



Innovation Through Collaboration: Securing a More Affordable and Reliable Energy Future

PROGRESS REPORT 2018

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American companies, school districts, and state and local governments all need affordable, reliable energy to thrive. Energy efficiency is a powerful tool that helps organizations of all kinds keep energy costs down while maintaining and often improving productivity, service, and comfort. Now in its seventh year, the U.S. Department of Energy's (DOE) **Better Buildings Initiative** is helping private and public sector organizations capture these and other important benefits of energy efficiency. Together, DOE and its partners are highlighting new innovations, sharing successful strategies, and developing new resources that contribute to lower costs and a cleaner, more resilient energy system.

Over 1,500 of these proven energy reduction resources now reside in the revamped Better Buildings Solution Center, which is easier than ever to navigate. Online solutions feature innovative technologies that have been validated in the field by private companies and public sector organizations, organizational strategies that can lead to sizable energy reductions at little to no cost, and big data solutions that leverage low-cost sensors and controls to optimize operations and improve energy efficiency.

These solutions are pulled from the real-world experiences of the more than 900 organizations that make up the Better Buildings Initiative. Together, partners represent 30 of the country's Fortune 100 companies, 12 of the top 25 U.S. employers, 12% of the U.S. manufacturing energy footprint, and 13% of total commercial building space, as well as 17 Federal agencies, 8 national laboratories, 28 states and 93 local governments spanning the nation.

Together, Better Buildings partners:

- ▶ **Set and meet ambitious energy efficiency targets.** More than 350 Better Buildings Challenge partners have saved \$3.1 billion since the start of the program, reducing their energy intensity by more than 2% a year on average and remaining on track to meet their 10-year 20% reduction goal. The nearly 200 manufacturers and other industrial organizations in Better Plants have reported estimated cost savings over \$4 billion since the start of the program.
- ▶ **Drive adoption of new energy-saving technologies.** Better Buildings Alliance partners covering 11 billion square feet of U.S. real estate are working together to uncover the latest technological innovations. Through a series of campaigns, Alliance partners are driving adoption of energy-efficient lighting, air conditioning, and energy management information system technologies.

“Partners in the Better Buildings Initiative are achieving impressive energy savings worthy of celebration. Partners are meeting their savings goals, testing the latest technologies, and sharing their results. Together, they are showcasing a new generation of energy saving solutions.”



— Rick Perry
U.S. Department of Energy Secretary

- ▶ **Increase the flow of financing.** Over 40 Financial Allies have extended over \$12 billion in capital for efficiency projects. Allies are helping to develop new financing models, such as commercial property assessed clean energy (PACE), efficiency-as-a-service, and other novel approaches that have the potential to unlock deeper energy savings.
- ▶ **Collaborate to overcome barriers.** More than 200 partners across the private, public, and nonprofit sectors are actively participating in nine different Accelerators that are targeting specific barriers to energy efficiency and providing the market with resources designed for real-world applications. The Better Communities Alliance now has 44 city and county government partners that are working together to solve common energy challenges facing communities.

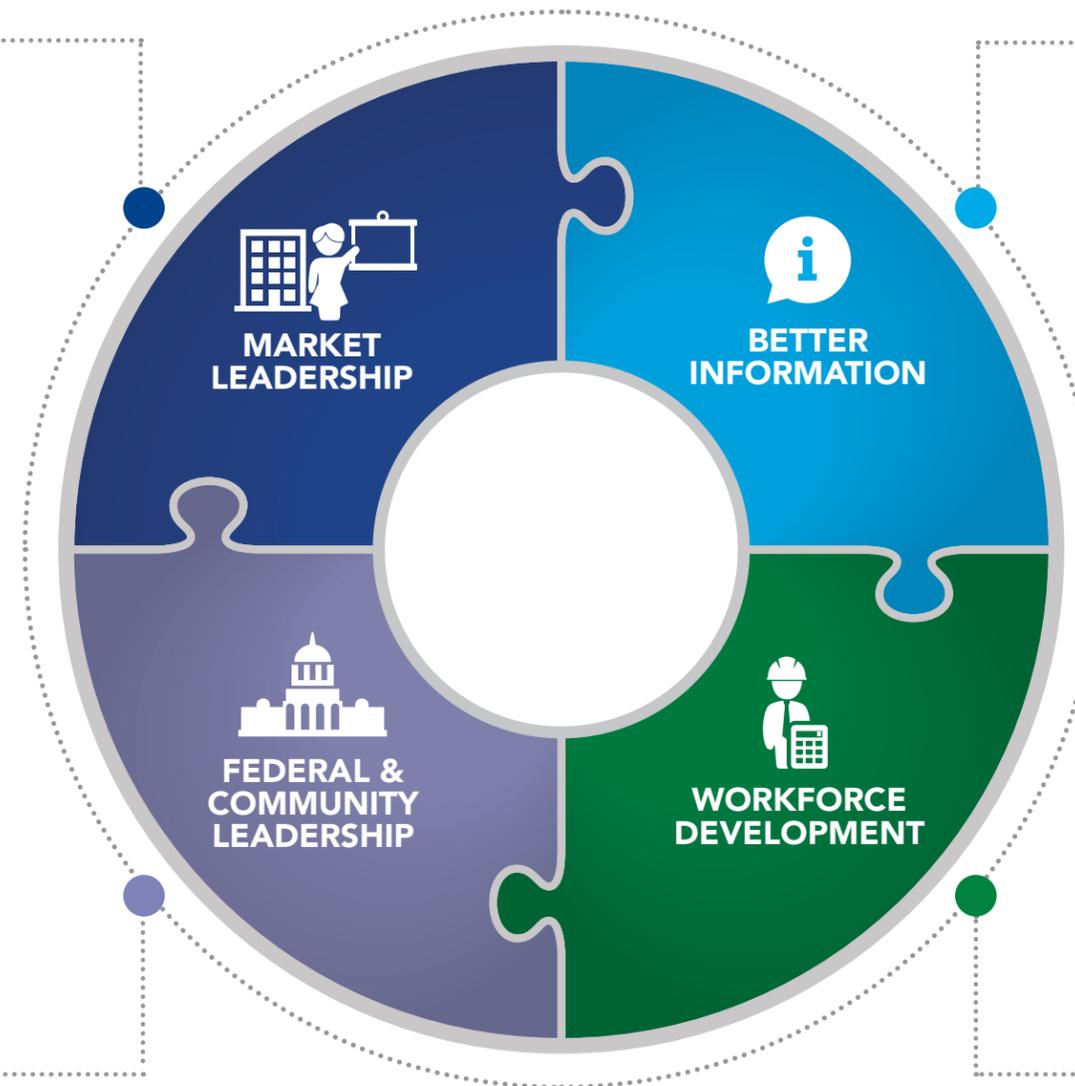
In addition, DOE recently released the fourth installment of the Better Buildings Challenge SWAP. Manufacturers General Motors and L’Oréal square off to find ways to slash energy in each other’s plants and learn a few new tricks along the way.

In the year ahead, the Better Buildings Initiative will continue working closely with its partners as they meet and adapt to new challenges. The program will also adapt, finding new ways to inform the market more quickly about successful energy reduction strategies and promising R&D results that are shaping the future of energy efficiency.

Cover photos featuring the following Better Buildings partners [clockwise from top left]: Chattanooga, TN; ArcelorMittal USA; Aurora Public Schools; Milwaukee, WI; Dysart Unified School District 89, AZ; Foundation Communities; Arizona State University, UW Health

Developing Innovative, Replicable Solutions with Market Leaders

- ▶ **Better Buildings Challenge**
More than 350 partners have saved 380 trillion Btus, or \$3.1 billion since the start of the program.
- ▶ **Better Buildings Alliance**
More than 300 organizations participating in four campaigns reported estimated savings of over \$150 million a year through technology upgrades.
- ▶ **Better Buildings, Better Plants**
Almost 200 Better Plants partners located in all 50 states have reported estimated cost savings of \$4.2 billion.
- ▶ **Better Buildings Accelerators**
More than 200 Accelerator partners are creating new tools and strategies targeting specific barriers to energy efficiency.
- ▶ **Better Buildings Residential**
More than 50 new organizations joined the residential network in the past year, and residential partners completed more than 90,000 home energy upgrades.
- ▶ **Strategic Energy Management**
Strategic energy management approaches can result in savings of 5-30%; nearly 65 partners have worked with DOE to develop energy management systems consistent with ISO 50001.



Making Energy Efficiency Investment Easier

- ▶ **Better Buildings Solution Center**
The new-look Better Buildings Solution Center now offers over 1,500 proven strategies for energy and water savings.
- ▶ **Financing Navigator**
4,700 users in the past year accessed the latest sector-specific energy efficiency financing options.
- ▶ **Improved Data Consistency and Access**
More than 16,000 users have input data on over 1 million buildings through the Building Performance Database.
- ▶ **Building Energy Asset Score**
More than 2,300 buildings representing 240 million square feet of space across 47 states have identified and evaluated new energy saving investment opportunities using Asset Score.
- ▶ **Home Energy Score**
More than 90,000 home energy scores have been created since 2012, leading to more informed home purchasing decisions and efficiency investments.
- ▶ **Tools for Industrial Energy Management**
An Integrated Tool Suite is available on the Solution Center, with updated energy system software to analyze most industrial support systems.

State, Local, and Federal Governments Leading by Example

- ▶ **State and Local Engagement**
More than 120 unique state and local governments are participating in an array of Better Buildings programs, including 53 in the Challenge, 44 in the Better Communities Alliance, and 55 in one or more Accelerators.
- ▶ **Performance Contracting**
21 Federal agencies have awarded 380 projects worth more than \$2.9 billion since 2011, resulting in more than 510 trillion Btus in life cycle energy savings and more than \$12.3 billion in cumulative energy cost savings for the Federal Government.

Expanding the Workforce

- ▶ **Better Buildings Workforce Guidelines**
One new voluntary, national commercial building certification program has been recognized, and more than 300 courses, workshops, webinars, and Energy Exchange accredited sessions have been delivered.
- ▶ **Industrial Energy Management Workforce**
Almost 1,500 industrial partner employees have participated in In-Plant Trainings since 2011, and more than 3,000 students were trained to provide over 18,000 energy assessments through Industrial Assessment Centers. Additionally, over 110 people have become certified as 50001 Energy Management Systems Certified Practitioners since 2012.

Better Buildings Challenge

Through 2017, Better Buildings Challenge partners have shared energy performance results for more than 38,000 properties. More than 350 partners and Financial Allies have now joined the Challenge, representing more than 4.4 billion square feet of building space and more than 1,000 industrial facilities. On average, partners are saving more than 2% per year, and remain on track to meet their energy savings goals of 20% over 10 years.

In extending over \$12 billion since the start of the program, Financial Allies have surpassed their commitments by over \$4 billion. To date, Allies have extended over a billion dollars in financing for each of the following financing products: leases, loans and debt, bonds, and property assessed clean energy (PACE).

Doubling Down on Energy Efficiency

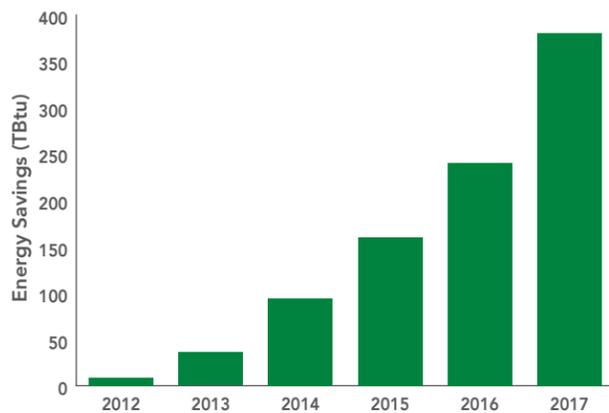
Over 65 partners and Financial Allies have now met their original energy reduction, water reduction and financing goals, all of them ahead of schedule. A number of these goal achievers have publicly committed to second goals, demonstrating that continual energy efficiency improvement is possible even after sizable gains have already been made. Visit the Better Buildings Solution Center to learn more about the strategies and solutions of these leading partners.

Better Buildings Challenge Partner Progress and Cumulative Results

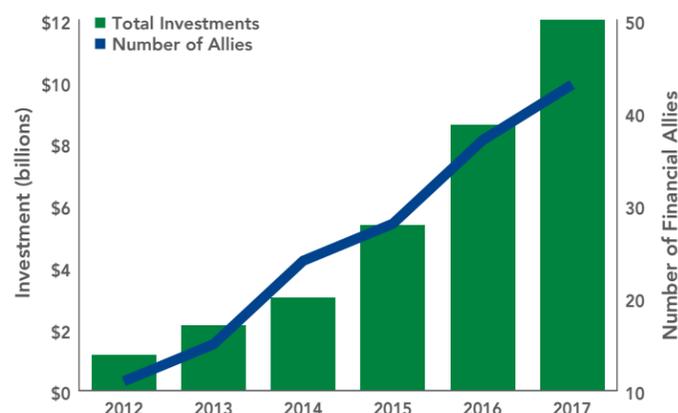
Results	2016	2017
Energy Saved (Btus)	240 trillion	380 trillion
Dollars Saved	\$1.9 billion	\$3.1 billion
Avoided CO ₂ Emissions (tons)	15 million	23 million
Funding Extended	\$8.6 billion	\$12 billion
Water Savings (gallons)	4 billion	6.3 billion
Solutions		
Partner Solutions Available Online	1,000+	1,500+
Partners		
Number of Partners and Allies	345+	350+
Square Feet Represented	4.4 billion	4.4 billion

Financial Allies exceeded their financing commitments by 50% in 2017.

Cumulative Energy Savings



Total Investment and Ally Growth by Year



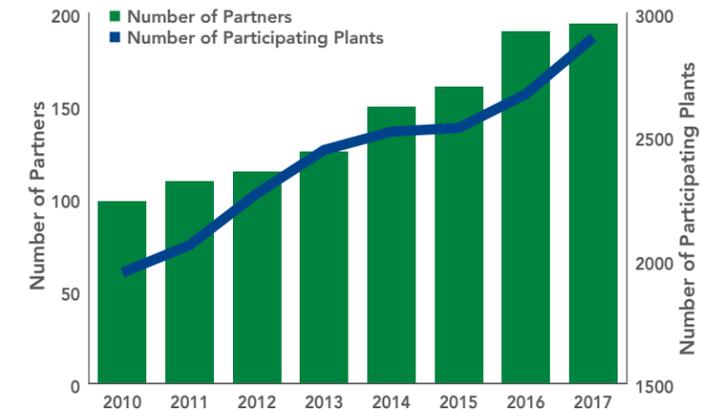
Better Plants

By the end of 2017, an estimated 12.6 million Americans were working in manufacturing, an increase of more than a million compared to early 2010.¹ The manufacturing sector is also the nation's leading buyer of technology and the source of an estimated 90% of all new patents and 70% of private sector research and development.² In short, manufacturing is a major driver of both jobs and innovation in the United States. This underscores the importance of the hard work of almost 200 Better Plants partners, across roughly 2,900 facilities located in all 50 states, as they put their people and new technologies to work to improve energy efficiency and save money. Together, Challenge and Program level Better Plants partners have reported estimated cost savings of \$4.2 billion over the last seven years.³

In the past year, partners began taking advantage of several new resources to help improve energy performance and offer new opportunities to help partners share their stories. The **Field Validation and Diagnostic Equipment Program**, for example, is facilitating data analysis and measurement by making 19 diagnostic instruments available for short-term use. Partners can also choose from two new **In-Plant Training** topics—50001 Ready and Industrial Refrigeration—in addition to the previously available eight. Additionally, the National Renewable Energy Laboratory (NREL) hosted the second annual **Technology Days** for partners, an event designed to facilitate research and development collaboration and technology transfer between the 17 National Laboratories and the private sector.

