



Partnering to Share Pathways and Solutions

PROGRESS REPORT 2023

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To access the 2023 Better Buildings Initiative Progress Report, visit <https://betterbuildingssolutioncenter.energy.gov/better-buildings-progress-reports>

Cover photos feature scenes from the 2023 Better Buildings, Better Plants Summit, along with site visits to Cleveland-Cliffs, Inc., (leftmost photo) and Washington D.C. Public Schools (upper row on right).

EXECUTIVE SUMMARY

Through the Better Buildings Initiative, the U.S. Department of Energy (DOE) works with leaders across the nation to develop and deploy solutions that benefit our communities and our planet while strengthening our economy and increasing our competitiveness. Better Buildings partners are pursuing ambitious greenhouse gas (GHG), energy, water, and waste reduction goals, and sharing their proven solutions with the marketplace.

Since the start of the program, partners have collectively saved more than 3 quadrillion British thermal units (QBTu) of energy. This amounts to a savings of more than \$18.5 billion. Partners have also reduced their carbon dioxide emissions (CO₂) by nearly 190 million metric tons, reduced their water use by more than 16 billion gallons, and diverted more than 1.8 million tons of waste from landfills.

The work of Better Buildings partners impacts nearly every sector of the U.S. economy, and the benefits of their innovative efforts can be felt by almost all Americans in the places they learn, work, and gather together.

In the past year, Better Buildings Initiative partners:

► **Took Action to Meet their Decarbonization Commitments**

Better Climate Challenge partners are sharing emissions reduction progress, and on average, organizations are reducing GHG emissions by more than 20% per year. Partners are advancing their decarbonization efforts by improving energy efficiency, developing emissions reduction frameworks to guide their efforts at the portfolio level, and investing in low-carbon technologies and retrofits. They are also working with DOE technical experts to address decarbonization barriers.

► **Exchanged Insights and Informed Research**

The Better Buildings Initiative fosters collaboration across building types and sectors. This type of collaboration amplifies diverse viewpoints, advancing the adoption of new technologies and solutions. Through working groups, peer exchanges, and the annual Better Buildings, Better Plants Summit, DOE



“DOE is America’s solutions department, and the Better Buildings Initiative’s collaborative approach is proof we can develop and deploy the innovative solutions we need to combat the climate crisis and secure our clean energy future.”

Jennifer M. Granholm
Secretary, U.S. Department of Energy

connects partners with peers and experts from National Laboratories. Partners exchange best practices while providing critical feedback to DOE that shapes the research and development of technical, organizational, and financial resources.

► **Accelerated the Adoption of Proven Solutions**

Partners demonstrated their leadership by sharing their successful approaches for reducing emissions, energy, water, and waste. These solutions are available on the Better Buildings Solution Center for any organization to learn from. There are now over 3,000 solutions available, including more than 100 added in the past year.

900+ program partners represent nearly 30 of the country’s Fortune 100 companies, nearly 20 of the top 50 U.S. employers, 14% of the U.S. manufacturing energy footprint, and 13% of total commercial building space, as well as more than 90 state and local governments spanning the nation.

Our Newest Partnership: The Better Climate Challenge

Partners and Allies in the Better Climate Challenge are committed to advancing decarbonization throughout the U.S. and beyond. Since the start of the program:

- 165+** Organizations will reduce scope 1 and 2 GHG emissions by at least 50% over 10 years and share pathways
- 21%** Average percent GHG emissions savings from base year
- 40+** Allies committed to support partners through financing and technical support
- 100+** Joined working groups on topics of emissions reduction planning and electrification

Highlighting Solutions

DOE’s [Better Buildings Solution Center](#) is full of proven solutions to address common challenges around decarbonization, energy efficiency, and water and waste reduction. There are more than 3,000 solutions categorized by barrier, building type, sector, technology, and more. Some of the resources highlighted throughout the pages of this report include:

- [Low Carbon Pilot Toolkit](#) 12
- [Decarbonization Resource Hub](#) 14
- [Technical Assistance Webinars](#) 14
- [Technology Campaigns and Research Team Resources](#) 17
- [Design and Construction Resources](#) 17
- [Waste Stream Energy Calculator](#) 22
- [Financing Mechanisms for Energy Efficiency and Decarbonization Projects](#) 25
- [Industrial Technology Resources](#) 26
- [Better Plants Virtual Training](#) 27

Shining the Spotlight on Partner Solutions

Sharing partner’s real-world solutions to common challenges amplifies best practices and encourages replication and innovation. This past year, DOE highlighted these solutions through site visits, social media, awards, and during the 2023 Better Buildings, Better Plants Summit. Visit the [Better Buildings Newsroom](#) for the latest updates and announcements.

In addition, DOE released its most recent video series, the **Better Climate Challenge Road Show**. The first stop was to Nashville, TN, where DOE experts visited partners working to reduce their emissions by 50% within 10 years.

Click [here](#) to access the series.



BETTER BUILDINGS INITIATIVE

Overall Results to Date

DOE launched the Better Buildings Initiative in 2011 to help make buildings and facilities more energy efficient by addressing common barriers and sharing best practices from market leaders across every sector of the economy. More than 900 organizations now participate in the Better Buildings Initiative. These organizations include state and local governments that provide public services, school districts and universities that educate the nation's students, and nearly 30 Fortune 100 companies that provide millions of jobs and fuel economic growth.

The Better Climate Challenge was launched to prioritize GHG emissions reductions at the portfolio level. In the first year of reporting results, partners reported data across nearly 850 million square feet of buildings and 2,100 industrial plants. On average, Better Climate Challenge partners are reducing GHG emissions by more than 20% from their base year.

OVERALL RESULTS TO DATE



Energy Saved
3.1 Quadrillion Btu



CO₂ Emissions Avoided
189 Million Metric Tons



Buildings Square Feet
9.6 Billion



Industrial Facilities
3,600



Dollars Saved
\$18.5 Billion



Funding Extended by Financial Allies
\$32 Billion



Water Saved (gallons)
16.2 Billion



Partner Solutions Available Online
3,000+

Many Better Buildings Initiative partners demonstrate leadership by setting ambitious portfolio-wide goals for reducing emissions, energy, water, or waste. They share annual performance data for review by DOE, and also share their proven approaches with the marketplace on the [Better Buildings Solution Center](#).



165+
PARTNERS

GOAL:

At least 50% reduction in GHG emissions over 10 years



265+
PARTNERS

GOAL:

At least 20% reduction in energy-use intensity over 10 years



270+
PARTNERS

GOAL:

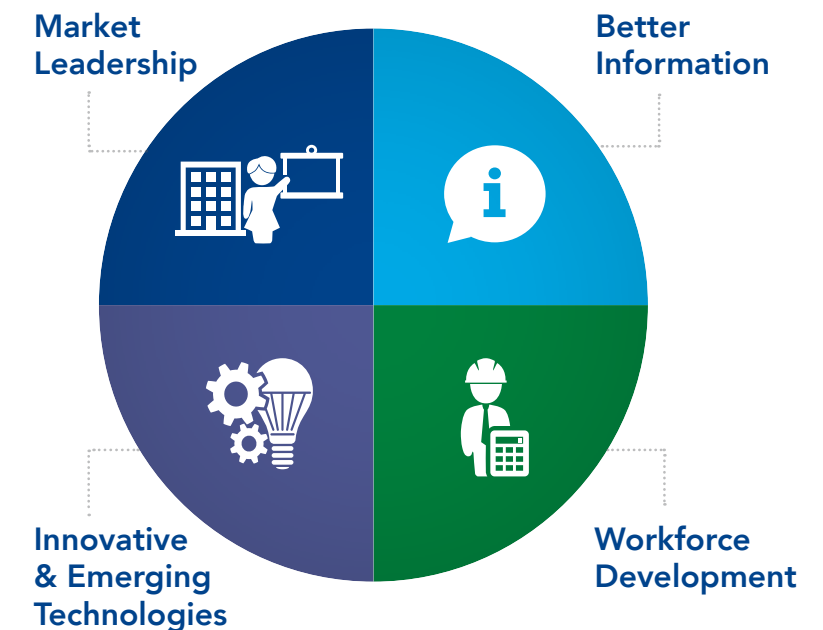
At least 25% reduction in energy-use intensity over 10 years

Additional Better Buildings Initiative partnership opportunities include the following:

- ▶ Better Climate Challenge Allies
- ▶ Financial Allies
- ▶ Better Buildings Accelerators
- ▶ Better Buildings Alliance
- ▶ Design and Construction Allies
- ▶ Better Buildings Residential Network
- ▶ Industrial Energy Management Workforce
- ▶ High-Impact Technology Field Validations
- ▶ Technology Research Teams and Campaigns
- ▶ Home Energy Score™

Visit the [Better Buildings Solution Center](#) for more information


Key Pillars of the Better Buildings Initiative



View the latest results and updates in each key area on the next page.

BETTER BUILDINGS INITIATIVE | Year in Review

Market Leadership


 Market leadership is about demonstrating what's possible, setting aggressive portfolio-wide goals, and influencing the development and deployment of cutting-edge technologies.



Partners collaborating at the 2023 Better Buildings, Better Plants Summit.

- ▶ Better Buildings Initiative partners are grounding DOE's research, development, and deployment activities in real-world barriers and opportunities through a range of dialogues and exchanges.
- ▶ More than 110 partners have met a portfolio-wide energy reduction goal since the start of the program, 8 have achieved an emissions reduction goal, more than 15 have met a water goal, and 35 Financial Allies have met a financing goal.
- ▶ Better Climate Challenge partners also reported data across more than 1 billion square feet of buildings and 1,500 industrial plants in the first year of data reporting.

BETTER INFORMATION


 Better information means having unbiased insights to make smarter decisions, which in turn leads to deeper emissions reductions and energy and cost savings.



National laboratory expert leading a workshop at the 2023 Better Buildings, Better Plants Summit.

- ▶ Partners benefit from a variety of collaborative opportunities to share solutions that work across building types. For example, more than 80% of the [Better Climate Challenge](#) partners have engaged in peer exchange activities, like working groups on emissions reduction planning and electrification.
- ▶ Nearly 425,000 visitors have explored resources on the [Better Buildings Solution Center](#) since 2022, with over 1.3 million page views.
- ▶ More than 11,000 attendees joined the [Better Buildings Webinar Series](#) in the past year, which averaged more than 400 attendees per webinar.

INNOVATION AND EMERGING TECHNOLOGIES


 Innovation and emerging technologies are key to building a stronger economy that benefits from clean energy.



National laboratory expert assisting partners at the 2023 Better Buildings, Better Plants Summit.

- ▶ Through the [Industrial Technology Validation Pilot \(ITV\)](#) DOE and its National Laboratories help de-risk the exploration and adoption of emerging technologies.
- ▶ [Integrated Lighting Campaign](#) participants saved more than 2 million kilowatt hours (kWh) through the adoption of advanced lighting systems.
- ▶ [Building Envelope Campaign](#) participants saved approximately 13 million kBtu of energy across 2 million square feet of conditioned floor space.
- ▶ [Green Lease Leaders](#) participants represent over 2.25 billion square feet of U.S. office space and are reducing energy use by 20% or more through green leasing practices.

WORKFORCE DEVELOPMENT

 Workforce development is essential to advance the American job force in step with technological progress.



Industrial partner Cleveland-Cliffs Inc. leading a building tour.

- ▶ More than 550 attendees joined [Better Plants Virtual Trainings](#) since DOE's last report, identifying over \$4.6 million in potential energy savings; the Virtual Training website was viewed by nearly 20,000 unique visitors.
- ▶ More than 200 partner attendees joined [Better Plants Bootcamps](#) in the past year, participating in hands-on activities to learn how to optimize energy use and decarbonize their manufacturing facilities.
- ▶ More than 200 attendees joined eight Better Buildings Workforce Development Accelerator events in the past year to discuss topics like streamlining career pathways and workforce program design and evaluation.


