	Education	46.4%	\$8,900
Jefferson	Des Moines, Iowa	Education	45.7%	\$2,100
Stafford Middle School	Frisco, Texas	Education	45.3%	\$9,600
Wakeland High School	Frisco, Texas	Education	43.3%	\$36,400
Fowler Middle School	Plano, Texas	Education	42.5%	\$9,600
Liberty High School	Frisco, Texas	Education	42.2%	\$42,900
Frisco High School	Frisco, Texas	Education	41.7%	\$23,400

BUILDING WATER REDUCTION OF 20 PERCENT OR MORE (continued)

Competitor	Location	Type	% Reduction	Cost Savings
Lakeside Business Center	Waukegan, Ill.	Office	41.6%	\$3,900
Bayshore Tech Park - 975 Island Dr	Redwood City, Calif.	Office	41.0%	\$30
Cobb Middle School	Frisco, Texas	Education	40.8%	\$8,200
Allen Elementary	Frisco, Texas	Education	39.4%	\$4,100
Centennial High School	Frisco, Texas	Education	35.4%	\$31,100
Sparks Elementary	Frisco, Texas	Education	34.2%	\$3,900
Early Childhood School	Frisco, Texas	Education	31.6%	\$2,500
Riverwoods	Des Moines, Iowa	Education	30.2%	\$2,100
Curtsinger Elementary	Frisco, Texas	Education	29.7%	\$2,200
201 South Tryon Square	Charlotte, N.C.	Office	27.0%	\$11,800
Tadlock Elementary	Frisco, Texas	Education	26.9%	\$3,100
Riddle Elementary	Plano, Texas	Education	26.5%	\$3,200
Transportation West	Frisco, Texas	Other	25.9%	\$800
Smouse	Des Moines, Iowa	Education	25.7%	\$1,400
Natatorium	Frisco, Texas	Education	25.5%	\$4,800
Harding	Des Moines, Iowa	Education	24.7%	\$2,200
Pink Elementary	Frisco, Texas	Education	24.5%	\$2,200
200 West Madison	Chicago, Ill.	Office	24.2%	\$29,500
Metro Park 3	Alexandria, Va.	Office	23.4%	\$6,500
Park Ten Plaza	Houston, Texas	Office	23.1%	\$10,500
10 Westport	Wilton, Conn.	Office	22.8%	\$5,600
Roosevelt	Des Moines, Iowa	Education	22.4%	\$7,600
60 Danbury Road	Wilton, Conn.	Office	21.7%	\$1,500
Floyd D. Akers Building	Washington, DC	Office	21.3%	\$8,600
PR III 255 California LLC	San Francisco, Calif.	Office	21.1%	\$3,300
Ten Peachtree Place	Atlanta, Ga.	Office	20.0%	\$9,200