In terms of amplification, the second year of the **Better Practice and Better Project awards** are recognizing partner achievements and spurring the continued sharing of proven energy efficiency strategies. Leading partners were also highlighted in a **DOE podcast**—with more than 15,000 downloads, the most of any episode to date—and in the fourth season of the **Better Buildings Challenge SWAP**. Finally, a new collaborative effort with the **National Association of Manufacturers** is helping amplify partners' leadership to an even greater degree through the Sustainability in Manufacturing partnership.

Better Plants Growth by Year



Better Buildings Alliance

Representing more than 11 billion square feet of U.S. real estate, the partners and affiliates of the Better Buildings Alliance collaborate in sector teams, technology research teams, and campaigns to address and overcome barriers to energy efficiency. More than 200 companies from across an array of commercial sectors participate, with Sector Steering Committee members helping to set priorities for their peers in each Alliance sector group. These priorities inform Alliance peer networking opportunities, resource development, and new initiatives. Other partners volunteer for field validations of high impact technologies and support research and development that is improving whole building performance.

The Better Buildings Alliance also engages closely with other market stakeholders, including associations, non-profits, trade organizations and others, to host educational events and shine a spotlight on difficult challenges. Recent examples include addressing the growing workforce need for well-trained HVAC and refrigeration technicians, as well as co-hosting a two-day workshop for sustainability professionals in the market-rate multifamily space with the National Apartment Association.

In addition, the Alliance's Technology Campaigns are a way to recognize participants for excellence in a particular technology area, while providing participants with technical expertise, best practices, case studies, and other guidance. These campaigns have had tremendous success over the past few years, as described on the next page.

Better Buildings Alliance (continued)

Advanced Roof Top Unit Campaign (ARC): Surpassing its goal, Campaign participants have impacted over 114,000 rooftop units (RTUs), resulting in annual savings of 900 million kWh and \$90 million. Since its inception in 2013, participants have made over 62,000 high efficiency RTU installations and over 52,000 advanced RTU controls retrofits, and have contributed to a transformation in the commercial buildings market for RTU efficiency.

Interior Lighting Campaign (ILC): Participants are on track to upgrade, or newly install, nearly 1.6 million high efficiency troffers, high-bay, low-bay, and suspended luminaires, many with lighting control systems. Participants have saved over 230 million kWh annually, amounting to nearly \$25 million in electricity savings.

Lighting Energy Efficiency in Parking (LEEP): LEEP Campaign participants concluded activities in 2017 resulting in upgrades and installations of energy-efficient equipment and/or lighting controls in 565 million square feet of parking facilities, representing 1.7 million parking spots. Participants saved nearly 230 million kWh annually, amounting to over \$24 million in electricity savings and deferring the energy usage equivalent to over 21,000 homes.

Smart Energy Analytics Campaign (SEA): 65 partners have joined the Campaign, representing 330 million square feet. These partners have implemented 24 different energy information system products, 12 fault detection and diagnostics products, and one automated system optimization product. Savings were reported by 19 Campaign partners, totaling 750 billion Btu and \$17 million annually, achieving median energy savings of 7%.

Technology campaign participants reported estimated savings of over \$150 million a year through interior and exterior lighting improvements, rooftop unit replacements and retrofits, and the use of energy management systems.

Better Communities Alliance

The Better Communities Alliance (BCA) is a collaboration with local government leaders, businesses, and institutions to improve the prosperity of American communities through energy technologies and solutions. Launched in 2016, the BCA has 44 city and county government partners that collectively represent more than 40 million Americans. The BCA made significant progress toward achieving its goals in 2017 by:

- ▶ **Increasing access to DOE resources.** Through its Resource Portfolio Initiative, the BCA organized technical and programmatic resources from across DOE into a single, easy-to-use guide for local governments. The Resource Portfolio became available in 2018.
- ▶ **Delivering technical assistance.** Through its Community Data Analysis Initiative, the BCA provided technical assistance to seven local governments to support their use of energy data and analytics in areas including measured building energy performance, electric vehicle market penetration, solar and battery technologies, and energy efficiency policy. The Initiative is continuing to provide support in 2018.
- ▶ **Creating public-private partnerships.** Through its Commitments for Better Communities Initiative, the BCA facilitated partnerships between organizations with energy expertise and more than 10 local governments to support community-scale energy assessments in areas including energy efficiency policy analysis, connected street lighting technologies, energy assessment for port facilities, building energy mapping visualizations, and community renewable energy goals.

Better Buildings Accelerators

Better Buildings Accelerators are short-term, collaborative efforts that target specific barriers to energy efficiency. Since 2013, 13 Accelerators launched, featuring more than 200 partnering organizations across the private, public, and nonprofit sectors. There are nine active Accelerators (summarized below), with participants demonstrating leadership and helping to create useful tools and resources that other organizations can use. In prior years, DOE successfully completed four Accelerators targeting outdoor lighting, industrial strategic energy management, energy data access, and energy savings performance contracting.



CLEAN ENERGY FOR LOW-INCOME COMMUNITIES

Participants develop plans to identify funding for expanding energy efficiency and renewable energy in low-to-moderate income communities. In the past year, the Low-income Energy Affordability Data Tool was created to provide interactive information on low-income housing and energy burden.



COMBINED HEAT AND POWER (CHP) FOR RESILIENCY

This Accelerator helps communities capitalize on CHP's strengths as a reliable, high efficiency, lower-emissions electricity and heating/cooling source for critical infrastructure. This year, DOE published a resiliency-planning tool with decision criteria and simple analysis around CHP feasibility.



DATA CENTERS

Partners commit to reducing the infrastructure energy intensity of one or more data centers by 25% over a period of five years. Through the Accelerator, DOE recently published a guide to help small data center owners and operators reduce energy costs in their facilities.



HOME ENERGY INFORMATION

Accelerator partners work to increase the access and use of reliable and standard home energy information in the real estate transaction. The Accelerator Toolkit provides resources and replicable best practices for increasing the number of homes with energy information, engaging real estate professionals, and managing home energy data.



HOME UPGRADE PROGRAM

The goal of this Accelerator is to minimize program costs while expanding savings through information technology and the adoption of common data standards. Programs are completing hundreds of thousands of upgrades annually with average savings of 20% for households.



SMART LABS

Universities, Federal agencies, and national labs in this Accelerator commit to advancing strategies that rapidly improve energy efficiency in laboratory buildings. One participant, the University of California, Irvine, shared its strategies for achieving 50% energy savings in its labs.



SUSTAINABLE WASTEWATER INFRASTRUCTURE OF THE FUTURE

State, local, and regional agencies work in this Accelerator to improve the energy efficiency of water resource recovery facilities by at least 30%. Partners contributed to the development of an energy data management manual that helps facilities develop energy performance metrics to strengthen their energy management programs.



ZERO ENERGY DISTRICTS

Participating districts demonstrate the practicality of taking action to cost-effectively meet zero energy goals by completing a detailed energy master plan, business case, model, and development pathway. Sun Valley EcoDistrict, for example, created an innovative and replicable approach for financing, building, and operating a district energy system.



ZERO ENERGY SCHOOLS

States and school districts are working together to develop a road map for zero energy schools. The Advanced Energy Design Guide for K-12 School Buildings published this year shows how zero energy is possible for traditional schools with typical budgets.

This year, 16 Better Buildings Challenge partners and allies met their energy, water, or financing goals. Since the start of the program, 45 Challenge partners have met one or more energy goals, 8 have met their water goals, and 18 Financial Allies placed sufficient investments to meet one or more of their financing goals.

Energy Savings Goal Achievers

 **C. F. MARTIN & CO., INC. (MARTIN GUITAR)**
27%
 Martin Guitar is an industrial partner based in Nazareth, PA. It committed 1 plant and has a 2015 energy baseline.

 **JERSEY CITY HOUSING AUTHORITY**
26%
 Jersey City Housing Authority is a multifamily partner based in Jersey City, NJ. It committed 10 properties and has a 2011 energy baseline.

 **GENERAL MOTORS**
26%
 General Motors is an industrial partner based in Detroit, MI. It committed 31 plants and has a 2008 energy baseline.

 **UW HEALTH**
24%
 UW Health is a commercial partner based in Madison, WI. It committed 4.7 million square feet and has a 2013 energy baseline.

Water Savings Goal Achievers

 **SHARI'S CAFÉ AND PIES**
37%
 Shari's Café and Pies is a commercial partner based in Beaverton, OR. It has a water commitment of 400,000 square feet and has a 2012 baseline year.

 **ANTHEM**
22%
 Anthem is a commercial partner based in Thousand Oaks, CA. It committed 5.7 million square feet and has a 2013 energy baseline.

 **COLUMBIA ASSOCIATION**
21%
 Columbia Association is a commercial partner based in Columbia, MD. It committed nearly 500,000 square feet and has a 2012 energy baseline.

 **NORTH CAROLINA**
21%
 The State of North Carolina committed 138 million square feet and has a 2009 energy baseline.

 **LEGRAND**
20%
 Legrand is an industrial partner based in West Hartford, CT. Having previously met its original Challenge goal, it committed 11 plants with 10 million square feet toward a second goal and has a 2012 energy baseline.

 **ANTHEM**
31%
 Anthem is a commercial partner based in Thousand Oaks, CA. It has a water commitment of 5.6 million square feet and has a 2013 baseline year.

Financial Ally Goal Achievers

 **BANK OF AMERICA MERRILL LYNCH**
\$2.54 BILLION
 Since joining, it has surpassed its goal of \$1.5 billion in financing for energy efficiency and/or renewable energy. It is headquartered in Charlotte, NC.

 **CITI**
\$2.26 BILLION
 Citi met its second Better Buildings goal of \$2.25 billion in financing for energy efficiency and/or renewable energy. It is headquartered in New York, NY.

 **EDF RENEWABLE ENERGY**
\$500 MILLION
 Since joining, it has surpassed its goal of \$500 million in financing for energy efficiency and/or renewable energy. It is headquartered in San Diego, CA.

 **SOL SYSTEMS**
\$111 MILLION
 Since joining, it has surpassed its goal of \$100 million in financing for energy efficiency and/or renewable energy. It is headquartered in Washington, DC.

 **METRUS ENERGY**
\$86 MILLION
 Since joining, it has surpassed its goal of \$75 million in financing for energy efficiency and renewable energy. It is headquartered in San Francisco, CA.

 **NYCEEC**
\$50 MILLION
 Since joining, it has surpassed its goal of \$25 million in financing for energy efficiency and renewable energy. It is headquartered in New York, NY.

 **PACE EQUITY**
\$27 MILLION
 Since joining, it has surpassed its goal of \$25 million in financing for energy efficiency and renewable energy. It is headquartered in Milwaukee, WI.

Previous Goal Achievers



Recognizing Leaders

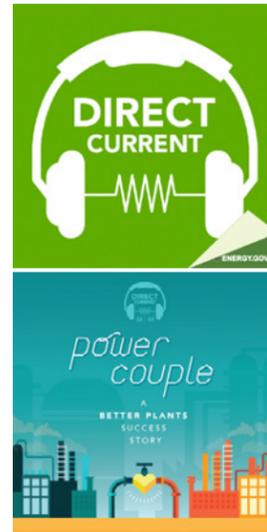
Representatives from DOE's Better Buildings Initiative join with partners and local or national media to promote the program's solutions and achievements.



First Row: King County, WA; Second Row: Shari's Cafe & Pies; Third and Fourth Row: Loews Vanderbilt Hotel

Direct Current Podcast

Tune in to *Direct Current*, an Energy.gov podcast, to learn how big U.S. manufacturing companies tackle energy-saving challenges through the Better Plants Program. In **S2 E9: Power Couple**, you will hear how a married couple of energy engineers, Tari and Kurt Emerson (Tari works for Charter Steel and Kurt works for Harley-Davidson) are uncovering energy waste and yielding big cost savings at their companies.



Subscribe to *Direct Current* using iTunes or at:

energy.gov/podcasts/direct-current-energygov-podcast



Better Buildings Summit

The Better Buildings Summit, held this year in **Cleveland, OH, from August 21–23, 2018**, is one of the premier events for energy professionals to engage with one another and share innovative strategies, emerging technologies, financing trends, and much more. This year's Summit will be held in conjunction with DOE's annual Energy Exchange, focused on Federal facility energy management, to provide even greater access to technical discussions and training.

Summit Highlights

- ▶ Emerging and advanced technologies
- ▶ Contingency planning and effective implementation for energy resilience
- ▶ Smart building design and operation
- ▶ Barriers and opportunities for energy and water efficiency and employing renewable energy
- ▶ Energy Exchange Trade Show

Learn more at: betterbuildingsinitiative.energy.gov/summit

Better Buildings Challenge SWAP

The **fourth installment** of the Better Buildings Challenge SWAP features two companies paving the way to more energy efficient manufacturing in the United States: General Motors and L'Oréal. In this online video series, the companies swap energy management teams to gain new insights, save money, and improve their industrial facilities through greater energy efficiency.

Watch the full SWAP series at: betterbuildingsinitiative.energy.gov/swap



NEW AND IMPROVED!

The Better Buildings Solution Center is an online tool designed to help organizations easily find proven and cost-effective energy and water efficiency solutions by topic, building type, sector, technology, location, and barrier. Collectively, partner solutions received more than 50,000 views this year, and there were more than 480,000 visits to Better Buildings websites in total.

THE UPDATED SOLUTION CENTER:

- ▶ Contains over 1,500 Solutions
- ▶ Has improved functionality and is easier to use
- ▶ Is now mobile-friendly

FIND EVERYTHING YOU ARE LOOKING FOR:



Collections of technical resources, case studies, guides, and more. The latest toolkits include:

- ▶ [Add Solar to your Rooftop](#)
- ▶ [Control Plug and Process Loads in your Buildings](#)
- ▶ [Energy Data Access: Blueprint for Action](#)
- ▶ [Energy Savings Performance Contracting](#)
- ▶ [Implement Energy Management Information Systems](#)
- ▶ [Outdoor Lighting Toolkit](#)



An online tool that helps private and public sector organizations find financing solutions for energy efficiency projects.