RECOGNIZING GOAL ACHIEVERS

GHG Emissions Reduction Goal Achievers


With total scope 1 and scope 2 GHG reduction since base year


 **70%** BENDIX COMMERCIAL VEHICLE SYSTEMS
Avon, OH
7 facilities committed
2018 base year

 **60%** ELEVANCE HEALTH, INC.
Indianapolis, IN
6.5 million sq. ft. committed
2019 base year


 **64%** HNI CORPORATION
Muscatine, IA
99 Facilities
2018 base year

 **55%** GENERAL MOTORS
Detroit, MI
82.2 million sq. ft. committed
2018 base year

 **60%** BXP
Boston, MA
39.2 million sq. ft. committed
2018 base year

 **52%** DSM NORTH AMERICA
Parsippany, NJ
18 facilities committed
2016 base year

 **60%** RXR REALTY
New York, NY
23 million sq.ft. committed
2019 BASE YEAR

 **32%** CLEVELAND-CLIFFS, INC.
Cleveland, OH
46 facilities committed
2017 base year

Energy Goal Achievers

With total energy use intensity reduction since base year

 **32%** COLUMBIA ASSOCIATION
Columbia, MA
492 thousand sq. ft. committed
2012 base year

 **30%** KOHL'S, INC.
Menomonee Falls, WI
112 million sq. ft. committed
2008 base year


 **31%** MOREHOUSE COLLEGE
Atlanta, GA
1.6 million sq. ft. committed
2017 base year

 **29%** NIKE
Beaverton, OR
10 million sq. ft. committed
2012 base year


Energy Goal Achievers (continued)

 **28%** ARVADA, CO
430 million sq. ft. committed
2010 base year

 **26%** VOLVO GROUP NORTH AMERICA
Greensboro, NC
13 plants committed
2014 base year

 **27%** DOUGLAS COUNTY SCHOOL DISTRICT, NV
Minden, NV
945 thousand sq. ft. committed
2008 baseline

 **24%** COOK COUNTY, IL
15.6 million sq. ft. committed
2013 baseline

 **27%** UNIVERSITY OF VIRGINIA
Charlottesville, VA
15.3 million sq. ft. committed
2010 baseline

 **24%** ISRINGHAUSEN, INC
Ladson, SC
1 facility committed
2019 base year


 **26%** STELLANTIS
Auburn Hills, MI
17 facilities
2016 base year

 **23%** ARLINGTON COUNTY, VA
1.9 million sq. ft. committed
2009 base year


RECOGNIZING GOAL ACHIEVERS

Energy Goal Achievers *(continued)*


With total energy use intensity reduction since base year

 **23%** **MGM RESORTS INTERNATIONAL**
Las Vegas, NV
61 million sq. ft. committed
2010 base year

 **22%** **WESLEY LIVING**
Memphis, TN
1.2 million sq. ft. committed
2013 base year

 **23%** **COMMONWEALTH OF MASSACHUSETTS**
65 million sq. ft. committed
2009 base year


 **22%** **SCHNEIDER ELECTRIC**
Andover, MA
39 facilities
2016 base year


 **22%** **COMMUNITY COLLEGE OF ALLEGHENY COUNTY**
Pittsburgh, PA
1.5 million sq. ft. committed
2014 base year

 **22%** **WEN-GAP, LLC**
Newport News, VA
54 thousand sq. ft. committed
2014 base year

 **22%** **ALLEGHENY COLLEGE**
Meadville, PA
1.3 million sq. ft. committed
2008 base year

 **21%** **HILLSBORO SCHOOL DISTRICT, OR**
Hillsboro, OR
3 million sq. ft. committed
2014 base year

 **22%** **FAIRFAX COUNTY PUBLIC SCHOOLS, VA**
Falls Church, VA
26.5 million sq. ft. committed
2014 base year

 **20%** **NATIONAL HOUSING TRUST**
Washington, D.C.
1.9 million sq. ft. committed
2010 baseline

Financing Goal Achievers

 **\$100 MILLION** **SCALAR INTERNATIONAL**
Surpassed a goal of \$100 million in financing for energy efficiency and/or renewable energy. It is headquartered in New York, NY.

 **\$25 MILLION** **JUA CAPITAL LLC**
Surpassed a goal of \$25 million in financing for energy efficiency and/or renewable energy. It is headquartered in San Diego, CA.

 **\$100 MILLION** **COUNTERPOINTE SUSTAINABLE REAL ESTATE**
Surpassed a goal of \$100 million in financing for energy efficiency and/or renewable energy. It is headquartered in Greenwich, CT.

 **\$25 MILLION** **SKYVEN TECHNOLOGIES**
Surpassed a goal of \$25 million in financing for energy efficiency and/or renewable energy. It is headquartered in Richardson, TX.

 **\$90 MILLION** **NYCEEC**
Surpassed a goal of \$90 million in financing for energy efficiency and/or renewable energy. It is headquartered in New York, NY.

 **\$25 MILLION** **SKYVIEW VENTURES**
Surpassed a goal of \$25 million in financing for energy efficiency and/or renewable energy. It is headquartered in Los Angeles, CA.

 **\$25 MILLION** **ONYX RENEWABLE PARTNERS L.P.**
Surpassed a goal of \$25 million in financing for energy efficiency and/or renewable energy. It is headquartered in New York, NY.

 **\$25 MILLION** **SOUTHEAST CAPITAL & FINANCE**
Surpassed a goal of \$25 million in financing for energy efficiency and/or renewable energy. It is headquartered in Searcy, AR.

PRIORITIZING DECARBONIZATION

A Call for Leadership

Buildings and manufacturing plants account for roughly two-thirds of U.S. CO₂ emissions.¹ Through the Better Climate Challenge and the Low Carbon Pilot, DOE has increased its support for organizations pursuing decarbonization. In particular, the Better Climate Challenge focuses on scope 1 and scope 2 emissions: direct emissions from an organization's operations and activities and the indirect emissions associated with an organization's energy use. Decarbonization has the potential to protect and preserve the natural environment, benefit human health by reducing air pollution and the occurrence of potential extreme weather, and reduce costs by improving efficiency and decreasing waste.

Results from the Low Carbon Pilot

The Low Carbon Pilot was introduced to accelerate decarbonization in individual buildings and plants, anticipating the portfolio-wide focus of the Better Climate Challenge. Through the pilot, 65 partners worked with DOE to share their experiences, successes, and challenges in their pursuit of low GHG emissions strategies. Many participants completed a building-level action plan to identify and reduce operational CO₂e emissions.

Over the course of the pilot, partners connected with industry experts and fellow leaders in nearly 20 peer exchanges. This pilot program culminated with the publication of the [Low Carbon Pilot Toolkit](#). This toolkit collects the Pilot's key findings and resources, such as action plan templates and replicable partner solutions, including for example:

- ▶ Columbia Association provided a complete [action plan template](#) which outlines the strategies implemented within energy efficiency, on-site renewable energy, and power purchase agreements/utility offerings for a community center and a fitness club.
- ▶ Stellantis developed an [8-step standardized shutdown procedure](#) to address excess energy consumption during unplanned plant shutdowns outside of normal production hours. After six months of refining the procedure, these sites achieved an additional load shed of nearly 30%.

The Better Climate Challenge invites organizations to set ambitious, portfolio-wide GHG emissions reduction goals. Partners pledge to reduce scope 1 and 2 GHG emissions across their U.S. building or plant portfolio by at least 50% over 10 years without the use of offsets, while also pursuing an energy efficiency target. DOE is working with partners to demonstrate real-world emissions reduction pathways for all types of buildings and plants and to share these solutions with the market. The core program tenets are:

- ▶ **Transparency and accountability:** Partners report annual energy and emissions data throughout a 10-year commitment, breaking down emissions reductions by energy efficiency, onsite renewable energy, and renewable energy certificates.
- ▶ **Technical assistance:** DOE provides direct technical support to help partners develop workable emissions reduction plans, connect with proven technologies and approaches, and respond to their unique challenges.
- ▶ **Facilitated collaboration:** Partners commit to sharing their barriers and solutions, and to participate in working group with peers and technical experts to discuss barriers, exchange best practices, and identify solutions.

Better Climate Challenge First Year Results

More than 165 organizations have committed to the goals of the Better Climate Challenge. In the past year, more than 120 have engaged in peer exchange activities, and more than 60 contributed to developing emissions reduction planning resources. Notable results include:

- 21%** Average percent GHG emissions savings from base year
- 850** Million square feet of building space reported
- 2,100** Industrial facilities reported

Collaborating to Share Insights

[Better Climate Challenge working groups](#) facilitate discussions in small group environments on real-world challenges faced by organizations. The groups share insights, strategies, and action plans, and DOE experts support them with technical assistance over the several-month period when working groups convene.

- ▶ **Portfolio-level GHG Emissions Reduction Planning**
Nearly 65 Better Climate Challenge partners and allies met over a series of sessions to discuss actionable plans for emissions reductions across their portfolios of buildings and plants. An emissions reduction plan enables an organization to understand and characterize its emissions sources and explore mitigation activities. It helps by identifying barriers, defining a phased plan, creating implementation strategies, assessing progress, and communicating internally and externally.

Partners significantly informed the development of the following emissions reduction planning resources:

- ▶ [The Framework for Greenhouse Gas Emissions Reduction Planning: Building Portfolios](#), tailored for organizations with a portfolio of buildings and vehicle fleets.
- ▶ [The Framework for Greenhouse Gas Emissions Reduction Planning: Industrial Portfolios](#), tailored for organizations with an industrial portfolio.
- ▶ [GHG Emissions Reduction Audit: A Checklist for Owners](#), guidance for a building-level GHG emissions reduction audit focused on scope 1 and 2 GHG emissions.

- ▶ **Electrification Planning**
More than 55 Better Climate Challenge partners and allies shared electrification strategies, lessons learned, and cost-benefit trade-offs. The group also discussed effective planning techniques to implement electrification strategies. Key takeaways include the following:
 - ▶ For industrial organizations, forklifts and electric heat pumps for HVAC applications are seen as low-lift electrification opportunities, while process heating applications are harder to electrify, but of high interest because of their great potential to reduce GHG emissions.

Benefiting from Technical Assistance

Better Climate Challenge partners meet regularly with technical experts on an individual basis. These experts come to understand each partner's unique barriers and connect them with relevant resources, while also providing feedback on their emissions reduction strategies. The Better Climate Challenge program also offers data support to partners, including assistance with calculating GHG emissions. Through this support, DOE helps partners demonstrate their pathways to decarbonization for others in the marketplace.

In the past year, the most common areas of technical assistance were:

- ▶ Buildings Audits and Measures
- ▶ Emissions Reduction Planning
- ▶ Heating System Electrification
- ▶ HVAC/Heat Pumps
- ▶ Industrial Systems and Processes
- ▶ Renewable Energy

- ▶ For organizations with buildings, decarbonization of heating systems without using electric resistance heat is a high priority. Methods to retrofit existing buildings to better use heat pump technology, such as improving building envelopes, is a critical pathway for this effort.
- ▶ For all organizations, electrification can often yield significant benefits beyond energy savings and emissions reductions, such as productivity, quality, and resilience improvements. These additional benefits can help make the case for higher-cost electrification projects.

Additional Working Groups Launched in 2023

- ▶ GHG Emissions Reduction Audits and Assessments
- ▶ Onsite Renewable Energy and Storage
- ▶ Low-Emission Alternatives to Industrial Thermal Loads

PRIORITIZING DECARBONIZATION

Leveraging Resources to Achieve Results

Decarbonization Resource Hub

The [Decarbonization Resource Hub](#) provides resources to guide organizations through every step of their decarbonization journey — from planning and funding to implementation. Explore tools, checklists, frameworks, and case studies to access insights, strategies, and advice from DOE technical experts and partners across every sector.