- ▶ More than 6,400 users have visited the site since its initial launch in December 2016.
- ▶ More than 40 organizations are now using it as an educational tool.
- ▶ The tool was developed in consultation with Financial Allies, program affiliates, and other industry leaders.



High impact technologies (HITs) are cost-effective, underutilized energy-efficient building technologies.

- ▶ [HIT Catalyst](#): Identifies promising technologies, evaluates national energy and cost savings potential, and validates performance and integration within commercial buildings.
- ▶ [HIT List](#): Based on the evaluation of almost 500 building technologies, DOE initiates research and development activities for these technologies with support from Federal leaders, regional non-profits, and utilities.
- ▶ [HIT HQ](#): A one-stop shop for information associated with field research on emerging technologies.



Experts share lessons and best practices in energy efficiency, and participants have the opportunity to ask questions and discuss strategies with their peers. In 2017, over 1,800 people participated in webinars covering these topics and more:

- ▶ [Resiliency Strategies for Commercial Buildings and Communities](#)
- ▶ [Energy Efficiency Potential of Small Data Centers](#)
- ▶ [New Tools for Leased Space Energy Efficiency](#)
- ▶ [3rd-Party Financing for Efficiency and Renewables](#)



The 50001 Ready Navigator is an online application that provides step-by-step guidance for implementing and maintaining an energy management system in conformance with the ISO 50001 Energy Management System Standard. The Navigator supports DOE's 50001 Ready program, which offers:

- ▶ A self-paced approach for any facility to implement an energy management system without certification.
- ▶ Guidance to identify and analyze facility-wide energy use and to develop action plans around energy performance improvements.
- ▶ DOE recognition for U.S. facilities that self-attest to completion of the 50001 Ready Navigator steps.

Treating and distributing water is an energy-intensive process—by some estimates, 4% or more of the nation’s energy consumption is attributable to water-related purposes. Better Buildings partners are working to reduce the energy requirements of the nation’s water infrastructure in two ways. First, more than 40 organizations across sectors have set goals to improve water efficiency by at least 20%, complementing their energy savings efforts. Second, through the Better Buildings Challenge, Better Plants, and the Sustainable Wastewater Infrastructure of the Future Accelerator, DOE is working with dozens of water and wastewater treatment agencies to improve the energy efficiency of their operations by 20–30%. Together, these agencies represent more than 100 plants that provide clean water services to close to 15% of the nation’s population.



Partners with Greatest Water Savings

Savings Since Baseline Year

Shari's Café & Pies*	37%
Staples*	35%
Anthem, Inc.*	31%
United Technologies Corporation (UTC)	19%
Alachua County Public Schools, FL	19%
Tenderloin Neighborhood Development Corporation	17%
Atlanta, GA*	15%
Intuit	13%
State of North Carolina	13%
Hillsboro, OR	11%

*Water goal achiever

Accomplishments and Partner Solutions

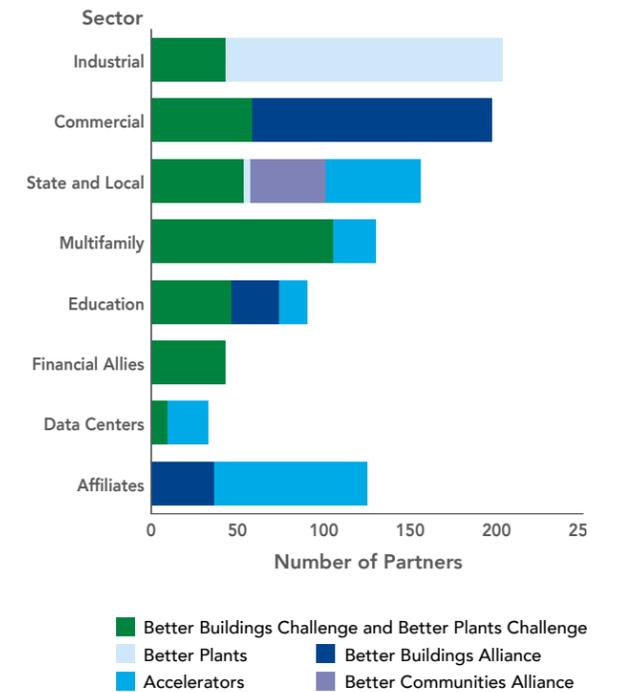
- ▶ **Expedited Financing Through State and Local Partnerships:** Orange Water and Sewer Authority partnered with the University of North Carolina Environmental Finance Center and state regulatory bodies to apply for a 20-year, \$6.5 million no-interest loan that paid for major infrastructure improvement and energy efficiency projects. These projects led to a 40% reduction in energy intensity and more than \$300,000 in energy bill savings.
- ▶ **Applying Energy Management Best Practices to Water Monitoring:** The Tower Companies borrowed lessons from its energy management program to greatly strengthen its water efficiency efforts. The company established a comprehensive water management program, which includes daily water consumption reporting, real-time alerts, advanced data analytics, setpoint modifications, and internal water audits.
- ▶ **Energy Data Management Manual for the Wastewater Treatment Sector:** Developed by DOE and its partners, this guide describes the benefits of energy data management, explains how it can help drive savings when linked to a strong energy management program, and provides clear, step-by-step guidance to wastewater treatment plants on how to best track energy performance.
- ▶ **Recycling Water Using Advanced Filter Strategies:** Nissan North America has implemented an innovative water reuse project, which has cut water use at its Smyrna, TN, vehicle assembly plant by about 10%. The project relies on an advanced filtration system to clean and reuse rinse water from the plant’s paint process, resulting in about \$300,000 in water cost savings.
- ▶ **Plant Water Profiler:** This new tool was developed to help industrial facility managers gather water data and identify savings opportunities.

While diverse in their make-ups, missions, and business models, Better Buildings partners in every sector share the challenge of finding new ways to increase energy efficiency and cut costs. For many partners, readily available savings from measures like lighting upgrades have already been captured, and so leaders in every sector are going further by finding new strategies to achieve deep energy savings. Some are even finding ways to approach net zero energy in key facilities by using advanced technologies and refined data management techniques.

Partners benefit greatly from networking with peers and sharing their solutions to common energy challenges within and between sectors. For example, some are taking steps to improve energy efficiency and integrate renewable energy into their building portfolios as part of a larger focus on resiliency planning. The healthcare and state and local government sectors, in particular, are sharing forward-thinking strategies for ensuring their ability to provide essential services in the case of extreme weather events that could compromise energy availability.

Explore the spotlights on the following pages to learn more about the innovative approaches being taken by program partners in each of the sectors they represent. Their leadership is shaping markets and proving the many ways energy efficiency is cutting costs and making a difference in the lives of everyday Americans.

Better Buildings Partners Connected Across the Marketplace



Better Buildings Partners Are



Manufacturing is a major hub of economic activity in the United States, accounting for millions of jobs and about 12% of the nation's gross domestic product.⁴ Improving energy performance thus has a broad impact; savings from reduced operating expenses can be reinvested in technology upgrades and new jobs, leading to a more competitive manufacturing sector. Many manufacturing companies and water and wastewater treatment agencies are seizing on this opportunity by setting ambitious energy-saving goals, taking advantage of tools and training resources, and sharing data and solutions.

Challenge Partners with Greatest Energy Savings

Savings Since Baseline Towards Initial Goal

C. F. Martin & Co., Inc. (Martin Guitar)*	27%
General Motors*	26%
Bucks County Water & Sewer Authority	24%
J.R. Simplot - Food Group	24%
Johnson Controls*	24%
Ford Motor Company	20%
General Mills	15%
Solberg Manufacturing Inc.	14%

*Goal achiever

Challenge Partners that met the 25% Goal and Re-Pledged

Savings Since Baseline Towards Renewed Goal

Victor Valley Wastewater Reclamation Authority	30%
Celanese Corporation	23%
Legrand	20%
Bentley Mills	19%
Volvo Group North America	14%
TE Connectivity	13%
Lennox International	11%

"3M's partnership with the U.S. Department of Energy has helped our company improve its energy performance, reduce the impact of energy use on the environment, and reduce our energy costs. As a Challenge Partner in the Better Buildings, Better Plants program, we have been able to utilize the tools and resources available from the Department of Energy and learn best practices in energy management from peer companies."

— Steve Schultz, Corporate Energy Manager, 3M



196
UNIQUE
SECTOR
PARTNERS

42
CHALLENGE
PARTNERS

154
BETTER PLANTS
PARTNERS

2,900 FACILITIES

\$4.2 BILLION SAVED SINCE 2009

MORE THAN 45 CHALLENGE AND PROGRAM LEVEL GOAL ACHIEVERS

Leadership in Action

- ▶ **Nissan North America** completed the 50001 Ready process at three of its facilities across the United States using the online 50001 Ready Navigator to maintain and build on its energy management system and self-attest to the structure of ISO 50001. The energy management system it is maintaining through this process will help it make progress on a new corporate-wide energy reduction pledge it made after meeting its first goal. Nissan has also taken advantage of the Diagnostic Equipment Program, borrowing tools twice to assess compressed air systems.
- ▶ **Owens Corning** participated in the Technology Days at Oak Ridge National Lab in 2017. Talking to researchers and seeing technology innovation in action first hand catalyzed Owens Corning to partner with the Lab on a collaborative R&D project that could bring significant energy savings to their facilities.
- ▶ **Des Moines Water Works** became a Challenge partner, having already made significant energy efficiency progress since joining the Better Plants program in early 2016. In 2017, it became the first partner from the water/wastewater treatment sector to achieve Superior Energy Performance certification, showing that the ISO 50001 approach toward energy management is applicable beyond mainstream manufacturing.
- ▶ **TE Connectivity** added energy treasure hunts to its Center of Excellence, an internal, online platform that enables all of its 58 U.S. plants to access best practices and ready-to-deploy projects to enable successful replication. Using the knowledge gained from hosting a Treasure Hunt Exchange In-Plant Training, TE Connectivity employees conducted nine energy treasure hunts at other plants within the following year, identifying \$1.1M in aggregate energy cost savings. These efforts helped TE Connectivity win the corporate award at the 2018 Industrial Energy Technologies Conference.
- ▶ **Victor Valley Wastewater Reclamation Authority** implemented a 1.6 MW CHP project fueled by on-site produced biogas that has achieved \$473,000 in annual energy cost savings, becoming one of five partners that received a 2017 Better Project Award for outstanding accomplishments at individual facilities.
- ▶ **Saint-Gobain** created an internal awards program called WWE (Water, Waste, Energy) to inspire competition among more than 120 manufacturing sites to reduce environmental impacts, joining five other partners in winning a 2017 Better Practice Award for outstanding accomplishments in implementing and promoting the practices, principles, and procedures of energy management in industry.

Sector Accomplishments

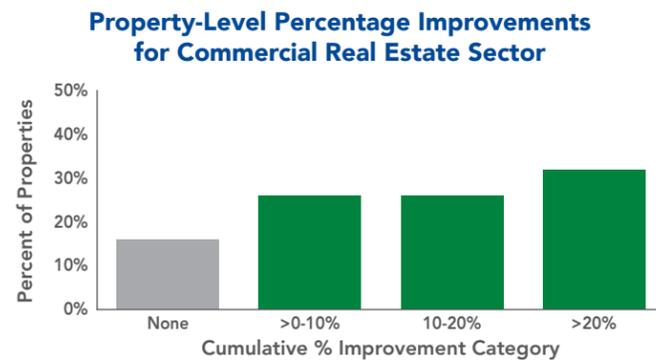
- ▶ **New In-Plant Trainings** on 50001 Ready (Energy Management) and industrial refrigeration are now available. The first new training features the 50001 Ready Navigator online tool and practical exercises designed to understand how to apply the structure of ISO 50001. The refrigeration training addresses industrial, ammonia-based refrigeration systems and provides best practices and strategies to optimize energy performance. Also, the **Treasure Hunt Exchange Toolkit**—a compendium of tip sheets, calculators, data collection guidance, and opportunity registers—is now available online.
- ▶ Pumping and process heating **system software tools** were updated; these tools can be used by professional auditors and manufacturing employees to assess and monitor the energy performance of industrial pumping and process heating systems.
- ▶ Industrial partners are bolstering **technology validation** through two days of tours, panels, and networking at this year's Technology Days at NREL and the establishment of a technology working group on industrial steam systems in which partners can share results of steam/boiler optimization efforts.
- ▶ Partners are benefiting from helpful new **tip cards and posters**. The wallet-sized cards include succinct, actionable information that can be applied by all employees in manufacturing. Posters were also produced for partners to display in their facilities to highlight their energy efficiency leadership.

The U.S. office market encompasses more than 15 billion square feet of floor space and incurs more than \$30 billion in energy costs every year, which means that cost-effective upgrades can yield big savings for both tenants and landlords.⁵ A tenant that spends \$5,900 more on energy efficiency equipment when building out their space, for example, can expect to save nearly \$160,000 in utility costs over a five-year lease on a typical 100,000 square foot property.⁶ Sector leaders are going even further, by installing energy management and information systems with sensors and controls to support occupant comfort, as well as testing the increased benefits of combining energy storage and renewable energy with energy efficiency strategies.

Challenge Partners with Greatest Energy Savings
Savings Since Baseline Year

The Hartford Financial Services Group, Inc.*	35%
Lendlease*	34%
The Tower Companies*	25%
DWS*	22%
Anthem, Inc.	22%
Columbia Association	21%
Shorenstein Properties, LLC*	20%
TH Real Estate (TIAA)	14%

*Goal achiever



“LaSalle Investment Management garners tremendous value from networking with industry leaders and using the tools and resources developed to overcome the barriers to greater adoption of energy efficiency, along with best practices to improve the financial performance of our properties.”

— Eric Duchon, Director, Global Head of Sustainability, LaSalle Investment Management



71
UNIQUE
SECTOR
PARTNERS

18
CHALLENGE
PARTNERS

53
ALLIANCE
PARTNERS

6.6 BILLION SQUARE FEET

18 TRILLION BTU ENERGY SAVINGS SINCE 2011

\$177 MILLION SAVED SINCE 2011

Leadership in Action

- ▶ **LBA Realty** upgraded the central plant at Park Place and installed a 1.3-MW intelligent energy storage system, reducing energy use by 25% and resulting in annual savings of \$490,000.
- ▶ **Anthem** installed a drip irrigation system to save more than 14.4 million gallons of water per year and replaced lawn space with resilient plants, contributing to a 46% reduction in water intensity. Anthem also became the first commercial real estate partner in the Better Buildings Challenge to achieve both energy and water reduction goals portfolio-wide.
- ▶ **Kimco Realty Corporation** installed new lighting and controls across nearly 90 million square feet of parking facilities to achieve a 40% reduction in energy use and save \$1.6 million, earning three awards from the LEEP Campaign.
- ▶ The **MC Realty Group's** D.A. Morr Transfer Building lighting retrofit achieved over 80% energy savings at its 114,000 square foot parking facility in Kansas City, MO, earning one of the two LEEP awards it received this year.
- ▶ **Columbia Association** achieved over 60% and over 70% reductions in energy costs at its Sports Park and Kahler Hall respectively, contributing to a total portfolio savings of more than 20% since its 2012 baseline. These projects earned ILC awards and helped Columbia Association achieve its portfolio-wide energy goal.
- ▶ **CBRE** in partnership with **Sprint** received recognition from the SEA Campaign for the Sprint headquarters building, acknowledging their best practice efforts to save energy through honing their energy management information systems processes to maximize the benefits of their fault detection and diagnostics software.
- ▶ **The Tower Companies** is among a number of partners taking action to address issues around the connection between energy efficiency, health, and wellness in the workplace, finding ways to improve both health and productivity among the American workforce and was recently named a Fitwel Champion for their leadership.
- ▶ **Colliers International, Principal Real Estate Investors,** and **TH Real Estate** collaborated with Lawrence Berkeley National Lab to conduct research on the energy and financial performance of commercial buildings, paving the way for better data access, research protocols, and actionable insights for the industry.
- ▶ **The Hartford Financial Services Group** installed a suite of interior and parking lighting upgrades at its corporate headquarters, achieving a nearly 45% reduction in annual energy use and earning awards for LEEP and ILC.

Sector Accomplishments

- ▶ **Enhanced the Green Lease Leaders program**, which now offers two-tiered recognition and new resources to help participants from the CRE sector and other sectors identify, document, and improve green leasing practices.
- ▶ **Piloted new methods** to assess mortgage default risk with three commercial lenders, demonstrating the impact of energy use and price on commercial mortgages and helping to inform the development of best practices protocols to mitigate risks.
- ▶ **Developed an online continuing education course** to provide commercial appraisers with the knowledge needed to accurately weigh energy performance during the valuation of commercial buildings.
- ▶ **Facilitated a two-day workshop** in partnership with the National Apartment Association to share energy efficiency strategies for market rate multifamily owners and managers.
- ▶ **Created a revolving loan fund guidance document** tailored to the commercial real estate sector that highlights the potential to use revolving loan funds to establish replenishing sources of capital for continued energy savings solutions.

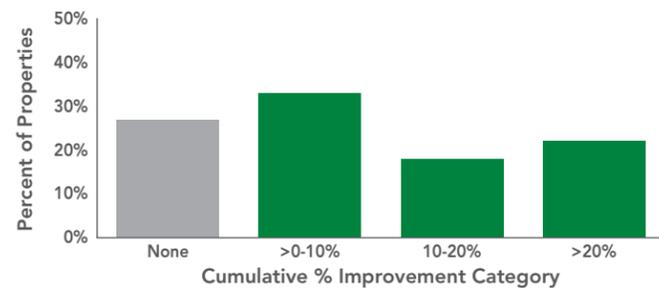
Healthcare facilities spend more than \$9.7 billion on energy annually and are one of the most energy-intensive building types.⁷ By reducing energy use while maintaining patient comfort standards, partners are saving money and improving the quality of patient care through energy-efficient technologies and operational efficiency policies, as well as with creative energy project funding like green revolving funds and partnerships with local utilities. Workforce development has also become an increasing priority in health systems seeking to improve technical expertise while simultaneously encouraging new professionals in the facilities management field. The activities of healthcare sector leaders are providing best practices that hospitals nationwide can replicate in energy management plans.

Challenge Partners with Greatest Energy Savings
Savings Since Baseline Year

UW Health*	24%
Cleveland Clinic	17%
NewYork-Presbyterian Hospital	13%
University of Maryland Medical Center	12%
University of Pittsburgh Medical Center (UPMC)	11%
University of Nebraska Medical Center (UNMC)	11%
Montefiore Medical Center	9%

*Goal achiever

Property-Level Percentage Improvements for the Healthcare Sector



"Kaiser Permanente is proud of the progress we're making toward climate resilience by reducing our dependency on traditional grid power and increasing our onsite clean energy production and storage through the installation of solar generation, fuel cells and battery storage. Our goal is to lead by example, reduce our contribution to climate change, and ultimately improve the health of the communities we serve."

— Ramé Hemstreet, Vice President of Operations and Chief Sustainable Resources Officer, Kaiser Permanente



42
UNIQUE
SECTOR
PARTNERS

9
CHALLENGE
PARTNERS

33
ALLIANCE
PARTNERS

490 MILLION SQUARE FEET

12 TRILLION BTU ENERGY SAVINGS SINCE 2011

\$119 MILLION SAVED SINCE 2011

Leadership in Action

- ▶ **Legacy Health** enrolled in Energy Trust of Oregon’s commercial Strategic Energy Management Initiative to establish a culture around energy savings at its facilities. Within three years after enrollment, the health system saved 3.5 million total kWh annually and nearly \$350,000 in energy costs through operations and maintenance improvements including building scheduling, system tuning, device calibration, and system repair.
- ▶ **UW Health** reduced energy consumption by more than 25% annually at University Hospital, one of the largest facilities in the campus portfolio through its partnership with Wisconsin’s Focus on Energy Retro-commissioning program and third-party engineering firm Sustainable Engineering Group (SEG). SEG implemented low-cost measures resulting in a payback of less than one year for the entire project.
- ▶ **DaVita** reduced water usage by 25% per dialysis treatment by optimizing water producing systems and using utility variance report to identify clinics with higher than average water usage resulting in 5 million gallons of water saved.
- ▶ **Cleveland Clinic** conducted a major lighting upgrade at the six-building research center by replacing fluorescent lamps with LEDs in 27,000 ceiling troffers, saving 4.8 million kWh a year and earning recognition from the ILC Campaign.
- ▶ **Welltower** achieved nearly 60% average energy savings across 17 sites after replacing metal halides with LED fixtures, receiving recognition from the LEEP Campaign. It was also the first healthcare company to be recognized by the Green Lease Leaders Program for its integration of energy efficiency and sustainability clauses into its leases leading to increased accessibility to tenant utility data.
- ▶ **Cleveland Clinic** and **University of Nebraska Medical Center (UNMC)** are both on track to meet their energy reduction goals, and have set additional goals of becoming net zero and carbon neutral by 2030 through the integration of on- and off-site renewable energy.
- ▶ **Hackensack Meridian Health** attained \$400,000 annual savings in central utility operating costs after partnering with utiliVisor Energy Plant services to implement a real-time web-based metering and monitoring system in the plant that oversees, analyzes, and reports on the facility’s HVAC systems and utility management.
- ▶ The **State of Missouri** is supporting critical facilities like hospitals to become more resilient and efficient by integrating CHP. The state recently hosted the Eastern Missouri CHP Summit for Resiliency and is working with DOE to determine CHP project feasibility.

Sector Accomplishments

- ▶ **Developed a Green Revolving Fund Toolkit** as a hub for relevant resources and solutions that demonstrate how to establish an ongoing funding vehicle to drive energy efficiency and sustainability over time, while generating cost savings and ensuring capital is available for future projects.
- ▶ **Communicated successful funding strategies** to finance sustainability improvement projects in healthcare facilities through case studies and conference presentations.
- ▶ **Supported and shared solutions on workforce development**, such as University of Maryland Medical Center’s Skilled Trades Apprenticeship Program, to overcome the emerging gap in the skilled-trades workforce and technical expertise.
- ▶ **Provided resources on managing water consumption** of commercial equipment through promotion of cross-sector case studies and webinars, and the facilitation of peer-exchanges.
- ▶ **Promoted technology demonstration** opportunities relevant to partners looking to advance the integration of on-site renewable energy through battery storage.

The U.S. hospitality sector, which ranges from luxury resorts to family-owned inns, includes more than 3.3 billion square feet of hotel floor space⁸ nationwide and contributes to nearly 8 million American jobs from hotel operations to guest spending.⁹ Sector leaders are making energy and water efficiency improvements that save money on operating costs without compromising guest comfort; an estimated 50% or more of larger hotels are implementing whole building energy management systems, and nearly 77% of all hotels have adopted water management programs.¹⁰ Some Better Buildings partners are even sharing their successful corporate sustainability approaches with their affiliates and franchised owners. Partners are also finding that energy management practices are most successful when coupled with strategic employee engagement initiatives, which have the additional benefit of further developing American workforce competencies.



16
UNIQUE
SECTOR
PARTNERS

7
CHALLENGE
PARTNERS

9
ALLIANCE
PARTNERS

1 BILLION SQUARE FEET

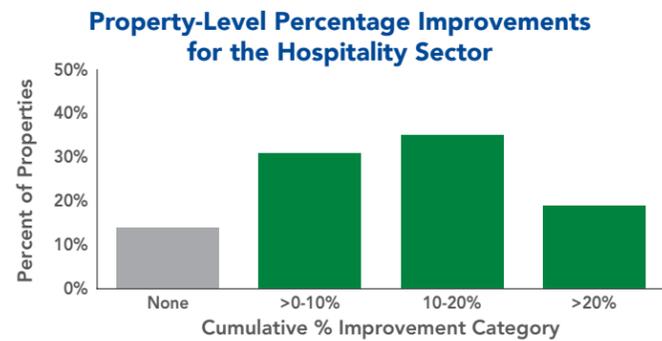
12 TRILLION BTU ENERGY SAVINGS SINCE 2011

\$113 MILLION SAVED SINCE 2011

Challenge Partners with Greatest Energy Savings

Savings Since Baseline Year

Las Vegas Sands Corporation	17%
Wyndham Worldwide	16%
MGM Resorts International	13%
Loews Hotels & Co.	12%
HEI Hotels & Resorts	11%
Saunders Hotel Group	8%



"By providing strategies and tools for hotel owners to make their buildings more energy efficient, we aim to help thousands of hospitality organizations increase their business value and create more jobs. Peer exchange and education is key to market adoption of energy management best practices and by highlighting leadership we are able to set an industry standard for incorporating energy efficient practices into hotel operations."

— Jagruti Panwala, Vice Chairwoman, AAHOA

Leadership in Action

- ▶ **Hilton Worldwide** achieved more than 30% energy savings and \$400,000 annual cost savings at the Hilton Austin Convention Center by upgrading guestroom thermostats, common area lighting, the building automation system, kitchen exhaust hoods, and the on-premise laundry system.
- ▶ **Loews Hotels & Co.** implemented several energy efficiency upgrades at the Loews Vanderbilt Hotel to achieve more than 20% energy savings including updating outdated chillers, installing variable frequency drives on water pumps, replacing ballroom roofing to improve the building's overall R-value, and upgrading all public area lighting to LEDs. The hotel hosted a media event that included a tour of the hotel's efficiency measures and attracted regional and national media coverage.
- ▶ **Saunders Hotel Group** achieved more than 20% energy savings at the Comfort Inn and Suites in Boston, in part by installing a new cogeneration unit that drove significant energy savings. Saunders used utility incentives to fund 20% of the cogeneration unit costs, and the remaining costs had a return on investment of four years. Saunders also replaced lighting throughout the hotel with LEDs, upgraded outdated boilers, and installed a new cooling tower with variable speed motors.
- ▶ **Wyndham Worldwide's** Wyndham Green program provides guidance and resources that help franchise owners reduce operating costs by reducing energy and water, and promotes their successes through green certifications and recognition. Wyndham also facilitates peer-to-peer learning between franchise owners through the Wyndham Hotel Group Green Advisory Board.
- ▶ **Las Vegas Sands** reduced energy consumption by more than 20% at the Venetian and the Palazzo Resorts, one of the largest combined hotel properties in the world, while maintaining or improving guest comfort. Energy savings were realized by incorporating energy efficiency equipment in guestroom renovations, upgrading exhibit hall lighting and controls, and undergoing a chiller plant optimization project. Sands also installed a nanofiltration system for groundwater reuse, and replaced all sand filtration with a glass filtration media, saving approximately 25 million gallons of water annually.
- ▶ **MGM Resorts International** installed fault detection and diagnostics software across 40 million square feet. The use of advanced building analytics contributes to growing the organization's energy management culture by creating actionable reporting on building performance, and helps MGM stay on track to meet its portfolio-wide energy reduction commitment.

Sector Accomplishments

- ▶ **Provided tools for engaging franchisees** in corporate sustainability programs, including a **hospitality factsheet** of DOE resources that hospitality brand partners can offer to franchise-owners internally in an effort to encourage more efficient hotel operations in franchised properties.
- ▶ **Developed a technology pilot forum** for Better Buildings hospitality partners to exchange experiences in evaluating and implementing emerging technologies. Participating partners will have access to a map of regional pilot projects and an opportunity to engage in a virtual discussion on best practices in technology verification.
- ▶ **Partnered with the Asian American Hotel Owners Association (AAHOA)** to encourage adoption of energy-saving solutions among 15,000 members, meeting with hotel owners at the annual **AAHOA Convention** and sharing proven strategies and solutions from Better Buildings partners through **AAHOA's educational webinar series**.
- ▶ **Promoted adoption of energy data management best practices** across the sector by sharing strategies from hotel owners on the Better Buildings Webinar Series, encouraging the use of Smart Energy Analytics Campaign tools and resources, and highlighting internal solutions to monitoring portfolio-wide operational performance through the Loews Score Card case study.

The retail, food service, and grocery (RFSG) sector is diverse, with building types ranging from storefronts and warehouses to supermarkets and fast food restaurants. With a cumulative energy bill of \$41 billion a year,¹¹ the sector also faces a range of energy challenges, from energy-intensive refrigeration in supermarkets to radically shifting customer expectations and shopping habits. Sector leaders are meeting these challenges by installing the latest advanced refrigeration technologies, building or retrofitting highly efficient (or even zero energy) distribution and fulfillment centers, and more. Program partners are also collaborating in the face of another common challenge: filling good-paying green collar jobs designing, installing and maintaining complex HVAC and refrigeration, and energy management systems.