Featured tools and resources:

- ▶ [Framework for Emissions Reduction Planning](#)
- ▶ [Low Carbon Pilot Action Plan Templates](#)
- ▶ [Carbon Inventory Calculator](#)
- ▶ [Decarbonizing HVAC and Water Heating in Commercial Buildings](#)



Working with Utilities

AVANGRID, Exelon Corporation, and the Pacific Gas and Electric Company are the first utilities to join the Better Climate Challenge. These partners are working with DOE to reduce direct emissions within their portfolio of utility-owned facilities. By addressing persistent barriers to decarbonizing utility operations, they are demonstrating an increased commitment to leveraging their role in transforming the built environment.



Technical Assistance Webinars

DOE experts, scientists, and program partners provide insights into cutting-edge technologies, strategies, and action plans that can serve as helpful resources to achieve low- to no-carbon buildings.

Recent topics have included:

- ▶ [Framework for GHG Emissions Reduction Planning in Buildings](#): Guides organizations to develop an actionable plan to achieve their scope 1 and 2 GHG emissions reduction targets across a portfolio of buildings.
- ▶ [Show Me the Money: Financing Decarbonization Projects](#): Introduces financing mechanisms available through Financial Allies to fund decarbonization projects, along with practical steps to identify and source capital from grants, third-party investors, bonds, and more.
- ▶ [Why Deep Energy Efficiency Now Matters More Than Ever](#): Introduces University of California, Irvine's program to achieve deep energy savings in both new and retrofitted buildings. UC Irvine describes how this approach is more impactful, permanent, and affordable than relying on emissions offsets, and is necessary to meet the urgency of the moment.

Visit the Solution Center [webinar page](#) to view more on-demand decarbonization webinars.



PARTNERS:

3M
ABB
Agnes Scott College
Albany County, NY
Ann Arbor, MI
AstraZeneca
AT&T
AvalonBay
AVANGRID
Bard College
Bendix Commercial Vehicle Systems LLC
Bentley Mills
Billerud Americas Corporation
BorgWarner
Brewery Vivant
Bullitt County Public Schools, KY
BXP
California State University, Sacramento
Chattanooga, TN
Chicago Housing Authority
Chicago Public Schools
Chula Vista, CA
Clark County, NV
Cleveland Clinic Foundation
Cleveland, OH
Cleveland-Cliffs Inc.
Codman Square Neighborhood Development Corporation
Colgate-Palmolive Company
Colorado State University
Columbia Association
Community Housing Partners
Credit Human
Cummins Inc.
Dallas, TX
DaVita
Deschutes Brewery
DSM North America
Eastman Chemical Company
Eden Housing
Electrolux
Elme Communities
Emerson
Empire State Realty Trust
Enterprise Community Development
Evoque
Exelon Corporation
Fairfax County, VA
Ford Motor Company
Foundation Communities
Genentech Inc.
General Electric (GE)
General Motors
Glens Falls, NY
Goodyear Tire & Rubber Company
Grand Rapids Water Resource Recovery Facility
Harley-Davidson Motor Company
Hewlett Packard Enterprise
Hillsboro School District, OR
Hillsboro, OR
Hilton Worldwide
HNI Corporation
Holcim U.S.
Homeowner's Rehab Inc.
Honeywell International
Housing Authority of the City of Pittsburgh
IKEA Retail U.S.
Ingersoll Rand
International Paper
Intertape Polymer Group Inc.
Jamestown
Johnson Controls
Kansas City, MO
King County Housing Authority
Kingspan Insulated Panels, Inc.
Knoxville, TN
Kohl's, Inc.
KYB Americas Corporation
La Crosse, WI
LaSalle Investment Management
Lear Corporation
Legacy Vacation Resorts
Legrand North and Central America
Lendlease
Life Time, Inc.
Link Logistics
Lopez-Dorada Foods
Los Angeles Department of Water and Power
Los Angeles Unified School District
Louisville, KY
Lundberg Family Farms
Madison, WI
Marriott International
Mayo Clinic
Mercy Housing, Inc.
Metal Technologies, Inc.
MetLife Investment Management
MGM Resorts International
Miami-Dade Water and Sewer Department
Mitsubishi Electric Automotive America
Village of Montour Falls, NY
Mutual Housing California
National Housing Trust
Nestlé
Nissan North America
Orlando, FL
Pace University
Pacific Gas and Electric Company
Paramount Pictures

Philadelphia, PA
Pima County Regional Wastewater Reclamation Department
Providence, RI
QTS Data Centers
River Trails School District 26, IL
Roanoke, VA
RTX
RXR Realty
Sabey Data Centers
Saint-Gobain Corporation
Saint Louis, MO
Saint Paul, MN
San Diego, CA
Schneider Electric
Schochet Companies
Seattle Housing Authority
Sherwin-Williams
Siemens
Sika Corporation
Southampton, NY
Southern Oregon University
Standard Communities
Stanley Black & Decker
State of Hawaii
State of Maryland
Steelcase Inc.
Stellantis
Stoneweg
Stryker
Sunrise Opportunities
Synthomer
Target Corporation
Tarkett USA Inc.
Tenderloin Neighborhood Development Corporation
The Chemours Company
The Tower Companies
Topsoe
Toyota Motor North America, Inc.
Trane Technologies
Uber Technologies, Inc.
United Mechanical and Metal Fabricators Inc.
University of Chicago
University of Michigan
University of Virginia
UW Health
Veris Residential
Vestolit
Victory Housing
Volvo Group North America
Vornado Realty Trust
W.L. Gore & Associates
Waupaca Foundry, Inc.
Weatherford US, LP
Whirlpool Corporation
WinnCompanies
Worcester, MA

Xerox Corporation
Zebra Technologies Corporation

FINANCIAL ALLIES:

Ecosave Inc.
Hawaii Green Infrastructure Authority
Kyotherm
Metrus Energy
Renew Energy Partners
Skyven Technologies
Solaris Energy Inc.

ALLIES:

American Hotel & Lodging Association
American Society for Healthcare Engineering
American Society of Heating, Refrigerating & Air-Conditioning Engineers
American Solar Energy Society
APPA – Leadership in Educational Facilities
Association for the Advancement of Sustainability in Higher Education
Association of Energy Engineers
Building Owners & Managers Association International
Chartered Institute of Building
ConnexFM
Curtis + Ginsberg Architects
Elevate
Green Building Initiative
Housing for the Future
Hydraulic Institute
ICAST
ICLEI: Local Governments for Sustainability
Institute for Market Transformation
International Facility Management Association
International Institute for Sustainable Laboratories
My Green Lab
National Institute of Building Sciences
National Insulation Association
North American Sustainable Refrigeration Council
NOWi Sensors
Pump Systems Matter
Rewiring America
RMI
Second Nature
Slipstream
Stewards of Affordable Housing for the Future
The Real Estate Roundtable
U.S. Green Building Council
Urban Land Institute

DRIVING INNOVATION

Learning from Peers and Informing RD&D

Through the following activities, program partners are able to harness the expertise of DOE's National Laboratories and collaborate with peers. Partners also help ground DOE's research, development and deployment (RD&D) activities in real-world challenges and contexts. The tools and resources that partners and DOE's experts develop together help other organizations across nearly every sector of the economy reach their sustainability goals.

Technology Campaigns

Technology Campaigns aim to accelerate the adoption of efficient building technologies by providing technical assistance, resources, and guidance on implementing best practices.

- ▶ **Building Envelope Campaign:** Improves the performance of building envelopes in both new and existing buildings by setting goals for building envelope performance, determining available energy savings, and providing technical support. In 2022, 13 participants were recognized for high performing building envelopes.
- ▶ **Integrated Lighting Campaign:** Helps facility owners and managers integrate advanced lighting controls and lighting systems with other building or business systems in their facilities. In 2022, 15 participants were recognized for exemplary projects in lighting.
- ▶ **Smarter Small Buildings Campaign:** Offers technical assistance and recognition opportunities to help small- and medium-sized buildings adopt rooftop HVAC units (RTUs) to improve comfort, save on energy costs, and reduce greenhouse gas emissions.
- ▶ **Internet of Things (IoT)-Upgradeable Lighting Challenge:** Invites end-users and manufacturers to be recognized for their participation and creative input regarding the widespread adoption of IoT-Upgradeable lighting.

Featured tools and resources:

- ▶ [Building Envelope Campaign Resources Page](#)
- ▶ [Product Selection Guidance for Small Building Control](#)
- ▶ [Interior Lighting Toolkit](#)
- ▶ [Smart Energy Analytics Campaign Toolkit](#)

Learning from Partners

At the 2023 Better Buildings, Better Plants Summit, partners and professionals from nearly every sector in the marketplace met with DOE and national laboratory staff to discuss the technologies and systems needed to accelerate portfolio-wide emissions reductions. Highlights included the following:

- ▶ An RD&D workshop where partners and DOE engaged in two-way dialogue on topics such as HVAC, lighting, appliances and smaller electric loads, the circular economy, and industrial electrification.
- ▶ Better Climate Challenge workshops with exercises for partners around emissions reduction planning.
- ▶ More than 60 additional sessions and presentations featuring partners with new ideas and strategies for achieving ambitious emissions reduction and efficiency goals.

View or download presentations from the 2023 Summit [here](#).

In addition, DOE is working closely with Better Climate Challenge partners to understand their needs through tailored, direct technical assistance and targeted working groups to address common barriers.



Partners engaged in an emissions reduction planning workshop at the 2023 Better Buildings, Better Plants Summit.

Technology Research Teams

Led by experts from DOE's National Laboratories, Technology Research Teams analyze the latest research and development on a range of building technologies with the goal of providing market-ready solutions to partners. Technical focus areas include plug and process loads, renewables integration, space conditioning, energy management and information systems, refrigeration, lighting, market solutions, and building envelopes.

Featured tools and resources:

- ▶ [Decarbonizing the Commercial Kitchen](#)
- ▶ [Connecting Electric Vehicle Charging Infrastructure to Commercial Buildings](#)

Accelerators

Better Buildings Accelerators are targeted, short-term efforts to address persistent barriers to efficiency, decarbonization, and more. They aim to speed up investments and adoption of proven approaches by demonstrating what's possible through the development of case studies, toolkits, and market research. Nearly 20 Accelerators have been completed to date. Visit the [Accelerator landing page](#) on the Solution Center to learn more.

Workforce Development

- ▶ Completed in 2023, Workforce Development Accelerator participants increased interest in building energy efficiency careers, improved curricula, and streamlined career pathways. The Accelerator team also matched twelve partners to technical assistance providers who helped map curricula, determined skills gaps in existing programs, and aligned skills training to certifications. Workforce Development Accelerator partners were featured at the 2023 Better Building, Better Plants Summit, as well as in the Better Buildings Summer Webinar Series.

Packaged Combined Heat and Power (CHP)

- ▶ Completed in 2023, the CHP Deployment Program worked with engagement partners to validate reductions in installation times and project costs for pre-engineered and technically validated packaged CHP systems. In the past year, partners finalized their profiles for incorporating packaged CHP, and informed the creation of the [Packaged Combined Heat and Power Technology Overview and Market Profile](#) resource.

Sustainable Corrections (SCIP)

- ▶ SCIP works with state and local correctional facilities through a voluntary partnership to target 5% short-term and 20% long-term portfolio-wide energy savings. Nearly 20 state and local partners represent more than 280 facilities and about 30% of state prisons. Partners are developing their final infrastructure improvement plans as their capstone projects in SCIP.