68
UNIQUE
SECTOR
PARTNERS

24
CHALLENGE
PARTNERS

44
ALLIANCE
PARTNERS

2.7 BILLION SQUARE FEET

139 TRILLION BTU ENERGY SAVINGS SINCE 2011

\$1.3 BILLION SAVED SINCE 2011

Challenge Partners with Greatest Energy Savings

Savings Since Baseline Year

Best Buy*	33%
Havertys*	28%
Macy's*	20%
Kohl's Department Stores	19%
Whole Foods Market	13%
The Wendco Group	13%
Carlisle Corporation	13%
The Wendy's Company	12%
Wendium of Florida, Inc.	12%
Staples	12%
Life Time Fitness	10%
Shari's Café & Pies	10%
Walmart	9%

*Goal achiever

"At Target, we are integrating sustainable practices across our business – from operating energy-efficient spaces, to using our resources responsibly. Better Buildings gives us a forum to network across our industry and exchange ideas for how to do that even better. Through those connections, we're strengthening ongoing relationships and tackling shared energy challenges in ways that help us meet our goals."

— John Leisen, VP Property Management, Target Corporation

Leadership in Action

- ▶ **Shari's Café and Pies** upgraded interior and exterior lights to LED, replaced energy and water intensive dipperwells with more efficient models, and installed a smart irrigation system at the Lynnwood, Washington location, achieving nearly 30% energy savings and over 40% water savings. This effort contributed to portfolio-wide water savings of more than 35%, surpassing the company's water goal.
- ▶ **Staples** replaced 10,500 fluorescent lamps with LEDs and installed occupancy sensors in 810 offices at their corporate headquarters, reducing energy consumption by 1 million kWh annually, or more than 60% compared to the existing usage, and earning an award from the ILC.
- ▶ **Ulta** made changes to its standard lease and fit out requirements, updating policies and practices to better align the costs and benefits of energy and water efficiency investments for both building owners and tenants.
- ▶ **Target** completed over 350 troffer lighting projects to save a combined 102 million kWh annually, achieving a nearly 45% reduction in energy usage compared to the new construction baseline and earning recognition from ILC.
- ▶ **Sprint** enhanced its energy management information processes and maximized the benefits of its fault detection and diagnostics software at its 20-building headquarters campus through a partnership with CBRE|ESI, saving over \$430,000 in energy costs in 2016.
- ▶ **The Wendy's Company** has continued to engage with many of its franchisees, with nearly 1,200 franchised restaurants committed to the Challenge to date. Wendy's is also demonstrating leadership at its Restaurant Support Center, by saving more than 25% by upgrading LED lighting, replacing chillers, and performing retro-commissioning.
- ▶ **Walgreens** replaced nearly 4,000 RTUs with high-efficiency units and completed RTU control retrofits, resulting in over 35 million kWh annual savings and receiving recognition from ARC.
- ▶ The **Retail Industry Leaders Association (RILA)**, a Better Buildings affiliate, is helping sector partners overcome barriers to enhanced energy performance through their Retail Energy Management Program, working with **Best Buy**, **Food Lion**, and **The Home Depot** to share their best practices for energy savings.

Sector Accomplishments

- ▶ Sector organizations are actively participating in seven different **technology field validations**, the results of which will be developed into case studies and shared with the market. These efforts include solar load optimization, high efficiency refrigeration system motors, CO₂ refrigeration for new construction, and data-driven receptacle controls.
- ▶ Sector partners contributed **real-world data and results** on their use of automatic fault detection and diagnostics systems, sharing their experience with this emerging technology through a fault detection and diagnostics field study.
- ▶ RFSG partners began to address the **skills gap and aging workforce** for HVAC and refrigeration technicians by contributing to an inventory of existing organizations and activities, supporting the development of a technician career infographic, and sharing their own best practices included in a workforce resource page on the Solution Center.
- ▶ **Engaged on advanced refrigeration** with the North American Sustainable Refrigeration Council and National Renewable Energy Laboratory, leading to the development of a toolkit containing case studies for energy savings from advanced refrigeration technologies.

K-12 schools and higher education institutions spend a combined \$14 billion on utility costs annually. The education sector continues to balance aging facilities with deferred maintenance challenges, rising utility costs, limited budgets, workforce retention concerns, and an increasing demand for technology in the classroom. To address these challenges, schools are focusing on resiliency preparedness, leveraging creative funding mechanisms, implementing measures to reduce plug loads, and developing workforce skills and training programs to prepare the next generation of energy professionals.

Challenge Partners with Greatest Energy Savings

Savings Since Baseline Year

Poudre School District, CO*	32%
University of California, Irvine*	27%
Mesa County Valley School District, CO	26%
Chesapeake College*	25%
River Trails School District 26, IL*	25%
Xenia Community Schools, OH	23%
Camas School District, WA*	20%
Allegheny College	19%
Towson University*	19%
Sewanee: The University of the South	18%
Bullitt County Public Schools, KY	18%
Hillsboro School District, OR	16%
Fairfax County Public Schools, VA	16%
Madison City Schools, AL	15%

*Goal achiever

"LAUSD is working to create the next generation of energy leaders by providing workforce development skills to high school students. We appreciate the role Better Buildings plays in helping us extend the impact of our district's commitment to the local community."

— Christos Chrysiliou, Director of Architectural & Engineering Services, Los Angeles Unified School District

"We are pursuing zero net energy buildings because they make sense: reducing costs and saving taxpayer total cost-of-ownership dollars, while creating state-of-the-art living laboratory opportunities for our students and external partners."

— J.B. Messer, Chief Facilities Officer, Community College of Allegheny County



Leadership in Action

K-12 SCHOOLS

- **Fairfax County Public Schools, VA, Parkway School District, MO,** and Discovery Elementary School of **Arlington County Public Schools, VA,** earned the U.S. Department of Education's Green Ribbon Schools Award for comprehensive energy efficiency operating practices, improved occupant health, and effective STEM education.
- **Horry County Schools, SC,** implemented a 10-year facilities strategic plan to accommodate an increasing student population while emphasizing green design, energy reduction systems, and STEM education. The district designed five new schools targeting zero energy operation.
- **River Trails School District, IL,** set a new energy reduction goal having previously achieved its 20% goal. The district is meeting this new goal by upgrading HVAC controls and retro-commissioning its schools.
- **Portland Public Schools, OR,** expects to reduce energy use by more than 45% and energy costs by more than 40% at the Marysville Elementary School, also lowering maintenance costs and helping to optimize the learning environment for students.
- **San Francisco Unified School District, CA,** has set a zero energy ready target for new schools using the energy use intensity guidance in the Technical Feasibility Study for Zero Energy K-12 Schools.

HIGHER EDUCATION

- **Arizona State University** implemented high efficiency building envelope design and smart lighting with daylight harvesting at its Student Pavilion, which is expected to reduce energy use by more than 50%. Zero energy will soon be achieved through a 200 kW solar PV array.
- The **Community College of Allegheny County** released a Net Zero RFQ for its Workforce Development & Training Center, which will provide needed space on campus without increasing overall energy load.
- **The University of the South's** Jessie Ball duPont Library installed comprehensive HVAC, sensor, and control upgrades to reduce energy consumption by nearly 35%, while improving humidity control for books and sensitive materials. The project has contributed to 18% portfolio energy savings since 2013.
- **Emory University** added fault detection and diagnostics programming to its building automation system, contributing to a reduction in annual energy costs of over \$2.5 million.
- **University of California, Davis,** developed and implemented two energy information system dashboards across 100 campus buildings, along with a web-based engagement tool that has allowed over 6,200 users to flag comfort conditions on a 5-point scale from hot to cold.

88
UNIQUE
SECTOR
PARTNERS

46
CHALLENGE
PARTNERS

28
ALLIANCE
PARTNERS

19
ACCELERATOR
PARTNERS

600 MILLION SQUARE FEET

14 TRILLION BTU ENERGY SAVINGS SINCE 2011

\$135 MILLION SAVED SINCE 2011

Sector Accomplishments:

K-12 SCHOOLS

- Local school districts were connected to experts and tools, like the Better Buildings Financing Navigator, to **identify creative financing mechanisms.** In addition, transportation experts advised partners on resources, case studies, and funding sources for the conversion of school buses to use alternative fuels.
- Five K-12 school districts highlighted different financing models for the **installation of on-site solar** PV at school facilities in Facility Executive magazine including feed in tariff, lease, power purchase agreements, and owner/operator models.
- **Published advanced energy design guidelines** for K-12 zero energy schools.

HIGHER EDUCATION

- The **Better Buildings Smart Labs Accelerator's day-long workshop** at UC Irvine featured proven solutions that are publicly available for **cutting laboratory energy use** by over 50%.
- Sector partners contributed to a **laboratory efficiency toolkit** available on the Solution Center, bringing together case studies, guides, tech specs, and more providing guidance for reducing energy consumption in laboratories.

The 50 state and 77,000 local governments across the country own 18 billion square feet of building space that consumes trillions of kBtus annually.^{12, 13} With a 20% improvement in energy performance, these buildings could save \$6 billion annually.¹⁴ Working towards this goal, state and local governments are advancing lead-by-example programs, launching voluntary building challenges, and adopting benchmarking ordinances to drive cost-effective solutions that enhance energy performance, save taxpayer dollars, and increase competitiveness. In conjunction with energy planning, these governments are also pursuing resiliency strategies that strengthen infrastructure, grid reliability, and overall community preparedness.

Challenge Partners with Greatest Energy Savings

Savings Since Baseline Year

Hillsboro, OR*	26%
State of Maryland*	23%
State of Delaware*	22%
State of North Carolina*	21%
Atlanta, GA	19%
Boston, MA	18%
King County, WA	18%
Commonwealth of Massachusetts	15%
Margate, FL	15%
Cook County, IL	14%
Arlington County, VA	13%
State of Minnesota	12%
Knoxville, TN	12%

*Goal achiever

"Through the Better Buildings Challenge, we're working to rebuild Milwaukee from the inside out. With energy efficiency projects, our historic existing buildings can save money, create local jobs, and contribute to a more vibrant community."

— Tom Barrett, Mayor, Milwaukee, WI

"Energy efficiency is the cheapest, cleanest and most reliable form of energy. It also means economic opportunity, with a recent clean energy jobs survey finding that nearly 50,000 Minnesota jobs are tied to the energy efficiency sector."

— Bill Grant, Deputy Commissioner of the Minnesota Department of Commerce's Division of Energy Resources.



121

UNIQUE SECTOR PARTNERS

53
CHALLENGE PARTNERS

44
COMMUNITIES ALLIANCE PARTNERS

55
ACCELERATOR PARTNERS

890 MILLION SQUARE FEET

67 TRILLION BTU ENERGY SAVINGS SINCE 2011

\$647 MILLION SAVED SINCE 2011

Leadership in Action

- ▶ The **State of Connecticut** implemented its first energy savings performance contract at CT Valley Hospital, featuring guaranteed energy and maintenance savings of nearly \$32 million over 15 years, and expected energy savings of 35%.
- ▶ The **Maryland Energy Administration** committed \$500,000 to innovative energy efficiency measures in data centers of at least 2,000 square feet as part of its second annual Data Center Energy Efficiency Grants Program.
- ▶ **Hillsboro, OR**, established a new goal to achieve an additional 20% in energy savings by 2025 after saving 26% since 2009. The city also formed a High-Performance Building Partnership for New Development that encourages above-code construction and will save homeowners millions of dollars in energy costs.
- ▶ **Orlando, FL**, is expecting 25% savings at the Amway Center, home to the Orlando Magic of the NBA and the Orlando Solar Bears of the ECHL, following HVAC and LED upgrades to performance and non-sports lighting.
- ▶ **Cattanooga, TN**, and the **State of Missouri** are developing on-bill solutions that make energy efficiency more accessible to low income households.
- ▶ The **Milwaukee, WI**, Better Buildings Challenge program continues to grow, driven by the city's three-pronged Business and Community Engagement Strategy. To date, more than 100 participants have joined and identified over \$1.6 million in annual savings covering approximately 10.2 million square feet.
- ▶ The **Commonwealth of Massachusetts'** Lead by Example program has increased solar photovoltaic installations to 21MW, reduced fuel oil by 79%, and constructed over 70 LEED-certified buildings at state facilities, contributing to a 15% reduction in energy use intensity in 2017 from a 2009 baseline.
- ▶ **King County, WA**, completed a deep energy retrofit of its Airport Terminal, with energy savings of nearly 70% from installation of highly efficient technologies for heating, ventilation, and lighting.
- ▶ The **State of New York** and the **State of Illinois** are pioneering use of cost effective solar energy measures for multifamily units in the Weatherization Assistance Program.
- ▶ **Chula Vista, CA**, has conducted close to 6,000 free energy and water evaluations for local businesses by linking the evaluations with the city's business license process, increasing awareness of efficiency opportunities and supportive programs.

Sector Accomplishments:

Nearly 30 states are participating in one or more of nine active Better Buildings accelerators, including Sustainable Wastewater Infrastructure of the Future, Combined Heat and Power for Resiliency, and Clean Energy for Low Income Communities. These states are driving outcomes such as:

- ▶ Developing a statewide multi-agency approach to energy efficiency financing for low to moderate income households, including on-bill solutions.
- ▶ Developing a statewide combined heat and power program targeting hospitals.
- ▶ Adopting innovative and best-practice approaches in data management, technologies, and financing for wastewater infrastructure improvement.

Three local government partners—New Orleans, Orlando, and Reno—**launched voluntary private building and community engagement programs** in the past year, leveraging lessons learned and best practices from five partners with existing programs. Since the fall of 2016, five local government partners—Denver, Los Angeles, Orlando, Pittsburgh, and Salt Lake City—passed benchmarking and transparency ordinances for their communities, joining six local government partners with existing ordinances.

There are more than 18 million market-rate and affordable multifamily housing units in the U.S., with a collective potential of over \$3 billion in cost-effective energy savings.¹⁵ Sector leaders are working to capture these savings through an array of approaches, including energy efficiency retrofits, renewable energy installations, organizational change, resident outreach, and operations and maintenance. The opportunities for energy savings in multifamily rental housing is particularly significant, because the energy expenditures per square foot in these homes are 37% higher than in owner-occupied multifamily homes and 76% higher than in owner-occupied single family homes.¹⁶

Challenge Partners with Greatest Energy Savings

Savings Since Baseline Year

Jersey City, NJ Housing Authority*	26%
Jewish Community Housing for the Elderly*	24%
Cambridge, MA Housing Authority	18%
Trinity Housing Corporation of Greeley, CO	18%
The Renaissance Collaborative	17%
Atlanta Housing Authority	17%
Danville Development	15%
The Housing Authority of the City and County of Denver	13%
Minneapolis Public Housing Authority	12%
Cascap, Inc.	12%

*Goal achiever

Sector Accomplishments

- ▶ In June 2017 the multifamily sector **completed its "Year of Data" drive**, ultimately publishing over 300 million square feet of whole-property data in partner data displays and helping more than 70 partners gain a better understanding of their properties' energy consumption and costs.
- ▶ Twenty-three public housing authority Better Buildings Challenge partners collectively **invested more than \$632 million in energy efficiency upgrades** through the U.S. Department of Housing and Urban Development's Energy Performance Contracting program. These projects typically provide 15% to 20% energy savings and require no upfront funding.