Sustainable Wastewater Infrastructure (SWIFt) 2.0

- ▶ SWIFt engages wastewater treatment facilities in a voluntary partnership to achieve 5% short-term and 25% long-term facility-wide energy savings, learn about financing opportunities for infrastructure upgrades, and implement advanced energy upgrades. More than 150 signatory partners represent more than 325 wastewater facilities across 43 states. Since 2016, SWIFt partners have achieved, on average, a 7% total energy intensity reduction over their baseline, and nearly 131 million kWh in cumulative energy savings.

Design and Construction Allies

The Design and Construction Allies bring together industry leading architects, engineers, and construction professionals to push the envelope for more energy-efficient and lower-carbon building design and performance. To date, this effort has involved nearly 90 design and construction professionals from more than 40 participating firms, whose combined portfolio of projects generated more than \$33 billion in 2022.

In 2023, the Design and Construction Allies participated in two working groups bringing together designers and building owners on the topics of building retrofit strategies and thermal heating design guidance. Participants are informing the development of resources to implement decarbonization strategies for building energy efficiency and electric-based heating systems, including the [Embodied Carbon Resource Navigator](#).

To learn more about how these allies are demonstrating leadership, [click here](#).

SPOTLIGHTING PARTNERS

Site Visits

DOE recognized many partners through social media and news stories throughout the year, and held site visits at the partner locations highlighted below.

The City of Chattanooga, TN



The City of Chattanooga achieved over 35% energy intensity savings at its Moccasin Bend Environmental Campus (MBEC) through a range of innovative energy efficiency improvements. The city upgraded the campus's equalization (EQ) blowers for an expected annual savings of 10 million kWh, installed a 10-acre solar array anticipated to provide 6,000 megawatt hours (MWh) annually, and overhauled its biosolids management system to reduce hauling needs and generate a renewable gas product.

Parkway School District in St. Louis, MO



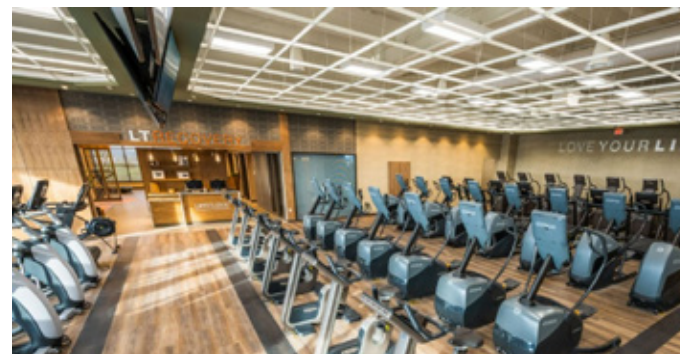
Parkway School District achieved a 20% reduction in annual energy use and annual savings of \$100,000 at its South High School in St. Louis. The district installed a central geothermal plant and a 75 kW solar array, implemented building envelope upgrades, LED lighting retrofits and controls, and completed the retro-commissioning of the school's HVAC system.

Waupaca Foundry Inc. in Waupaca, WI



Waupaca Foundry Inc., the largest iron foundry company in the world, reduced portfolio-wide energy intensity by more than 20% in an especially energy-intensive industry. Waupaca installed a waste heat recovery system at the melt center which provides 100% of its hot water needs year-round and 70% of the building's winter heating requirements, upgraded the compressed air system, and began using computerized displays from start to finish to improve consistency and efficiency.

Life Time, Inc. in Chanhassen, MN



Life Time, Inc. achieved a nearly 40% reduction in energy intensity across its portfolio of more than 18 million square feet through electric, natural gas, and water efficiency projects. At its club in Chanhassen, MN, Life Time reduced energy use by 35% and water use by 60% over the past decade through LED retrofits, equipment efficiency improvements, and pool pump upgrades.

Better Climate Challenge Road Show

DOE's latest video series features the work of Better Climate Challenge partners as they decarbonize their facilities. In Season One, DOE's experts visited Nashville, TN to learn from partners Nissan North America, The Chemours Company, and Whirlpool Corporation.

Better Climate CHALLENGE
U.S. DEPARTMENT OF ENERGY

ROAD SHOW

WATCH SEASON ONE
betterbuildingssolutioncenter.energy.gov/roadshow

Stay tuned for Season Two in Cleveland, OH!

TAPPING INTO PROVEN SOLUTIONS

Better Building Solution Center

DOE's Better Building Solution Center is the place to find proven and cost-effective solutions to help tackle decarbonization, energy efficiency, water and waste reduction, and much more.

- ▶ Use search filters to narrow down 3,000+ partner solutions to find the best strategy or technology for your organization.
- ▶ Access resource hubs on topics such as workforce development, resilience, decarbonization, and renewable energy.
- ▶ Learn how to participate in Better Buildings Initiatives, including peer exchange opportunities like the Water Savings and Waste Reduction networks, and how to join one or more of the Initiative's challenges.
- ▶ Identify funding opportunities and secure financing for decarbonization and efficiency projects.
- ▶ Attend webinars on challenges facing energy professionals, with experts leading the conversations on best practices, cost-effective strategies, and innovative approaches.

Proven Solutions that Move the Market

Better Buildings solutions come in many forms, from partner-developed case studies to webinars, toolkits, and technology information suites. They feature replicable decarbonization and efficiency measures that are implemented by industry leaders across different sectors and are available to help any organization be inspired and learn what's possible.

Click [here](#) to explore solutions by barrier, building type, sector, technology, and more.



Search. Find. Save.

Search 3,000+ emissions reduction and efficiency solutions

The Better Buildings Solution Center is getting an UPGRADE.

Features include:

- A new menu for easier navigation
- Upgraded interactive data displays to better showcase our partners' progress
- A powerful, enhanced search platform to more effectively discover the most relevant solutions, technologies, and strategies for your organization

New on the Solution Center

Funding and Incentives Resource Hub

This hub allows users to navigate the many rebates, funding opportunities, and other incentives available through the Inflation Reduction Act and Bipartisan Infrastructure Law. The list is regularly updated and continues to evolve as more resources become available.

Low Carbon Pilot Toolkit

A collection of key learnings and materials from the Low Carbon Pilot that highlights partner best-practices and serves as a useful starting point for organizations pursuing decarbonization.

Decarbonization Technical Assistance Webinars

Curated collection of technical assistance and decarbonization webinars that can serve as helpful resources to achieve low- to no-carbon buildings.

Top 5 Partner Solutions

1. Celanese Corporation: Large Chemical Plant Improves Energy and Environmental Performance with Boiler Upgrade ([link](#))
2. IHG Hotels & Resorts Green Engage Program ([link](#))
3. Ford Motor Company: Dearborn Campus Uses a Digital Twin Tool for Energy Plant Management ([link](#))
4. New York City Housing Authority: 344 East 28th Street ([link](#))
5. Denver's Energy Benchmarking Ordinance ([link](#))

[Subscribe](#) to get top partner solutions delivered to your email.

Better Buildings Webinar Series

Tailored to provide valuable insights for energy professionals, the Better Buildings Webinar Series covers a wide range of topics related to energy efficiency, decarbonization, and water and waste efficiency measures. View upcoming webinars on the [Better Buildings Webinar Series page](#) or watch [webinars on-demand](#).

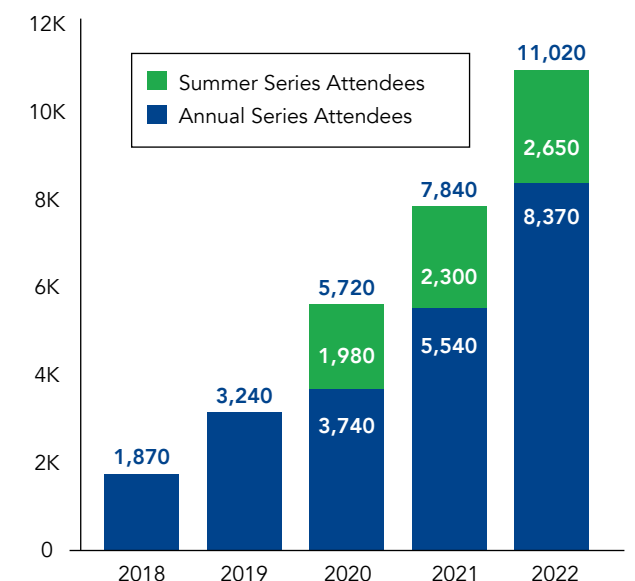
Since 2018 there have been:

- 100+** Series webinars hosted led by DOE and technical experts
- 29K+** Live webinar attendees
- 17K+** On-demand views
- 500%** Increase in attendees

Since 2022 there have been:

- 11K** Attendees
- 400+** Average attendees per webinars

Better Buildings Webinars: Total Attendees



*The Better Buildings Annual series runs September – April, and the Summer series runs June – August.

Reducing Waste

Waste Reduction Network

The Waste Reduction Network brings together 60+ industry-leading partners to demonstrate successful approaches to waste management. The Waste Reduction Network enables partners to:

- ▶ Formalize their commitment to waste reduction by setting ambitious public goals, and earn recognition for progress made reducing waste and associated energy use.
- ▶ Network with peers to share solutions.
- ▶ Receive technical assistance from DOE and national laboratory experts.
- ▶ Receive priority access to new tools, trainings and best practices towards waste reduction.

Notable outcomes from the Waste Reduction Network include:

- ▶ Developed [Virtual Trainings](#) for manufacturers to reduce waste with 150+ registered participants.
- ▶ Developed [The Waste Stream Energy Content Calculator](#) to help Industrial partners better understand the link between waste and energy. This spreadsheet-based tool evaluates the potential for energy recovery from applicable waste streams, outlines the impact of on-site energy consumption, and offers the ability to evaluate on- and off-site GHG impacts of the recovered energy.
- ▶ Presented partner best-practices and lessons learned at the 2023 REMADE Circular Economy Conference and Tech Summit.

Visit the [Waste Reduction Network](#) page to learn more.

Achieving a Waste Reduction Goal

GENERAL MOTORS

General Motors surpassed its 90% waste diversion goal by achieving a 91% diversion rate since 2019.

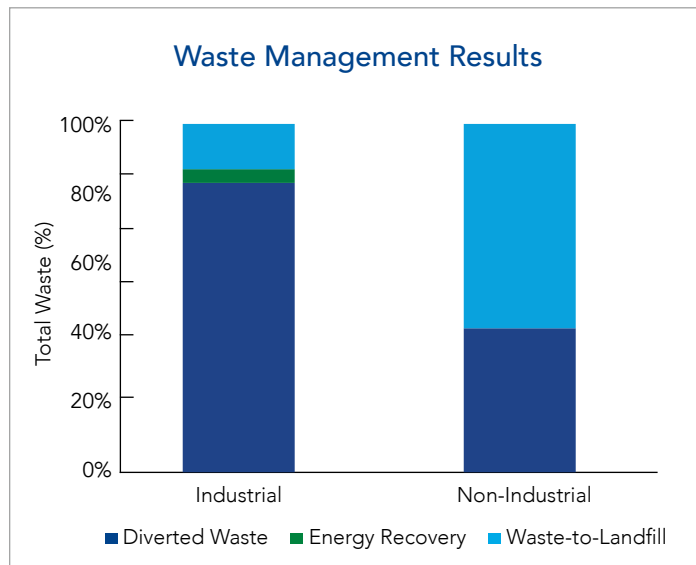


LEADERSHIP IN ACTION

Better Project and Practice award winners in the Waste Reduction Network

[Steelcase](#) developed step-by-step guidance to reduce manufacturing scrap waste, increase efficiency, and generate cost savings, helping the Kentwood Plant reduce scrap steel by 288,000 pounds, equating to a 26% reduction in waste-driven emissions.

[Empire State Realty Trust](#) implemented a long-term plan to address waste and water reduction at the Empire State Building while prioritizing occupant health.



Saving Water

Water Savings Network

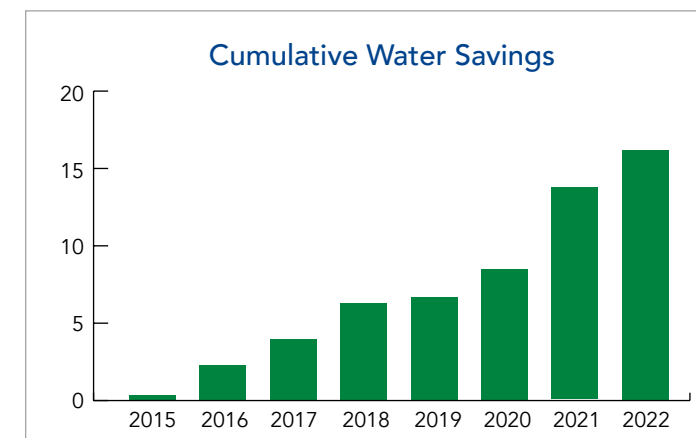
The importance of water conservation is growing as the demand for and cost of water increases and water availability diminishes. Water conservation and efficiency efforts save energy and operational costs while protecting those most vulnerable to water shortage.

The Water Savings Network brings together organizations to discuss and demonstrate successful approaches to conserving water in buildings and plants. To enhance these efforts, the Water Savings Network gives 70+ partners the opportunity to receive technical guidance and support, join a network of peers working to address similar issues and share solutions, and set water goals in partnership with DOE to track progress over time.

Notable outcomes from DOE's collaboration with partners around water reduction include the following:

- ▶ Partners have reported more than 16 billion gallons of water reduction since 2015.
- ▶ Developed more than 150 solutions for the Better Buildings Solution Center on topics such as water efficient equipment, exterior landscaping, and waste-water management.
- ▶ Hosted trainings that helped industrial partners evaluate their plant water efficiency status and identify more than \$2 million in water reduction projects.

Visit the [Water Savings Network](#) page to learn more.



LEADERSHIP IN ACTION

Better Project and Practice award winners in the Water Savings Network

[Mercy Housing](#) decreased water consumption by more than 30% and will save over \$10,000 annually after installing sensors and a real-time water meter to detect toilet leaks, mitigate costs, and address health concerns of residents.

[Ingersoll Rand](#) completed a die casting water reduction project to reduce absolute water use by more than 23%.

[General Motors](#) created a program that led to a 10-time increase in the number of suppliers working to drive energy and water-reduction efforts at their facilities.

Achieving a Water Savings Goal

CARLISLE, LLC

Carlisle surpassed its portfolio-wide 20% water intensity reduction goal by achieving 28% reduction from a 2018 baseline across 459,000 square feet.

ALBUQUERQUE PUBLIC SCHOOLS, NM

Albuquerque Public Schools, NM surpassed its portfolio-wide 20% water intensity reduction goal by achieving 27% reduction from a 2014 baseline across 13 million square feet.

EMPIRE STATE REALTY TRUST

Empire State Realty Trust surpassed its portfolio-wide 20% water intensity reduction goal by achieving 27% reduction from a 2017 baseline across 9 million square feet.

COMMONWEALTH PARTNERS

CommonWealth Partners surpassed its portfolio-wide 20% water intensity reduction goal by achieving 26% reduction from a 2010 baseline across 11 million square feet.



SECTOR SPOTLIGHTS | Overview

DOE's Better Buildings partners represent nearly every sector of the U.S. economy and collectively employ millions of Americans. These organizations are leaders in developing solutions to address the climate crisis. Their innovative efforts to improve waste, water, and energy efficiency benefits the American people, and economy, and the global environment.



Coming Together to Address Common Challenges

The Better Buildings Initiative fosters collaboration across building types and sectors for partners to gain valuable insights from their peers and expand their networks. Addressing common barriers together strengthens the solutions employed by partners and accelerates their adoption into the marketplace.

This past year, partners participated in a variety of knowledge-sharing activities, including:

- ▶ **Industrial Decarbonization:** Partners joined nearly 20 decarbonization peer exchanges, connecting 30 partners with each other and industry experts on topics such as industrial electrification, renewable natural gas, green bonds, and carbon capture.
- ▶ **Healthcare Sector Decarbonization:** Partners shared best practices and joined DOE national laboratory experts to discuss topics including decarbonizing laboratories, resilience planning through large-scale heat pump systems, and resilience planning using PV storage to enable microgrid configurations.

The Sector Spotlights that follow illustrate the many ways partners are driving decarbonization and prioritizing efficiency:

Industrial	26
Commercial real estate	30
Healthcare	32
Retail, food service, and grocery	34
Hospitality	36
Higher education	38
K-12 school	40
State and local government	42
Multifamily	44
Financial Allies	46
Residential	48
Federal	50

- ▶ **Electrifying Commercial Kitchens:** Partners from the higher education, hospitality, and the retail, food service, and grocery sectors discussed challenges and solutions to electrifying commercial kitchens.
- ▶ **Financing Decarbonization:** Partners from the healthcare, hospitality, and retail, food service, and grocery sectors collaborated on best practices for financing mechanisms available for energy efficiency and decarbonization projects. Resources available for organizations were captured in a blog titled [Financing Mechanisms for Energy Efficiency and Decarbonization Projects](#).
- ▶ **State and Local Planning for Energy (SLOPE):** More than 10 state and local partners met to identify how to incorporate EV infrastructure, increase onsite solar generation, and address issues around energy justice.

Awarding Performance and Innovation

More than 35 Better Buildings Initiative partners received a [2023 Better Project or Better Practice award](#) to recognize their innovative and industry-leading decarbonization, energy efficiency, water, and waste reduction accomplishments.

Visit the awards page on the Better Buildings Solution Center to see previous winners, access more information, or to submit an application.

" Thank you for recognizing KYB. We are delighted for the opportunity to showcase our project at the Summit. "

KYB Americas Corporation

" This is so exciting, and such a great validation for the whole team's hard work!! Thank you also for your team's ongoing support of our work over the last couple of years! "

Atlanta Housing Authority

" Thank you so much, you do not realize how happy this will make our team. We have put in so much hard work to make this happen! "

Ohio Department of Rehabilitation and Correction



The U.S. Industrial Sector, which provides jobs for nearly 13 million people,² accounts for approximately 30% of U.S. primary energy-related CO₂ emissions.³

286 UNIQUE SECTOR PARTNERS

3.6 THOUSAND FACILITIES

\$11.8 BILLION SAVED SINCE 2011

SECTOR SPOTLIGHTS | Industrial

GHG emissions from industrial facilities total 1.91 billion metric tons of CO₂e annually.¹ Organizations in the sector have collaborated with DOE over the past year to address the following barriers to decarbonization:

- ▶ Electrifying thermal processes is challenging because of barriers around availability, infrastructure, and cost. The [Industrial Electrification Working Group](#) convened partners to discuss barriers to electrification, leading to the development of the Electrification Assessment Framework, which includes guidance on electrifying industrial thermal process loads served by fossil-fuel fired systems.
- ▶ It can be difficult for organizations to balance near-term, incremental efficiency measures while also trying to take transformational decarbonization actions. [The Framework for Greenhouse Gas Emissions Reduction Planning](#) delineates a structure for organizations to develop long-term, portfolio-wide plans to achieve their GHG emissions goals.
- ▶ Corporate financing barriers, high operational costs, and lack of access to data make it difficult to achieve emissions reduction goals. [The Funding and Incentives Resource Hub](#) was designed to connect organizations with available funding opportunities, including those that were created or expanded by the Inflation Reduction Act and the Bipartisan Infrastructure Law. In addition, DOE's new [Industrial Technologies page](#) was created to help organizations learn about and integrate new, innovative processes and technologies and get connected with funding opportunities.

- 14%** of the U.S. manufacturing energy footprint
- 2.4** QBTU of energy saved
- 147** million metric tons of CO₂ saved
- 1.8** average annual energy intensity improvement rate

Better Plants: Driving Improvements Across the Industrial Sector

DOE's Better Plants program is a partnership within the Better Buildings Initiative that helps industrial organizations achieve significant energy efficiency improvements, emissions reductions, and increased resilience across their portfolios. The program works with leading U.S. manufacturers and water and wastewater treatment organizations to target ambitious energy, water, waste, and GHG reductions. Partners receive support in the form of technical assistance, tools, resources, and national recognition. Within the last year, the program has worked with nearly 300 manufacturers and water and wastewater utilities, representing every U.S. state and territory.



Partners and DOE visiting Cleveland-Cliffs' Middletown, OH, facility during a plant tour.

Advanced Trainings to Accelerate Deeper Savings

- ▶ Advanced skills are needed to implement, maintain, and operate high-efficiency technologies that will lower emissions. DOE offers [In-Plant Trainings \(INPLTs\)](#) that provide participants with information and resources to overcome critical barriers to adopting energy management and emissions reduction practices and technologies.
- ▶ [Virtual Trainings](#) are online workshops led by DOE and other industry experts. Upon completion of a training, attendees can receive Professional Development Hours (PDH) certificates.
- ▶ Better Plants hosts annual [Technology Days](#) at DOE's National Laboratories to educate and encourage partners to engage with the available decarbonization skills, resources, and facilities at the labs – and to stay on top of the latest developments in advanced decarbonization technologies.
- ▶ Through the [Industrial Technology Validation Pilot \(ITV\)](#), DOE and its National Laboratories validate performance of emerging technologies in industrial environments. Results help organizations understand the viability of a solution while mitigating many of the risks associated with being an early adopter of emerging technology.
- ▶ In 2022, Better Plants launched the [Energy Bootcamp Series](#) – a 3-day crash course in industrial energy systems, energy management, and industrial decarbonization. Through a combination of classroom teaching and hands-on interactive learning, Bootcamps are a useful training tool for new energy and maintenance managers but are also effective refresher courses for seasoned employees. More than 200 participants joined two Bootcamps in the past year, focused on energy and decarbonization respectively.



National laboratory expert leading a training for industrial partners.

SECTOR SPOTLIGHTS | Industrial

New Tools and Resources:

- ▶ **VERIFI** (in beta) is a utility dashboard tool that models an organization's energy consumption using regression analysis and enables them to monitor, track, and improve their understanding of energy, water, and GHG emission patterns.
- ▶ **MEASUR** is an open-source software suite used to model industrial systems, enabling personnel to assess these systems for energy savings and GHG emissions reduction potential. MEASUR includes 7 industrial system assessment modules, a Motor Inventory module, a Data Exploration module, as well as nearly 80 standalone calculators for quick estimates.
- ▶ Electrification Toolkit with resources for pursuing decarbonization goals such as a heat pumps calculator, forklifts calculator, electrification readiness checklist, facility inventorying template, and a billing analysis spreadsheet.

Opportunities for Collaboration

- ▶ **Low Carbon Pilot:** For two years, 30 industrial partners piloted the program. They shared their experiences, successes, and challenges in their pursuit of low-carbon emission strategies, which are featured in the [Low Carbon Pilot Toolkit](#).
- ▶ **Better Climate Challenge Industrial Working Groups:** Over the last year, partners joined working groups on emissions reduction planning and industrial electrification to discuss opportunities and exchange best practices. See [page 13](#) for more details on the results of these working groups and more information on the newest ones being launched.
- ▶ **Peer Exchanges:** Nearly 20 partner peer exchanges were held, connecting industrial partners to each other and to industry experts across a variety of topics, including industrial electrification, renewable natural gas, green bonds, and carbon capture.

New Climate Challenge Partners



New Program Partners



LEADERSHIP IN ACTION

Better Practice Award Winners

3M realized energy and GHG reductions of more than 250,000 kWh and 140 metric tons of CO₂e during its initial pilot of converting its battery-powered industrial vehicles (PIVs), such as forklifts and tuggers, from lead-acid to lithium-ion batteries.