128

UNIQUE SECTOR PARTNERS

105
CHALLENGE PARTNERS

25
ACCELERATOR PARTNERS

625 MILLION SQUARE FEET

10 TRILLION BTU ENERGY SAVINGS SINCE 2011

\$95 MILLION SAVED SINCE 2011

Leadership in Action

- ▶ **Keene Housing's** West Street Pilot Project achieved energy consumption savings of nearly 40% and energy cost savings of 25% by replacing older electric heating with high efficiency mini-split air-source heat pumps. Keene will be expanding the pilot to additional properties.
- ▶ **King County Housing Authority** achieved over 20% energy consumption savings and nearly 25% water consumption savings at Cascade Apartments through the installation of ductless heat pumps and upgrades to insulation, windows, light bulbs, and plumbing fixtures.
- ▶ The **New York City Housing Authority** is implementing paid-from-savings retrofits across its housing stock on a scale never seen before, through the U.S. Department of Housing and Urban Development's Energy Performance Contracting program. A featured upgrade of these retrofits—heating control modernization in steam-heated buildings—will eliminate overheating and deliver expected savings of 18% across 147 housing developments.
- ▶ **Wishrock Investment Group** realized 20% energy consumption savings with the rehabilitation of Timbercroft Apartments. The project earned Enterprise Green Communities certification through upgrades to the HVAC systems, water heaters, lighting, appliances, windows, walls, and roofing.
- ▶ **Boston Land Company** upgraded a 200-year old property as a Low-Income Energy Affordability Network project, installing a high efficiency gas-fired boiler and indirect water heater system at the property.

Americans spend about a third of their income on their homes, yet most do not invest in energy efficiency improvements that would save them money and make their homes more comfortable and valuable.¹⁷ Improving access to reliable energy information and qualified home energy contractors are both key to addressing this paradox. The National Association of REALTORS® reports that over 70% of agents and brokers think energy efficiency promotion in listings is valuable.¹⁸ To that end, Better Buildings partners are increasing the availability of reliable information on a home's expected energy use at time of sale. Through in-home assessments, Home Energy Score Assessors provide nationally standardized "miles-per-gallon" home scores that are useful to homeowners, homebuyers, and renters.

Home Performance with ENERGY STAR® makes energy efficiency investments easier and improves overall effectiveness of home energy upgrade programs by connecting homeowners with contractors who are qualified to offer solutions that fix comfort problems and reduce energy bills. To share best practices, the Better Buildings Residential Network (BBRN) attracted a record 4,000+ participants in the past year on peer exchange calls with topics ranging from home energy information systems to quality installation.

Leadership in Action

- ▶ **Portland, OR**, launched a program requiring a Home Energy Score when a home is listed on the local multiple listing service (MLS). Since January 2018, Earth Advantage and RMLS, the MLS serving Portland, have populated listings with more than 3,000 Home Energy Scores.
- ▶ **Elevate Energy, Build It Green, and Earth Advantage** led 50+ National Association of REALTORS® Green Designation trainings, contributing to over 4,000 Green Designated REALTORS® nationwide.
- ▶ Several states, along with the **National Association of State Energy Officials**, published a guide to help state and local governments develop home energy labeling strategies that meet their specific goals and local context.
- ▶ **Build It Green** completed improvements to PG&E's home upgrade rebate process, which led to cutting

350+ RESIDENTIAL NETWORK MEMBERS

90,000+ HOME ENERGY SCORES CONDUCTED SINCE 2012

90,000+ HOMES UPGRADED IN 2017 BY HOME PERFORMANCE WITH ENERGY STAR® SPONSORS

Sector Accomplishments

- ▶ **BBRN's Community-Based Social Marketing Toolkit** explains how community-based social marketing can be used to increase participation rates, promote a greater understanding of the value of energy-efficient homes, and strengthen relationships with residents.
- ▶ **BBRN's Evaluate and Learn as You Go to Strengthen Performance Toolkit** explains how evaluations can be more nimble and adaptable, so programs can make adjustments more responsively, rapidly, and with greater overall program efficacy.
- ▶ **The Home Energy Information Accelerator Toolkit** helps efficiency programs, real estate professionals, and other stakeholders replicate and build upon the successful models created through the Accelerator and provide more reliable energy information in real estate transactions nationwide.

average approval times in half, faster repayment to contractors, and boosted satisfaction with the program by nearly 30%.

- ▶ **Northeast Energy Efficiency Partnerships (NEEP)** finished building and testing the HELIX database, a tool for storing home energy data and seamlessly transferring it to the MLS. NEEP also created open source code and guidance documentation for easy replication.
- ▶ The **Home Performance Coalition**, the **HPXML Working Group**, and DOE developed a roadmap to increase the value and use of open data standards, like HPXML, among residential energy efficiency programs. Data standardization is crucial to improving data quality and interoperability in the home performance industry.

Data centers provide critical services to businesses and organizations of all types. With an ever-increasing need for greater amounts of computational power, data centers typically consume between 10 to 100 times as much energy relative to a standard office building. They also often operate on a 24-hour schedule with minimal to no downtime. At the same time, cost-effective solutions have been shown to reduce energy use in these facilities by up to 45%.¹⁹ Through Better Buildings, data center Challenge and Accelerator partners are demonstrating the business case for energy efficiency measures to help others follow their lead. They are also finding new ways to show leadership, for example, by promoting workforce development efforts that emphasize energy efficient best practices and researching the benefits of promising new technologies such as liquid and free air cooling designs.

Partners with Greatest Energy Savings
Savings Since Baseline Year

Sabey Data Center Properties*	35%
eBay Inc.*	27%
Intuit*	24%

*Goal achiever

Sector Accomplishments

- ▶ DOE published a guidance document titled **Small Data Centers, Big Energy Savings: An Introduction for Owners and Operators**. Representing nearly 50% of all data computed, data centers that are less than 5,000 square feet can often reduce energy by 20 to 40% by applying simple measures, such as identifying and turning off unused servers, improving server power management, improving air management, adopting ASHRAE recommended temperature set-points, turning off active humidity control, and minimizing requirements for UPSs.
- ▶ In addition to Intuit's new data center water usage commitment, the National Renewable Energy Laboratory has made significant improvements to its **data center water consumption while also improving its PUE**. By installing a thermosyphon cooler in series with its evaporative towers, it reduced water consumption by over 50% in its first year, further reduced its world leading PUE, and cut its water and utility operational costs.

33
UNIQUE
SECTOR
PARTNERS

9
CHALLENGE
PARTNERS

24
ACCELERATOR
PARTNERS

570 MEGAWATTS OF ELECTRICITY DEMAND

2 TRILLION BTU ENERGY SAVINGS SINCE 2011

\$20 MILLION SAVED SINCE 2011

Leadership in Action

- ▶ Challenge partner **Sabey** demonstrated a 57% reduction in infrastructure energy intensity (PUE-1) at its data center located in Quincy, WA. Energy efficiency measures included hot aisle containment, indirect evaporative cooling computer room air handlers, highly efficient uninterruptable power supply (UPS) system, and variable speed drives on fans that are tuned to match server load requirements. Sabey measured a 0.2 improvement in power usage effectiveness (PUE) across its 30 co-located customers at this site, providing the multi-tenant space added flexibility and reliability.
- ▶ Challenge partner **Schneider Electric** realized nearly 50% energy savings from baseline energy consumption via a consolidation and virtualization strategy that transitioned a legacy data center in Lexington, KY, and multiple, distributed data centers to a highly-efficient data center in St. Louis, MO. Measures taken include hot aisle containment, in-row cooling, modular UPS and power distribution, and a Virtual Private Cloud converged infrastructure.
- ▶ **Iron Mountain** achieved certification under ISO 50001, the international energy management standard. Iron Mountain met the certification requirements by establishing a rigorous energy management system, establishing energy efficiency goals, and demonstrating progress toward those goals.
- ▶ **Intuit** became the first data center partner to set a Water Usage Effectiveness goal, and it has saved over 12% since 2014 so far, by working with its water treatment provider to reduce the frequency of blowdowns in its evaporative cooling tower. It is well on its way to meeting its goal of a 20% reduction in portfolio water intensity by 2024.

41
UNIQUE
SECTOR
ALLIES

\$3.5 BILLION FINANCED IN PAST YEAR

\$12 BILLION FINANCED SINCE 2012

7 NEW ALLIES

Leadership in Action

- ▶ **Citi** and **Metrus Energy** partnered to fund a \$27 million energy services agreement that bundles projects across multiple sites and is expected to reduce lighting costs by 70%.
- ▶ **CleanFund** and **Petros PACE Finance** partnered to fund the largest commercial PACE deal in history: a \$40 million seismic (i.e., earthquake-proofing) upgrade for Seton Medical Center that will also include upgrades to inefficient energy systems and equipment.
- ▶ **Greenworks Lending** funded a suite of upgrades for a mixed-use facility in Hartford, CT, including the first-ever microgrid financed through CPACE, which resulted in annual energy savings of nearly \$320,000.
- ▶ **Bank of America Merrill Lynch** and **Citi** each eclipsed \$2 billion in total investment since joining the Better Buildings Challenge.
- ▶ A **diverse group of seven new Financial Allies** joined the Better Buildings Challenge, representing a wide range of emerging and non-traditional financing models. These include efficiency-as-a-service, financing for combined heat and power, and financing that combines PACE with a power purchase agreement.

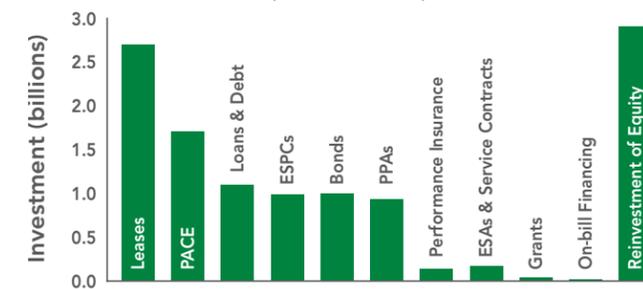
Lack of accessible, streamlined, low-cost financing is often cited as a key barrier to energy efficiency. Through the Challenge, Financial Allies provide innovative financial products, highlight replicable and scalable financing business models, and educate the market about opportunities in energy financing. The past year has seen important innovations in the form of new companies, partnerships, financial products, and several flagship deals of historic size and scope. In addition, Allies have made a difference in underserved markets, with more than \$3 billion in financing extended by those that focus on low-income neighborhoods, affordable housing, and community development projects.

Financial Allies with Most Capital Invested in 2017

Bank of America Merrill Lynch*	\$1.07B
EDF Renewable Energy*	\$500M
Enterprise Community Partners*	\$466M
Citi*	\$400M
Renew Financial*	\$399M
AFL-CIO Housing Investment Trust*	\$319M
Sol Systems*	\$111M
Connecticut Green Bank*	\$106M
Metrus Energy*	\$39M
NYCEEC*	\$32M

*Goal achiever

Total Investment by Financial Product (2012 - 2017)



Sector Accomplishments

- ▶ **Better Buildings Financing Navigator Version 2.0** will include renewable energy financing options, improved search features for connecting with Financial Allies, and sector-specific financing resources.

- ▶ The **Commercial PACE for Resiliency Toolkit** was launched to highlight how PACE can be used to improve the safety, reliability, and disaster resistance of buildings with projects like renewable energy, seismic upgrades, hurricane-proofing, and microgrid.

With more than 360,000 buildings and 600,000 vehicles, the U.S. Federal Government makes up about 1% of the total annual U.S. energy consumption. The Federal Energy Management Program (FEMP) enables Federal agencies to reduce their \$16.1 billion annual energy bill, meet their energy related goals, identify affordable solutions, and provide global energy leadership. FEMP supports Federal agencies in meeting statutory energy and water management related goals and helps them capture the \$9 billion to \$15 billion energy efficiency investment opportunity by:

- ▶ Partnering with key stakeholders to develop, test, and replicate enterprise wide approaches to resiliency and energy management
- ▶ Establishing strategic integration of energy management into agencies' core operations
- ▶ Improving the agility, skills, and impact of the Federal workforce through accredited training

With assistance from FEMP-supported initiatives and partnerships, the Federal Government has reduced its facility energy intensity by 49% since 1975, 25% since 2003, and over 3% from a 2015 baseline. Investments since 2007 are estimated to have avoided energy use in 2016 that is equivalent to the annual energy used in more than 1 million typical households. However, additional opportunities exist for further energy cost reduction and energy conservation.

New Efforts, Tools, and Resources

- ▶ **DOE-FEMP & DHS Resilience Framework Partnership:** Announced in January 2018, this partnership is helping to protect the nation's critical infrastructure by developing a resilience framework to apply across the Department of Homeland Security (DHS) Enterprise.
- ▶ **DOE-FEMP & GSA Building Cyber Security Framework:** FEMP and the General Services Administration (GSA) are partnering to build a prototype Building Cyber Security Framework that works with control systems, so information technology can be used to ensure the safety and comfort of occupants, enhance efficiency, lower facility costs, and optimize operations.
- ▶ **REopt Lite:** FEMP and others sponsored NREL to develop a new REopt Lite web version of a tool that helps building owners evaluate the economics of grid-connected solar photovoltaics and battery storage at commercial sites. Over the past 10 years, the REopt model has analyzed more than 10,000 sites and led to more than 260 megawatts of renewable energy development.
- ▶ **ESPC ESA Toolkit:** This Energy Savings Performance Contracting Energy Sales Agreement (ESPC ESA) Toolkit makes it easier for users to use the ESPC long-term contracting authority within the Federal Government to implement cost-saving renewable energy conservation measures on Federal buildings and land. The toolkit provides phases on the ESPC ESA process and includes templates, checklists, and a process diagram.