AT&T's Energy and Building Management Solution (EBMS) uses Internet of Things (IoT) technology to gather and centrally manage over 240 million data points each day from equipment across 1,000+ facilities, enabling an average of 8-10% savings in operating expenses since 2012.

The Chemours Company launched a corporate roadmap to reduce fluorinated organic compound (FOC) process emissions by 99% by 2030. To date, it has cut FOC emissions by more than 40%, resulting in a reduction of over 3.5 million MT of CO₂e emissions per year.

Eastman Chemical Company integrated its energy management and sustainability teams resulting in a more than 12% improvement in energy intensity since the baseline year with over 70 active energy efficiency projects valued at over \$20 million in estimated savings.

Energys developed the EnerSys Operating System (EOS) lean program which facilitates organizational change by fostering employee-driven opportunities at each plant to achieve energy and cost savings as well as waste and CO₂ emissions reductions.

General Motors' created a self-paced Energy Treasure Map supplier program focused on 20 of the most effective measures for reducing electricity, natural gas, and water usage, leading to a 10x increase in suppliers working to drive efforts at their facilities.

Sherwin-Williams initiated a Sustainability Challenge for new hire employees in its Accelerated Development Program, who identified more than \$100,000 in savings opportunities by reducing energy and water use and decreasing waste sent to landfills.

Steelcase developed step-by-step guidance to reduce manufacturing scrap waste, increase efficiency, and generate cost savings, helping the Kentwood Plant reduce scrap steel by 288,000 pounds, equating to a 26% reduction in waste-driven GHG emissions.

Stryker developed and augmented a self-assessment tool to drive a pipeline of over 120 future energy and emissions reduction projects across the enterprise. This tool includes replicable case studies of successful projects, specific guidance, and rules of thumb.

Better Project Award Winners

ABB lowered its U.S. carbon footprint by more than 16% and improved facility safety performance by installing a full capture system for Sulfur Hexafluoride (SF₆) emissions at its Pinetops, NC facility, effectively eliminating 99% of SF₆ emissions.

Bendix Commercial Vehicle Systems achieved zero liquid discharge status by implementing an all-electric high vacuum distillation system which has a 90% recovery rate and annually treats and reuses over 500,000 gallons of water in the plant's damper washing operations.

The Chemours Company reduced its greenhouse gas emissions by 1,200 MT of CO₂e per year through a project which improved boiler control and optimized burner fuel-to-air ratio to improve turndown, eliminate steam venting, and reduce stack losses.

Cummins reduced site electricity consumption by 6% and GHG emissions by over 1,700 MT CO₂e at its Rocky Mount Engine Plant by installing a 3.62 MW solar farm.

Hewlett Packard Enterprise's renewable landfill natural gas combined heat and power (CHP) project in Puerto Rico is expected to reduce annual energy costs by over \$2 million and GHG emissions by more than 60%.

Ingersoll Rand achieved a more than 23% reduction in absolute water consumption at its Sheboygan, WI, facility through a combination of water efficiency projects, including installing a water circulation temperature control system.

KYB Americas Corporation implemented a comprehensive chiller system replacement that resulted in annual energy savings of 2.1 million kWh and energy and maintenance cost savings of \$280,000.

Nestlé USA achieved annual savings of 3.7 million gallons of water and 7.3 million kWh of energy at its Gerber facility in Arkansas by installing an electrochemical water treatment technology that treats cooling tower water and reduces reliance on chemicals.

Saint-Gobain Corporation installed over 180 energy meters and integrated them with a smart energy management system at its gypsum wallboard plant. Within three months, the company identified opportunities to reduce energy usage and emissions.

Click [here](#) to access additional solutions and resources for organizations in this sector.



Twenty commercial real estate companies have joined the Better Climate Challenge representing over 700 million square feet of building space.

75 UNIQUE SECTOR PARTNERS

3.7 BILLION SQUARE FEET

\$490 MILLION SAVED SINCE 2011

SECTOR SPOTLIGHTS | Commercial Real Estate

GHG emissions from commercial real estate (CRE) facilities total 107 million metric tons of CO₂e annually.⁴ Organizations in the sector have collaborated with DOE over the past year to address the following barriers to decarbonization:

- ▶ CRE companies face a range of challenges achieving ambitious emissions reduction goals, including financing, internal stakeholder buy-in, and finding the right pathway for decarbonization. Best practices shared through peer exchange and working groups have provided a platform for CRE partners to learn about successful pathways to decarbonization from those facing similar barriers. These solutions are available on the [Commercial Real Estate Better Buildings Initiative page](#).
- ▶ Many CRE companies that lease office, retail, and multifamily space encounter challenges collecting tenant data to measure and mitigate scope 3 emissions. Through the [Green Lease Leaders](#) program, DOE and program partners have worked to understand how organizations can overcome tenant data access challenges and [published a series of case studies](#) exploring leasing best practices.
- ▶ It can be difficult for CRE companies to navigate regional energy grids because of local regulations and varying municipal targets. Better Buildings brought partners together for key virtual peer exchanges to share regional barriers and solutions in California, Pennsylvania, New York City, and Washington, DC.



Design and Construction Ally expert at the 2023 Better Buildings, Better Plants Summit.

LEADERSHIP IN ACTION

LBA Realty achieved [net-zero scope 2 emissions and reduced electricity consumption](#) at One Culver, an 8-story mixed-use office property located in Los Angeles, CA, by pursuing a renewable energy contract, installing window tinting, altering the energy management system and performing audits to identify retro-commissioning opportunities.

Hudson Pacific Properties addressed embodied carbon across its portfolio by utilizing lower embodied carbon fit-out products across various regions and converting an outdated shopping mall into new, Class A office space. This resulted in a more than [30% embodied carbon reduction](#) from an alternative full demolition/ground-up scenario.

In 2023, Green Lease Leaders recognized more than [70 organizations](#), including 13 Better Buildings CRE partners, for their leadership in green leasing.

Brandywine Realty Trust, a Better Buildings Alliance partner, was recognized for [integrating high-performance leasing and social equity practices](#) into building operations at its Philadelphia headquarters.

2023 Better Practice and Better Project Award Winners

Credit Human completed construction of a [12-story headquarter building that is nearly 65% more efficient than comparable buildings](#) through its utilization of a geothermal system for heating and cooling, and implementation of state-of-the-art building envelope, space conditioning, and lighting designs. The company is also [diverting 55% \(42% recycling and 13% compost\) of solid waste](#) from landfills.

Columbia Association reduced natural gas consumption by approximately [70% and GHG emissions by 18 metric tons per year](#) after installing five dual fuel heat pump units at a fitness facility.

Lendlease reduced [average annual gross utility costs by nearly \\$20 million](#) at two Hawaii communities spanning over 10,000 military homes with no required up-front capital investment, reducing grid electricity consumption by 30%, and water consumption by 35%.

Click [here](#) to access additional solutions and resources for organizations in this sector.

CASE STUDY

A Playbook for Reducing Emissions

Empire State Realty Trust, a Better Climate Challenge partner, developed the [Empire Building Playbook: An Owner's Guide to Low Carbon Retrofits](#) to demonstrate how the company reduced carbon emissions by more than 50% since the start of 2022. This playbook provides replicable technical and economic approaches for reducing the carbon emissions of high-rise buildings while implementing energy and emissions projects with proven returns on investment. The Playbook also demonstrates the technical and financial feasibility for the Empire State Building to achieve net zero by 2030 to align with company-wide sustainability goals.

Empire State Realty Trust received a [2023 Better Project Award](#) for this work.





The healthcare sector accounts for 8.5% of U.S. emissions,⁵ and if the global healthcare sector were a country, it would be the fifth-largest GHG emitter on the planet.⁶

SECTOR SPOTLIGHTS | Healthcare

GHG emissions from healthcare facilities total 50 million metric tons of CO₂e annually.⁴ Organizations in the sector have collaborated with DOE over the past year to address the following barriers to decarbonization:

- ▶ It can be difficult for healthcare organizations to balance goals to reduce energy use with the need to provide patient care. DOE brought together Better Climate Challenge sector partners, DOE experts, and Better Buildings [Design and Construction Allies](#) to discuss occupant centric, low-carbon construction and retrofits.
- ▶ Hospitals need to be resilient to increasing extreme weather events, so patient care isn't disrupted. The sector has been sharing resources and solutions like the [Efficiency-Resilience Nexus](#) page which highlights on-site renewable energy and beneficial electrification projects as well as the [Centers for Medicare & Medicaid Services \(CMS\) Categorical Waiver](#) that allows health systems to use clean energy microgrid systems to improve facility resilience and patient care.
- ▶ Medical Imaging Equipment (MIE) energy use is substantial and projected to increase with the introduction of new technology to the market and the expanding installation. The sector has shared best practices to manage, track, and reduce MIE energy loads and has collaborated with the National Renewable Energy Laboratory (NREL) Plug and Process Load Technical Research Team to inform the development of an [EPA ENERGY STAR specification for MIE](#).

32 UNIQUE SECTOR PARTNERS

550 MILLION SQUARE FEET

\$390 MILLION SAVED SINCE 2011



Partners in a working session at the 2023 Better Buildings, Better Plants Summit.

LEADERSHIP IN ACTION

Atlantic Health System achieved a reduction of nearly 45% in CO₂ emissions through the construction of a CoGen plant at the Morristown Medical Center that uses natural gas to generate electricity and captures the waste heat to generate steam.

DaVita leveraged virtual power purchase agreements (VPPAs) to [achieve 100% renewable energy](#) for its U.S. operations by constructing both wind and solar farms in Texas. Annually, the two projects combined are expected to generate approximately 625,000 megawatt hours (MWh) of clean energy.

Allina Health used a [climate risk vulnerability tool](#) developed by the State of Minnesota to understand climate change-related building and community infrastructure vulnerabilities. Allina Health evaluated the extent to which its building portfolio was at risk of weather-related and public health disasters, and then coordinated across teams to ensure uninterrupted patient care and ongoing support to the local community.

University of Utah Health restructured its sustainability team to propel progress towards campus-wide goals of achieving carbon neutrality by 2050. By distinguishing medical operations from maintenance operations, the University has fostered increased collaboration between Planning Design and Construction staff, main campus sustainability groups, and a new Corporate Sustainability Officer.

The Department of Veterans Affairs demonstrated over 50% water savings and \$16,900 cost savings at [Erie VA Medical Center \(VMAC\)](#) by replacing outdated single pass water-cooled condensing units with modern air-cooled condensing units. In addition to the water savings, the retrofit reduced overall maintenance costs and provided a more consistent operation of the overall system. This successful case study was presented at the 2023 CleanMed conference.

Click [here](#) to access additional solutions and resources for organizations in this sector.

CASE STUDY

[UC Davis Measures Energy Use of Medical Imaging Equipment \(MIE\)](#)

The UC Davis Department of Radiology and Medical Center Energy Team collaborated with the NREL Plug and Process Loads team to conduct a submetering study to identify opportunities to measure and reduce MIE energy consumption. The team initially focused their study on the MRI imaging modality, given that MRI machines are the largest consumers of energy within MIE. The data was collected at the UC Davis Main Hospital campus from multiple MRIs and space types to capture energy use during the "Ready-To-Scan" and "Low-Power" modes. This data was shared with EPA to develop an ENERGY STAR specification for MIE.





New retail, food service, and grocery partners committed more than 260 million square feet this year to reducing scope 1 and 2 emissions by 50% through the Better Climate Challenge.

48

UNIQUE SECTOR PARTNERS

1.2

BILLION SQUARE FEET

\$3.5

BILLION SAVED SINCE 2011

SECTOR SPOTLIGHTS | Retail, Food Service, & Grocery

GHG emissions from retail, food service, and grocery (RFSG) facilities total 89 million metric tons of CO₂e annually.⁴ Organizations in the sector have collaborated with DOE over the past year to address the following barriers to decarbonization:

- ▶ While energy data access has improved, the ability of RFSG partners to analyze and act on data remains a challenge. Better Buildings [created a toolkit](#) to build awareness and help partners comprehensively manage energy, emissions, and other sustainability data to make data-driven decisions.
- ▶ RFSG organizations face unique challenges implementing renewable energy solutions such as franchisee business models, leasing building space, or diverse building footprints. Better Buildings published a [comprehensive guide](#) on implementing innovative renewables strategies such as community solar, highlighting RFSG leaders' achievements. Better Buildings also hosted a related [community solar webinar](#) alongside DOE's [Solar Energy Technologies Office \(SETO\)](#).
- ▶ Tracking and reducing refrigerant leaks and resulting GHG emissions is crucial to achieving portfolio-wide emissions reduction goals because refrigerant leaks represent a significant source of emissions in the sector. The program [hosted a webinar](#) featuring organizational best practices and refrigeration resources in partnership with [EPA GreenChill](#).



Representative from The Wendy's Company presenting at the 2023 Better Buildings, Better Plants Summit.

LEADERSHIP IN ACTION

Life Time, Inc. joined the Better Climate Challenge and is committing to reducing its scope 1 and 2 GHG emissions intensity 50% by 2032. It plans to do this through strategies such as decarbonizing HVAC systems and implementing controls.

Target Corporation, a Better Climate Challenge partner, has achieved a 32% reduction in absolute emissions (scope 1 and 2) from a 2017 baseline through projects such as transitioning to CO₂ refrigerants and retrofitting its first net zero energy store. The company expects to generate more renewable energy than needed to support its operations.

IKEA Retail U.S. is powered by 100% renewable energy and currently owns two wind farms in the U.S., generating roughly 800 gigawatt hours of renewable electricity per year, helping the company progress towards its 80% absolute GHG reduction target.

Slipstream, a Better Climate Challenge Ally, created the free web-based energy modeling tool [Sketchbox™](#) to enable organizations to conduct energy analysis for new constructions and major retrofits of commercial buildings. The tool allows for early energy simulation to inform building design and improve building performance without adding cost.

Carlisle, LLC, a Wendy's Franchisee, exceeded its water use reduction goal by reaching 28% water savings through strategies such as irrigation water taps, water-cooled ice machines, and water bill monitoring.

Kohl's, Inc. has more than 160 solar arrays installed across the country and obtained over 6% of its electricity from renewable sources in 2022. The company is installing 15 additional arrays in Arizona and Illinois, which has the potential to increase Kohl's installed solar capacity by more than 10%. Kohl's also achieved its second Better Buildings Challenge goal by reducing energy use 30% from a 2008 baseline.

Nike exceeded its Better Buildings Challenge goal, achieving a 29% reduction in energy use from a 2012 baseline by pursuing innovation in low-impact materials and increasing its adoption of renewable energy. Nike is also driving energy efficiency within its supply chain.

Sheetz, Inc.'s new [Herndon, VA, store](#) features motion sensor faucets, LED lighting, and a comprehensive buildings management system that has contributed to a portfolio-wide energy use reduction of 13% since 2016.

Starbucks Coffee Company is pursuing a 25% Better Buildings Challenge energy reduction target, in part through investments in more than 23 community solar projects in New York state.

Click [here](#) to access additional solutions and resources for organizations in this sector.

ADDITIONAL HIGHLIGHTS

Comprehensive Guide on Community Solar Engagement Strategies

In coordination with DOE's Solar Energy Technologies Office (SETO), Better Buildings partners **Starbucks Coffee Company** and **Kohl's, Inc.**, along with **Walmart**, published a comprehensive guide with engagement strategies with community solar solutions to reduce GHG emissions. [This fact sheet](#) illustrates how retail companies are acting as anchor tenants and offtakers to support community solar projects. Investing in community solar has become a viable option for large companies looking to help spur the development of localized renewable energy, while also making progress toward their own climate and social equity goals.





The 2022 U.S. average occupancy rate increased over 2021 levels and is expected to climb to more than 60% in 2023, close to what it was before the start of the pandemic.⁷

16 UNIQUE SECTOR PARTNERS

940 MILLION SQUARE FEET

\$300 MILLION SAVED SINCE 2011

SECTOR SPOTLIGHTS | Hospitality

GHG emissions from hospitality facilities total 52 million metric tons of CO₂e annually.⁴ Organizations in the sector have collaborated with DOE over the past year to address the following barriers to decarbonization:

- ▶ As hotels continue to recover from periods of low occupancy during the COVID-19 pandemic, it can be a challenge to obtain approval for capital projects with payback periods longer than two years. The sector team hosted a cross-sector peer exchange and published a [resource](#) highlighting the top takeaways and tips for financing decarbonization and ultra-high building efficiency projects.
- ▶ Hospitality organizations face challenges tracking and managing their hotels' water consumption data, along with increasing difficulties brought on by regional droughts exacerbated by climate change. The sector hosted a [webinar](#) highlighting how partners are leveraging water efficient technologies and tracking water usage data, while also introducing [EPA's WaterSense Rebate Finder](#) to help pay for water efficient technologies.
- ▶ The influx of voluntary and regulatory reporting means hospitality companies must collect data on the climate-related risks to their assets, including scope 1, 2, and 3 GHG emissions. The sector hosted a roundtable discussion for partners to share their best practices, including the use of ESG reporting frameworks to help prepare for future reporting requirements, and conducting a materiality assessment to identify key data points for each organization.



Partners networking at the 2023 Better Buildings, Better Plants Summit.

LEADERSHIP IN ACTION

IHG Hotels & Resorts, a Low Carbon Pilot participant, established a Science Based Targets initiative (SBTi) goal to deliver 46% absolute reduction in GHG emissions from its owned, leased, managed and franchised hotels. The company worked with DOE to prioritize a list of energy conservation measures in a [roadmap for meeting the ambitious goal](#).

Neema Hospitality, a franchisee owner and operator, [reduced its year-over-year water costs by more than 30%](#), despite a 200% increase in occupancy, through the installation of low-flow water fixtures on sinks and aerators, and water efficient toilets with 0.8 gallons per flush.

Neema Hospitality a franchisee of **IHG Hotels & Resorts** was selected by IHG to participate in a networked thermostat pilot project. Neema and IHG measured the implementation of several networked thermostats and helped determine which model best allowed hotel staff to remotely configure them to decrease energy costs while keeping in mind guest comfort and satisfaction.

The American Hotel & Lodging Association (AHLA), a Better Climate Challenge Ally, published the [Hotel Kitchen Toolkit for Managing Food Waste](#) with in-depth guidance including training videos and food waste audit guides to properly track the amount of food wasted. AHLA also recently launched the sustainability branch of its website, titled "[Responsible Stay](#)," that features best practices from Better Buildings partners.

Legacy Vacation Resorts, a Better Climate Challenge partner, installed onsite solar panels at four resorts, where about 80% of each resort's electricity is sourced by onsite solar. The company is also conducting a networked thermostats pilot program at several locations and features low-flow water fixtures, LED lighting, and EV charging stations at each resort.

Marriott International shared details on the [Marriott Infrastructure Resilience and Adaptation \(MIRA\)](#) program, receiving significant interest from all sectors within the commercial space.

Click [here](#) to access additional solutions and resources for organizations in this sector.

CASE STUDY

MGM Achieves Energy Reduction Goal and Targets Emissions Reductions

MGM Resorts International reduced its energy use intensity by 23% and progressed towards its Better Climate Challenge goal by reducing its scope 1 and 2 GHG emissions by 33%. MGM has achieved this progress through the following initiatives:

- ▶ Installed a [100-megawatt \(MW\) "Mega Solar Array"](#)
- ▶ Replaced over 1.5 million lights with LEDs
- ▶ Integrated smart buildings controls and efficient HVAC systems
- ▶ Conducted preventative maintenance and energy audits, and utilized energy analytics and fault detection and diagnostics systems audits.





CO₂ emissions from nearly 135 publicly available 4-year U.S. colleges and universities total almost 5.7 million metric tons, equivalent to 1.3 million gas-powered cars being driven for a year.⁸

57 UNIQUE SECTOR PARTNERS

460 MILLION SQUARE FEET

\$340 MILLION SAVED SINCE 2011

SECTOR SPOTLIGHTS | Higher Education

GHG emissions from higher education facilities total 13 million metric tons of CO₂e annually.⁴ Organizations in the sector have collaborated with DOE over the past year to address the following barriers to decarbonization:

- ▶ Higher education institutions have a diverse array of building types and systems, such as energy intensive laboratories, commercial kitchens, medical buildings, and transportation networks. To help address barriers to decarbonization in campuses with diverse and energy intensive building portfolios, the sector developed and convened a peer exchange with healthcare partners on laboratory decarbonization.
- ▶ Institutions are facing increased demands to maintain higher indoor air quality (IAQ) standards to ensure healthy and productive spaces for students, faculty, and staff. Due to operational changes in HVAC processes like increased outside air, institutions are looking for ways to reduce energy usage while still maintaining these standards. The sector convened a cross-sector peer exchange to share best practices for commercial kitchen electrification, and included a presentation on the indoor air quality benefits of very high efficiency HVAC. The team also disseminated [DOE's Healthy Buildings Toolkit](#).
- ▶ With hazardous weather events increasing in severity and frequency, colleges and universities across the country are tasked with planning for resilient campus operations. The sector team held a joint higher education and healthcare resiliency peer exchange in addition to holding a commercial sector break out at the 2023 Better Buildings, Better Plants Summit focused on resiliency.



Catholic University of America leading a plant tour during the 2023 Better Buildings, Better Plants Summit.

LEADERSHIP IN ACTION

2023 Better Practice and Better Project Award Winners

The University of Virginia (UVA) Sustainable Labs Program decreased CO₂e emissions by more than 20%, energy use by almost 20%, and annual costs by around \$5 million. The program, focused on intensive lab buildings, enhances safety features and promotes engagement with UVA's research community.

Pace University reduced annual energy usage by 18% through building audits, updating energy management software, improving HVAC rescheduling, and implementing lighting upgrades. PACE University's [coordinated energy management strategy](#) has contributed to their 15% energy efficiency improvements to date.

The University of California, Irvine [converted its central plant cooling towers](#) to use recycled water instead of potable water, helping cut potable water use 50% and saving more than 60 million gallons of drinking water annually.

Click [here](#) to access additional solutions and resources for organizations in this sector.

Carleton College reduced its carbon footprint by 70% over the course of 15 years, largely by building three new geothermal bore fields to provide heat to campus. This [transition from steam to hot water](#) led to significant operational cost savings, reduced utility expenses, and increased system safety.

Agnes Scott College reduced scope 1 and 2 emissions by 40% to date, and plans to achieve carbon neutrality by 2037. Agnes Scott joined the Better Climate Challenge in 2022.

California State University, Sacramento is evaluating strategic building electrification to complement the decarbonization of its district energy system. Sacramento State has committed to net zero emissions by 2040 through the Second Nature Climate Leadership Network and joined the Better Climate Challenge in 2022.

Southern Oregon University (SOU) installed more than 60 kW of solar to help generate 340,000 kWh annually from over 1,000 solar panels to help provide clean power around campus. SOU joined the Better Climate Challenge in 2022.

CASE STUDY

Power Purchase Agreement to Double Solar Capacity on Campus

Colorado State University (CSU) [utilized a power purchase agreement](#) (PPA) to install 4.25 MW of solar systems across 20 sites on campus. This two-year solar project added 20 new installations to roofs and patches of open land across the University's Fort Collins Campus, nearly doubling its capacity and generating enough electricity to power more than 800 homes. CSU's PPA is a 28-year fixed rate contract that helped mitigate risk, control long-term utility costs, and assist in meeting environmental goals. The addition of these solar photovoltaic systems is contributing to CSU's commitment to 100% renewable electricity by 2030 and carbon neutrality by 2040.