FEMP by the Numbers

\$1.3 billion	Total Federal Investment in Facilities Infrastructure Energy Efficiency Government-Wide in FY2016
4,525 billion Btu	Estimated Annual Energy Savings from FY2016 Investment
\$118 million	Estimated Annual Energy Cost Savings from FY2016 Investment
\$700 million	Efficiency Investment Awarded in FY2016 Under FEMP-Managed Performance Contracts



COMMERCIAL

- Abbott Northwestern Hospital
- AKSAN United Fortune, Inc.
- Anthem, Inc.***
- Arby's Restaurant Group, Inc.***
- Army & Air Force Exchange Service
- Ascension*
- AtSite
- Beaumont Health System
- Baptist Memorial Hospital Desoto
- Belk, Inc.
- Best Buy***
- BJ's Wholesale Club, Inc.
- Bon Secours St. Francis Health System
- Boston Market
- Briad Wenco
- Broward Health North
- Calhoun Management
- Carlisle Corporation*
- Catholic Health Initiatives
- CBRE
- CC Frost Properties, Ltd.
- CEFCO Stores
- CentraCare Health
- Chipotle Mexican Grill
- CKE Restaurants Holdings, Inc.***
- Clarion Partners
- Cleveland Clinic*
- Coffee & Bagel Brands
- Colliers International
- Columbia Association***
- CommonWealth Partners*
- Community Services Agency & Development Corporation
- Costco Wholesale Corporation
- Cox Enterprises
- Crate & Barrel
- Cushman and Wakefield
- DaVita
- Dacra Development

- Delight Restaurant Group*
- Denver West
- Dunkin' Brands
- DWS***
- Equity One Inc.
- First Potomac Realty Trust
- Food Lion
- Forest City Realty Trust*
- Gables Residential
- Glenborough
- Gundersen Health System
- H&M
- Hackensack Meridian Health*
- Hamra Enterprises
- Hannaford
- Harris Teeter
- The Hartford Financial Services Group, Inc.***
- Havertys***
- HAZA Foods
- HealthSouth
- HEI Hotels & Resorts*
- Hilton Worldwide*
- Hines
- The Home Depot
- Hoover Foods*
- Hospital Corporation of America
- Hyatt Hotels Corporation
- IBM
- IHG (InterContinental Hotels Group)
- Inova Health System
- JAE Restaurant Group
- Jamestown*
- JBG Smith*
- JC Penney
- Jones Lang LaSalle
- Kaiser Permanente
- Kelco Management & Development
- Kessinger Hunter & Co
- The Kessler Collection
- Kilroy Realty

- Kimco Realty Corporation
- Kohl's Department Stores*
- Lamey-Wellehan Shoes
- LaSalle Investment Management
- Las Vegas Sands Corporation*
- LBA Realty*
- Legacy Health
- Lendlease***
- Liberty Property Trust
- Life Time Fitness*
- Lincoln Harris
- Living City Block
- Loews Hotels & Co.*
- Lowe's
- Luxottica North America
- Macy's***
- The Malcolm Bryant Corp.
- Marriott International
- Mayo Clinic
- McDonald's Corp.
- MC Realty
- Mesa Lane Partners, LLC
- MGM Resorts International*
- Montefiore Medical Center*
- Mountain West Wendy's
- Neema Hospitality
- Newmark Grubb Knight Frank
- NewYork-Presbyterian Hospital*
- Nike*
- North Shore-Long Island Jewish Health System
- Oregon Health & Science University
- Panda Restaurant Group, Inc.

KEY

- ▶ Partners with names in **bold** are energy, water, or Accelerator goal achievers
- ▶ Partners with a ***** have taken the Better Buildings Challenge

Parkway Properties*
 Parmenter Realty Partners*
 Petco
 PetSmart
 PNC Financial Services Group*
 Primary Aim, LLC*
 Principal Real Estate Investors
 Prologis*
 Promar Corporation
 Providence Health & Services
 Prudential Financial, Inc.
 Publix
 Red Robin Gourmet Burgers
 Regency Centers
 REI
 Related Companies
 Retail Properties of America
 Ryan Companies US, Inc.
 Safeway
 Saunders Hotel Group*
 Sears
Shari's Cafe & Pies*
 Sharpe Properties Group, LLC
Shorenstein Properties LLC*
 Siemens
 Southwestern Vermont Health Care
Sprint*
Staples*
 Starbucks Coffee Company*
 Stream Realty Partners, L.P.
 Studley
 Summa Health System
 Suncoast Credit Union*
 SUPERVALU
 Tar Heel Capital
 Target
 TH Real Estate (TIAA)*
 Tishman Speyer
The Tower Companies*
 Transwestern*
 Ulta Inc.

USAA Real Estate Company*
 U.S. Navy CNIC Facilities
 and Acquisitions
 U.S. Space and Rocket Center*
UW Health*
 University of Maryland
 Medical Center*
 University of Nebraska
 Medical Center*
 University of Pittsburgh Medical
 Center (UPMC)*
 University of South Alabama
 Medical Center
 University of Utah Health Care
 Vornado
 Walgreens Co.*
 Walmart*
 The Walt Disney Co.
 Washington REIT
 Wawa
 Weis Markets
 Welltower
 Wen-GAP, LLC
 Wend-Rockies Inc.*
 Wendco Group*
 Wendium of Florida, Inc.*
 The Wendy's Company*
 WenMarr Management
 Company, LLC.
 Westchester Medical Center
 The Westfield Group
 Whole Foods Market*
 Wyndham Worldwide*
 Yum! Brands

DATA CENTERS

CenturyLink, Inc.*
Digital Realty Trust*
eBay Inc.*
 Facebook*
 Georgia Institute of Technology
Intuit*

IO Data Centers*
 Iron Mountain Data Centers*
Sabey Data Center Properties*
 Virtustream
Waste Management

EDUCATION

Adams 12 - Five Star Schools, CO
 Alachua County Public Schools, FL*
 Albuquerque Public Schools, NM*
 Alexandria City Public Schools, VA*
 Allegheny College*
 Amity School District, CT
 Anne Arundel County
 Public Schools, MD*
 Arizona State University
 Arlington County School District, VA
 Aurora Public Schools, CO*
 Bard College*
 Boulder Valley School District, CO
 Bullitt County Public Schools, KY*
Camas School District, WA*
Chesapeake College*
 Clark Atlanta University
 Community College of
 Allegheny County*
 Cornell University
 Delaware State University*
 Douglas County School District, CO
 Douglas County School District, NV*
 Duke University
 Dysart Unified School
 District 89, AZ*
 Emory University
 Evergreen Public Schools, WA*
 Fairfax County Public Schools, VA*
 Florida A&M*
 Fort Atkinson School District, WI*
 Garnet Valley School District, PA*
 Grand Valley State University
 Hackensack University
 Medical Center*

Hermosa Beach City School
 District, CA
 Hillsboro School District, OR*
 Houston Independent
 School District, TX*
 Huntsville City Schools, AL*
 Indianapolis Public Schools, IN*
 Indiana University
 Kansas City Public Schools, MO*
 Los Angeles Unified School
 District, CA*
 Loyola University
 Madison City Schools, AL*
 Manchester School District, NH*
 Massachusetts Institute of
 Technology
 Mesa County Valley School
 District, CO*
 Michigan State University*
 Northwestern University*
 Parkway School District, MO*
 Penn State University*
 Portland Public School District, OR*
 Portland State University
Poudre School District, CO*
 Ramapo College
River Trails School District 26, IL*
 San Mateo Community
 College District
 School District of Philadelphia, PA
 Sewanee: The University
 of the South*
 Stanford University
 Stevens Institute of Technology*
Towson University*
 Tulane University
 Tulsa Public Schools, OK*
 University of California, Berkeley*
 University of California, Davis
University of California, Irvine*
 University of California, Merced
 University of Colorado Boulder
 University of Hawaii at Manoa*

University of Iowa
 University of Maryland
 University of Massachusetts
 Medical School
 University of Miami
 University of Minnesota
 University of New Hampshire
 University of South Carolina
 University of Utah*
 University of Virginia*
 University of Wisconsin
 Washington University in St. Louis*
 Washtenaw Community College
 Xenia Community Schools, OH*

FEDERAL

Argonne National Laboratory
 Defense Health Agency
 Environmental Molecular
 Sciences Laboratory
 Lawrence Berkeley
 National Laboratory
 Lawrence Livermore
 National Laboratory
 Los Alamos National Laboratory
 National Energy Research
 Scientific Computing Center
 National Renewable
 Energy Laboratory
 Oak Ridge National Laboratory
 U.S. Department of Agriculture
 U.S. Department of Defense -
 Defense Information
 Systems Agency
 U.S. Department of Justice -
 Drug Enforcement Agency
 U.S. Department of Veterans Affairs
 U.S. Environmental
 Protection Agency
 U.S. General Services Administration
 U.S. National Aeronautics
 and Space Administration
 U.S. Social Security Administration
 Veterans Health Administration

FINANCIAL ALLIES

Abundant Power*
 Advantage Energy Capital
 Partners, LLC*
**AFL-CIO Housing
 Investment Trust***
 All American Investment Group*
 Allumia*
Bank of America Merrill Lynch*
BioStar Renewables*
 Blue Hill Partners LLC*
 BlueFlame Energy Finance*
 Bostonia Partners LLC*
 Byline Financial Group*
 California Housing Partnership*
 CBJ Energy*
 Centrica Business Solutions*
Citi*
CleanFund LLC*
 Commercial Power Partners, LLC*
**Community Investment
 Corporation***
Connecticut Green Bank*
EDF Renewable Energy*
Energi*
Enterprise Community Partners*
 Flywheel*
 Greenworks Lending*
Hannon Armstrong*
LISC*
 Low Income Investment Fund*
Metrus Energy*
**New York City Energy
 Efficiency Corporation***

KEY

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- ▶ Partners with a ***** have taken the Better Buildings Challenge

Onsite Utility Services Capital*

PACE Equity*

Petros PACE Finance LLC*

Redaptive*

Renew Financial*

Rockwell Financial Group*

Samas Capital*

Sol Systems*

Southeast Capital & Finance*

SparkFund*

Structured Finance Associates, LLC*

Triple Bottom Line (TBL) Foundation*

Urban Ingenuity*

Ygrene Energy Fund*

INDUSTRIAL

3M*

AbbVie Inc.

Alcoa*

Alexandria Renew Enterprises

Amtcor

American Mitsuba

ArcelorMittal USA

Armstrong Flooring, Inc.

Asama Coldwater Manufacturing

AT&T

Ball Corporation

Bath Electric Gas & Water Systems*

BD*

Bentley Mills*

Bosch Rexroth

BPM, Inc. (Badger Paper Mills, Inc.)

Bradken

Bridgestone Americas, Inc.

Briggs & Stratton*

Bristol-Myers Squibb

Buck Company

Bucks County Water & Sewer Authority*

California Portland Cement Company (d.b.a. CalPortland)

Campbell Soup

Cardington Yutaka Technologies

Carlton Forge Works

Cascade Engineering Technologies, Inc.

Celanese Corporation*

C. F. Martin & Co., Inc. (Martin Guitar)*

Chapco Inc.

Charter Steel

Chippewa Valley Ethanol Company

Citrus World, Inc (formerly Florida's Natural Growers)

City of Charleston, SC, Water System

City of Grand Rapids Water Resource Reclamation Facility*

City of Phoenix Water Services Department

City of Roseville, Environmental Utilities Department

Clearwater Engineering

CoilPlus Inc.

Comau Inc.

Commercial Metals Company

Complete Design and Packaging

Co-Operative Industries Aerospace & Defense

Cooper Standard

Cummins, Inc.*

Daikin Applied Americas, Inc.

Darigold*

Davisco Foods

Delta Diablo

Denison Industries

Des Moines Water Works*

Didion Milling

Dixline Corporation

Donsco Inc.

Dow Chemical

DSM North America

Durex Inc.

Earth2O (d.b.a. The Sweetwater Company Inc)

Eastman Chemical Company*

Eaton Electric

Eck Industries

Electrolux*

Encina Wastewater Authority*

Expera Specialty Solutions (Thilmany Mill)

Flambeau River Papers

FMC Corporation

Ford Motor Company*

General Aluminum Manufacturing Company

General Dynamics Ordnance and Tactical Systems

General Electric*

General Mills*

General Motors*

General Sheet Metal Works, Inc.

GKN Aerospace Services Structures

Golden Renewable Energy, LLC

Goodyear Tire & Rubber Company

Graphic Packaging International, Inc.

HARBEC*

Harley-Davidson Motor Company

Harrison Steel Castings Co.

Harva Company

Haynes International

Hitchiner Manufacturing Co. Inc.

HNI Corporation / Allsteel

Honda

Huntsman Corporation

Ingersoll Rand*

Ingevity

Intel*

International Paper Company

Intertape Polymer Group

Ithaca Area Water Wastewater Treatment Agency*

JBT Corporation

Jedco, Inc.

Johnson Controls*

Johnson & Johnson

Johnson Matthey

J.R. Simplot*

Kent County Levy Court

Kenworth Truck Company

Kingspan Insulated Panels, Inc.

KYB Americas Corporation

Lafarge-Holcim*

Land O' Lakes

Legrand*

Lennox International*

Lineage Logistics

Lockheed Martin

L'Oréal*

Los Angeles Bureau of Sanitation

Los Angeles Department of Water and Power*

Lynam Industries Inc.

Magnetic Metals Corp.

MAHLE Engine Components USA

Manitowoc Grey Iron Foundry

Mannington Mills

Marquis Energy

Marquis Energy Wisconsin

Massachusetts Water Resources Authority

MB Aerospace East Granby

McCain Foods USA, Inc.

MedImmune

Metal Industries, Inc.

Mohawk Industries

Mulgrew Aircraft Components, Inc.

NSK Americas

Narragansett Bay Commission

Navistar International Corporation

Neenah Foundry

Newman Technology

NEW Water (Green Bay Metropolitan Sewerage District)*

Nissan North America*

Novati Technologies

Novelis

NYC DEP - Bureau of Wastewater Treatment

O'Fallon Casting

OFD Foods

OMNOVA Solutions Inc.

Orange Water and Sewer Authority*

Oshkosh Corporation

Osram Sylvania

Owens Corning

Pactiv

Paperworks Industries

Parker Hannifin

Patrick Cudahy

Patriot Foundry & Castings

PepsiCo

Pharmavite*

Philadelphia Water Department

Pima County Regional Wastewater Reclamation Department

Plastics Engineering Company (Plenco)

PPG

Procter & Gamble

Quad/Graphics, Inc.

Raytheon

Research Electro-Optics

Richmond Industries Inc.

Roche Diagnostics Operations

Rowley Spring and Stamping

Saint-Gobain Corporation*

Savage Precision Fabrication

Schneider Electric*

Selmet, Inc.

Shaw Industries

Sherwin Williams

Solberg Manufacturing Inc.*

Sony DADC

Spirax Sarco, Inc.

Stanley Spring and Stamping

Steelcase, Inc.

St. Petersburg Water Resources Department

SunOpta, Inc.

TE Connectivity*

Tenaris

Texas Instruments

Texas Nameplate Co.

Textron, Inc

ThyssenKrupp Elevators

Toyota Motor Engineering & Manufacturing North America, Inc*

TPC Group LLC

Tri-State Plastics, Inc.

United Technologies Corporation*

Vanguard Space Technologies

Vermeer

Verso Corporation

Victor Valley Wastewater Reclamation Authority*

Volvo Group North America*

W. L. Gore and Associates

Waupaca Foundry

Weber Metals Inc.

Western Lake Superior Sanitary District

Westrock

Weyerhaeuser

Whirlpool Corporation

Zimmer Biomet

KEY

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MULTIFAMILY

ACTION-Housing Inc.*
 Aeon*
 AHEAD, Inc.*
 Angola Housing Authority*
 Atlanta Housing Authority*
 Avon Park Housing Authority*
 Balfour Beatty Communities*
 Beacon Communities*
 The Boston Land Company*
 Bozzuto Management Company*
 BRIDGE Housing Corporation*
 Cambridge, MA, Housing Authority*
 Capitol Hill Housing*
 Caritas Communities, Inc.*
 Cascap, Inc.*
 Century Housing*
 Cion Housing Services*
 The City of Hickory Public Housing Authority*
 Cleveland Housing Authority*
 Codman Square Neighborhood Development Corporation*
 CommonBond Communities*
 The Community Builders, Inc.*
 Community Housing Partners*
 Consecra Housing Network*
 Corcoran Management*
 Cuyahoga Metropolitan Housing Authority*
 Danville Development*
 The DeBruler Co.*
 EAH Housing, Inc.*
 East Bay Asian Local Development Corporation*
 The Economic Development Authority of the City of Mankato, MN*
 Eden Housing*
 Elderly Housing Development and Operations Corporation*
 Essex Management Company, LLC*

The Evangelical Lutheran Good Samaritan Society*
 Fort Wayne Housing Authority*
 Foundation Communities*
 FS Energy*
 Gary Housing Authority*
 Gateway Management Services, LLC*
 Green Coast Enterprises*
 H.J. Russell & Company*
 Homes for America*
 Housing Authority of Baltimore City*
 Housing Authority of City of Bristol, CT*
 The Housing Authority of the City and County of Denver*
 Housing Authority of City of Freeport, IL*
 Housing Authority of City of Helena, MT*
 Housing Authority of City of Palatka, FL*
 Housing Authority of City of Philadelphia, PA*
 Housing Authority of City of San Buenaventura, CA*
 Housing Authority of Knox County, IN*
 Housing Trust of Rutland County*
 Houston Housing Authority*
 Jamaica Plain Neighborhood Development Corporation*
Jersey City, NJ, Housing Authority*
Jewish Community Housing for the Elderly*
 Jonathan Rose Companies*
 Keene Housing*
 Kier Property Management*
 King County Housing Authority*
 Korman Residential Properties, Inc*
 LINC Housing Corporation*
 Lucas Metropolitan Housing Authority*
 Manhattan Housing Authority*

McCormack Baron Salazar*
 Mercy Housing, Inc.*
 Michigan City Housing Authority*
 Minneapolis Public Housing Authority*
 Multi-Family Mission Ministries*
 National Church Residences*
 New Bedford Housing Authority*
 New York City Housing Authority*
 Newark Housing Authority*
 NewLife Homes*
 NHP Foundation*
 NHT/Enterprise Preservation Corporation*
 Peabody Properties, Inc.*
 Presby's Inspired Life*
 Preservation of Affordable Housing*
 Puerto Rico Public Housing Administration*
 REACH CDC*
 The Renaissance Collaborative*
 Retirement Housing Foundation*
 Rockford Housing Authority*
 Rural Ulster Preservation Company*
 San Antonio Housing Authority*
 Satellite Affordable Housing Associates*
 Schochet Companies*
 The Silver Street Group and Housing Management Resources, Inc*
 Stark Metropolitan Housing Authority*
 Stewards of Affordable Housing for the Future
 Tampa Housing Authority*
 Tenderloin Neighborhood Development Corporation*
 Trinity Housing Corporation of Greeley, CO*
 Trinity Management*
 Truth or Consequences Housing Authority*
 Utica Municipal Housing Authority*

Village of Hempstead Housing Authority*
 Vistula Management Company*
 Volunteers of America
 Washington, DC, Housing Authority*
 Wesley Housing Corporation*
 Windsor Locks Housing Authority*
 WinnCompanies*
 Wishrock Investment Group*
 Yolo County, CA Housing Authority*

STATE & LOCAL

Albany, NY
 Anchorage, AK
 Arlington County, VA*
 Arvada, CO*
Atlanta, GA*
 Austin, TX
Beaverton, OR*
 Boston, MA*
 Boulder, CO
 Boulder County, CO
 Broward County, FL
 Cambridge, MA
 Chattanooga, TN*
Chicago, IL*
Cincinnati, OH
 Chula Vista, CA*
 Clark County, NV*
 Cleveland, OH*
 Columbia, MO*
 Columbus, OH
Commonwealth of Massachusetts*
 Commonwealth of Pennsylvania
Commonwealth of Virginia
 Cook County, IL*
 Dearborn, MI
 Deerfield Beach, FL
Delaware Valley Regional Planning Commission
 Denver, CO*

Des Moines, IA
Detroit, MI
 District of Columbia*
 Dubuque, IA
 Duluth, MN
 El Paso, TX*
 Erie County Industrial Development Agency
 Evanston, IL
 Flint, MI
 Fort Lauderdale, FL*
Fort Worth, TX*
 The Fresno Energy Performance District
 Gary, IN
 Gillette, WY*
 Greater Lawrence Sanitary District
 Hall County, GA*
 Hawkeye Area Community Action Agency
Hillsboro, OR*
 Hoboken, NJ
 Holland, MI
Houston, TX*
Huntington Beach, CA
 Huntington, NY*
 Kansas City, MO
 Kauai County, HI*
 King County, WA*
 Knoxville, TN*
 Knoxville Utilities Board
 Little Rock, AR
 Local Government Commission
Los Angeles, CA*
 Los Angeles County, CA
 Margate, FL*
 Medford, MA*
 Miami-Dade County, FL
 Milwaukee, WI*
 Minneapolis, MN
 Montgomery County, MD
 Montpelier, VT

New Orleans, LA
 New York, NY
Newark, NJ
 Northeast Ohio Regional Sewer District
 Oakland, CA
 Orlando, FL*
 Perry, IA
 Philadelphia, PA*
 Phoenix, AZ
 Pittsburgh, PA*
 Placer County, CA*
Portland, ME
 Portland, OR
 Racine, WI
 Reno, NV*
 Richmond, VA
 Rhode Island Infrastructure Bank
 Roanoke, VA*
 Rochester, NY*
 Saint Paul, MN
 Salt Lake City, UT*
 San Diego, CA*
 San Francisco, CA
 Santa Fe, NM*
 Santa Monica, CA
 Seattle, WA*
 Sonoma County, CA
 Southeast Michigan Regional Energy Office
 Southern California Regional Energy Network
 Spokane County, WA*
State of Alabama

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State of California
State of Colorado
 State of Connecticut
State of Delaware*
 State of Florida
State of Hawaii
State of Illinois
 State of Indiana
 State of Iowa
 State of Kansas
State of Maryland*
State of Michigan
 State of Minnesota*
 State of Missouri
State of Montana
 State of Nevada
 State of New Hampshire
State of New Mexico
 State of New York*
State of North Carolina*
 State of North Dakota
 State of Oklahoma
 State of Oregon
 State of Rhode Island*
State of South Carolina
 State of Tennessee
 State of Texas
 State of Utah
State of Washington
 State of Wisconsin
 St Petersburg, FL
Takoma Park, MD
 Tallahassee, FL
 Thurston County, WA*
 Toledo, OH*
 Virgin Islands Energy Office
 Washington State Transportation
 Improvement Board
West Palm Beach, FL*
 West Virginia Rural Water
 Association
 Will County, IL*
 Worcester, MA*

UTILITY

AEP Ohio
 Arizona Public Service
 Atlanta Gas Light (AGL)
 Austin Energy
Bonneville Power Administration
 California Energy Commission
 Commonwealth Edison (ComEd)
Efficiency Vermont
 Eversource
 Focus on Energy
 Kansas City Power & Light (KCP&L)
 Long Island Power Authority
 NSTAR/Northeastern
 National Grid
 Nicor Gas
 Orlando Utilities Commission
 Pacific Gas and Electric Company
 PECO
 Pennsylvania PUC
 Pepco
 PSEG Long Island
 Puget Sound Energy (PSE)
 Questar Gas
 Reliant/NRG
 Rocky Mountain Power
 San Diego Gas & Electric (SDG&E)
 Southern California Edison
 Southern California Gas
 TECO
 Xcel Energy

PROGRAM AFFILIATES

Alliance to Save Energy
 American Council for an
 Energy-Efficient Economy
 American Hotel & Lodging
 Association
 American Institute of Architects
 American Planning Association

American Society for
 Healthcare Engineering
 American Society for Heating,
 Refrigerating, and Air-
 Conditioning Engineers
 APPA - Leadership in
 Educational Facilities
 Appraisal Institute
 Arup
 Asian American Hotel
 Owners Association
 Association for Learning
 Environments
 Association for the Advancement of
 Sustainability in Higher Education
 Association of Energy Affordability
 Biomass Thermal Energy Council
 BlocPower
 Building Owners and Managers
 Association International
 Building Performance Institute
 Build It Green
 The Bullitt Foundation
 C40
 California Regional Multiple
 Listing Service
 California Street Light Association
 Center for REALTOR® Technology
 City Zenith
 Clean Energy States Alliance
 Community Action Partnership
 of Oregon
 Community Action Program
 of Evansville and
 Vanderburgh Counties
 Consortium for Building
 Energy Innovation
 CoreLogic
 Couleecap Inc
 Council of Multiple Listing Services
 Denver National Western Center
 Earth Advantage
 EcoDistricts
 Ecolibrium3
 Edison Electric Institute

Eetility
 Elevate Energy
 Emerald Cities Collaborative
 The Energy Coalition
 Energy Efficiency for All/NRDC
 Energy Foundation
 Energy Outreach Colorado
 Enhabit
 Environmental Defense Fund
 Ford Twin Cities Assembly Plant
 Redevelopment Project
 Garfield Clean Energy Collaborative
 Global Cool Cities Alliance
 Google
 Governing Institute
 Green Building Alliance
 Green Button Alliance
 Green Parking Council
 Green Sports Alliance
 GRID Alternatives
 Groundswell
 Hatch
 Health Care Without Harm
 Home Innovation Research Labs
 Home Performance Coalition
 Homes.com
 ICLEI
 Illuminating Engineering Society
 of North America
 Institute for Market Transformation
 Institute for Sustainable
 Communities
 International City/County
 Management Association
 International District
 Energy Association
 International Facility
 Management Association
 IRES MLS
 Kresge Foundation
 Metropolitan Regional
 Information Systems
 Mid-America Regional Council

Midwest Energy Efficiency Alliance
 Midwest Real Estate Data
 NACUBO
 NAIOP (Commercial Real Estate
 Development Association)
 National Apartment Association
 National Association of Convenience
 Stores
 National Association of Counties
 National Association of Real Estate
 Investment Trusts
 National Association of
 REALTORS®
 National Association of
 Regional Councils
 National Association of
 State Energy Officials
 National Co-op Grocers
 National Energy Education
 Development Project
 National League of Cities
 National Multifamily
 Housing Council
 NeighborWorks of Western Vermont
 New Buildings Institute
 Northeast Energy Efficiency
 Partnerships
 Opportunity Council
 Pearl National Certification
 Philips Lighting
 PicketFence.com
 Posigen
 Practice Greenhealth
 Professional Retail Store
 Maintenance Association
 Public Technology Institute
 The Real Estate Round Table
 Real Estate Standards Organization
 Realtors Property Resource, LLC
 Regional MLS
 Renewable Energy
 Transition Initiative
 Retail Industry Leaders Association
 Rocky Mountain Institute

Roof Coatings
 Manufacturers Association
 Second Nature
 Seventhwave
 Smart Cities Council
 Smart Energy Decisions
 The Solar Foundation
 Spire Inc
 STAR Communities
 Sun Valley EcoDistrict
 Surdna Foundation
 Sustainability Roundtable Inc.
 Sustainable Endowments Institute
 Tennessee Valley Authority
 Thermal Energy Corporation
 Unified Foodservice
 Purchasing Co-op, LLC
 United Illuminating
 Urban Sustainability
 Directors Network
 U.S. Green Building Council
 Vermont Energy Investment
 Corporation
 Virginia Green Travel Alliance
 Vizient Vote Solar
 Water Environment Federation
 Western New York
 Manufacturing ZNE District

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1. Bureau of Labor Statistics. *Employment, Hours, and Earnings from the Current Employment Statistics Survey (National)*. U.S. Department of Energy. Updated 2017.
2. Alliance for American Manufacturing. *Innovation: Public Policy Should Invest More in Research and Development to Create Cutting-Edge Manufacturing Jobs*. Updated 2018.
3. National Association of Manufacturers. *NAM Manufacturers' Outlook Survey: Fourth Quarter 2017*. Released 2017.
4. National Association of Manufacturers. *Top 20 Facts About Manufacturing*. Updated 2018.
5. Energy Information Agency. *2012 Commercial Building Energy Consumption Survey Data, Consumption & Expenditures, Table C3*. U.S. Department of Energy. Released 2016.
6. Better Buildings. *Build Out to Save Money—Large Office*. U.S. Department of Energy. Released 2018.
7. Energy Information Agency. *2012 Commercial Buildings Energy Consumption Survey Data, Consumption & Expenditures, Table C1*. U.S. Department of Energy. Released 2016.
8. Energy Information Agency. *2012 Commercial Buildings Energy Consumption Survey Data, Consumption & Expenditures, Table PBA1*. U.S. Department of Energy. Released 2016.
9. Oxford Economics. *Economic Impact of the US Hotel Industry*. Published 2016. https://www.ahla.com/sites/default/files/Economic%20Impact%20Study%20%28Oxford%29_0.pdf
10. *The 2016 Lodging Survey Hotel Trends: An Inside Look at Popular Amenities and Guest Services*. STR and the American Hotel & Lodging Educational Foundation.
11. Office of Energy Efficiency and Renewable Energy. *Buildings Energy Data Book for Retail Markets and Companies*. U.S. Department of Energy. Released 2012.
12. Energy Information Agency. *2012 Commercial Buildings Energy Consumption Survey Data, Consumption and Expenditures, Table C1*. Released 2016.
13. U.S. Census Bureau, *2012 Census of Governments: Organization Component Estimates*. Released 2013.
14. Energy Information Administration. *2012 Commercial Buildings Energy Consumption Survey Data, Consumption and Expenditures, Table C1*. U.S. Released May 2016.
15. Samarripas, Stefen. *Multifamily energy efficiency spending nearly triples in years*. American Council for an Energy-Efficient Economy. Released 2017.
16. *Energy Efficiency and its Relationship to Household Income in Multifamily Rental Housing*, Fannie Mae. Released 2012.
17. Consumer Expenditure Survey. <https://www.bls.gov/opub/reports/consumer-expenditures/2015/pdf/home.pdf>
18. NAR's REALTORS & Sustainability 2017. <https://www.nar.realtor/research-and-statistics/research-reports/realtors-and-sustainability-2017>
19. United States Data Center Energy Usage Report. Lawrence Berkeley National Laboratory. Released 2016.