Energy ranks as the second-highest cost, behind personnel costs, on K-12 school district operating budgets, totaling approximately \$8 billion annually nationwide.⁹

22

UNIQUE SECTOR PARTNERS

275

MILLION SQUARE FEET

\$130

MILLION SAVED SINCE 2011

SECTOR SPOTLIGHTS | K-12 Schools

GHG emissions from K-12 school facilities total 52 million metric tons of CO₂e annually.⁴ Organizations in the sector have collaborated with DOE over the past year to address the following barriers to decarbonization:

- ▶ Funding constraints pose a significant barrier for K-12 schools when pursuing energy and emissions reductions. The newly formed State and Community Energy Programs (SCEP) Office provides valuable funding opportunities to help schools overcome financial barriers. These opportunities were shared with K-12 partners through newsletters, technical assistance calls, and during the “[Community Strategies for Successfully Accessing Federal Funds for Energy Projects](#)” session at the 2023 Better Buildings, Better Plants Summit. Additionally, the [Funding and Incentives Resource Hub](#) on the Better Buildings Solution Center provides a centralized platform to navigate and discover rebates, funding opportunities, and incentives, including those available through the Inflation Reduction Act and Bipartisan Infrastructure Law.
- ▶ Determining a pathway to achieve emissions reduction goals is a common challenge faced by Better Climate Challenge partners. Through the Better Climate Challenge “[Portfolio-level GHG Emissions Reduction Planning](#)” and “[GHG Emissions Reduction Audits and Assessments](#)” working groups, K-12 schools received technical support in identifying specific next steps for evaluating, selecting and executing emissions reduction projects. Additional technical assistance and peer exchange opportunities were also presented during the [K-12 Schools meetup](#) at the Better Buildings, Better Plants Summit, including the [Efficient and Healthy Schools Campaign](#) and [Professional Learning Networks for Indoor Air Quality \(IAQ\) and Sustainability](#).



Parkway School District being recognized by DOE during a site visit.

- ▶ School districts often face challenges in identifying and prioritizing emissions reduction measures due to limited access to comprehensive data, analytical tools, and subject matter experts. To address this, experts from the National Renewable Energy Laboratory and Lawrence Berkeley National Laboratories provided technical assistance to Better Building Partners in evaluating the emission, energy, and cost impacts of technology options. Additionally, DOE tools such as [Asset Score](#) and [SEED](#) help school districts identify areas for improvement and effective strategies for implementing emissions reduction measures. Successful implementation strategies and solutions for K-12 schools are available through the Better Buildings Solution Center [K-12 sector page](#).

LEADERSHIP IN ACTION

Pasadena Independent School District's Jackson Intermediate School entered into an energy savings performance contract (ESPC) to achieve annual energy savings of nearly 40% and \$60,000 in annual cost savings. The ESPC includes measures to upgrade aging HVAC and lighting systems, optimize existing equipment, and modify occupant behavior.

Aurora Public Schools' Gateway High School, one of the district's most energy intensive schools, expects to reduce energy use by 20% and save more than \$50,000 annually after a real-time energy monitoring system was installed.

Indianapolis Public Schools' Raymond F. Brandes Elementary School's recommissioning initiative is expected to result in nearly 30% annual energy savings, 40% in water savings, and a combined annual cost savings of over \$30,000 from improvements including new setpoints for heating and cooling, additional zones added into the building automation system, and optimized controls throughout the facility.

Bullitt County Public Schools collaborated with the [Kentucky Energy Efficiency Program for Schools \(KEEPS\)](#) to create a district-wide Energy Plan and Energy Management Program to bring on an Energy Manager, establish school energy teams, host an energy mascot contest, identify cost-saving energy efficiency measures, and implement pre-holiday break shutdown checklists. As of 2019, the district reduced energy consumption by 21% from a 2013 baseline across 27 buildings.

Parkway School District's South High School in St. Louis, MO, implemented a comprehensive project to improve efficiency, resulting in more than 20% annual energy savings and \$100,000 annual cost savings. The project included installation of a central geothermal plant and a 75 kW solar array as well as building envelope upgrades, LED lighting and controls retrofits, and retro-commissioning of the school's HVAC system.

Click [here](#) to access additional solutions and resources for organizations in this sector.

CASE STUDY

Net-Zero Energy Facility

River Trails School District's Prairie Trails School was a 2023 U.S. Department of Education [Green Ribbon Schools](#) Honoree for promoting environmental sustainability in the community. Serving pre-kindergarten and kindergarten students, Prairie Trails School became the first net-zero energy facility in Mount Prospect, IL, when renovations were completed in 2021. Prairie Trails is also the nation's first net-zero energy school that meets the [PHIUS+ Source Zero standard](#) for using 40 to 60% less energy than conventional buildings. Sustainability features include solar panels, a permeable paver parking lot, and an efficient HVAC system with heat recovery.





U.S. cities bought 4,370 megawatts (MW) of clean energy in 2021 — enough to power more than 940,000 U.S. households annually.¹⁰

93

UNIQUE SECTOR PARTNERS

780

MILLION SQUARE FEET

\$1.3

BILLION SAVED SINCE 2011

SECTOR SPOTLIGHTS | State & Local Government

GHG emissions from state and local government facilities total 120 million metric tons of CO₂e annually.⁴ Organizations in the sector have collaborated with DOE over the past year to address the following barriers to decarbonization:

- ▶ State and local governments are setting ambitious emissions reduction goals, but face challenges that include aligning strategies and priorities across departments and agencies, and implementing climate action plans. To help, Better Climate Challenge technical advisors review state and local government's climate action plans to identify specific technologies to help reach plan targets and to provide cost-benefit analyses. Additionally, nearly 15 public sector partners joined the GHG Emissions Reduction Planning working group to discuss pathways for achieving portfolio-wide emissions reductions, and 10 partners contributed to the [Framework for GHG Emissions Reduction Planning](#) and the [Emissions Reduction Audit Checklist](#).
- ▶ Tight budgets, limited staff capacity, and competing priorities pose challenges for state and local governments seeking to fund emissions reduction projects. The newly formed [State and Community Energy Programs \(SCEP\) Office](#) oversees \$16 billion in funding from annual appropriations, the Bipartisan Infrastructure Law, and the Inflation Reduction Act, and is responsible for managing funding mechanisms, including formula grants, competitive grant awards, consumer rebate grants, and technical assistance. Through monthly newsletters and direct communications, Better Buildings and SCEP share resources such as the [Funding and Incentives Resource Hub](#), the [State and Local Solution Center](#), and more. These resources ensure that jurisdictions are well-informed of the opportunities available to effectively tackle emissions reduction activities.

"Our vision is to become the most environmentally friendly, socially inclusive, and economically vibrant city in the Southeast...one of the most sustainable cities in the U.S."

Mayor Buddy Dyer,
City of Orlando, FL

LEADERSHIP IN ACTION

2023 Better Practice and Better Project Award Winners

Louisville Metro Government saved more than \$1.5 million and reduced building energy use by nearly 10% through new energy management initiatives including utility billing analysis and building performance audits.

The Maine Department of Corrections implemented a series of carbon reduction initiatives across its portfolio, including mounting solar panels, installing high efficiency rating systems, and achieving [50001 Ready](#) designation, along with additional water use reduction measures.

The Village of Montour Falls, NY, piloted a plan to prevent solid waste produced in the Village and sludge from a new water reclamation facility from entering landfills through an educational program and diversion strategies for residents and businesses.

The Town of Southampton, NY, reduced GHG emissions by more than 210 metric tons of CO₂e per year at its 100+ year old town hall building after completing a multi-year project to retrofit the steam heating, lighting, and water systems.

The Ohio Department of Rehabilitation and Correction completed a three-year facility project to install state-of-the-art HVAC technology, energy efficiency metering, waste reduction measures, and water use reduction measures.

Chattanooga, TN, reduced energy use by 27% and water use by nearly 25% from a 2013 baseline, saving over \$1.4 million, by implementing a range of energy and water efficiency measures at its Moccasin Bend Environmental Campus. The campus manages and treats wastewater for six counties.

The Commonwealth of Massachusetts highlighted its deployment of onsite solar assets during the 2023 Better Buildings, Better Plants Summit session ["Tapping into the Power of Utility-Scale and Onsite Solar."](#) With a cumulative installed capacity of nearly 35 MW at state-owned sites, the state achieved significant electricity cost and demand charge savings, in addition to greening the regional grid.

The State of Maryland presented on its [lessons learned through climate action planning](#), as well as on its [efforts around building performance standards](#), at the 2023 Better Buildings, Better Plants Summit. By 2030, approximately 90% of its state-owned buildings must achieve a 20% reduction in net direct GHG emissions, with the ultimate goal of achieving net-zero direct GHG emissions by 2040.

Click [here](#) to access additional solutions and resources for organizations in this sector.

ADDITIONAL HIGHLIGHTS

New Tools and Resources Available to State and Local Governments

- ▶ **Decarbonization strategies and best practices**, including the [Framework for Greenhouse Gas Emissions Reduction Planning](#), and the [GHG Emissions Reduction Audit Checklist for Owners](#).
- ▶ **Office of State and Community Energy Programs (SCEP) resources**, including those to help create new and more [accessible pathways to federal funding](#) and the [State and Local Solution Center](#).
- ▶ **Energy data management resources**, such as the [Energy Data Management Guide](#) which provides a step-by-step approach to establishing a robust and sustainable data management program.
- ▶ **Planning tools for State and Local Governments**, including the [State and Local Planning for Energy \(SLOPE\) Platform](#), the [Low-Income Energy Affordability Data \(LEAD\) Tool](#), NREL [REOPT Tool](#), and DOE's collection of [Building Energy Data Tools](#).



More than 15 Better Climate Challenge partners are pursuing ambitious emissions reduction goals and delivering climate resilience and health benefits while working to preserve affordability.

Better Climate Challenge partner Foundation Communities of Austin, TX designed all-electric 132-unit affordable multifamily development Jordan at Mueller to use 30% less energy than a conventional development.

97 UNIQUE SECTOR PARTNERS

620 MILLION SQUARE FEET

\$270 MILLION SAVED SINCE 2014

SECTOR SPOTLIGHTS | Multifamily

GHG emissions from multifamily facilities total 107 million metric tons of CO₂e annually.¹¹ Organizations in the sector have collaborated with DOE over the past year to address the following barriers to decarbonization:

- ▶ A fundamental challenge for partners developing portfolio-wide decarbonization plans is balancing smaller, more attainable energy efficiency and electrification projects with the need for more resource-intensive transformational electrification and deep emissions reductions. In the past year, the program provided partners with strategies and step-by-step guides through peer exchanges and resources such as the [ABCs of Multifamily Electrification Strategies](#) and [Strategies for Achieving Zero Energy in Multifamily Buildings](#).
- ▶ Heat pumps are a core technology for decarbonization in multifamily buildings. Barriers to implementing them include identifying the optimal technology and system configuration for each unique building, along with educating organization staff and residents on the system's operations and maintenance. This year, the program hosted a set of peer exchange calls for partners alongside Better Climate Challenge Ally ICAST, a [Multifamily Heat Pump O&M 101 session](#) at the 2023 Better Buildings, Better Plants Summit, and a Better Climate Multifamily Decarbonization discussion focused on Heat Pump Hot Water Heaters.
- ▶ The economics of electrification are not yet clear due to physical limitations in existing buildings, upfront costs and financing constraints, and the variability of fuel and electricity pricing. To support partners in identifying strategies for overcoming these challenges, the program showcased U.S. Department of Housing and Urban Development (HUD) officials and industry leaders in a Multifamily Financing Roundtable and focused on the [Multifamily Meet-Up on Inflation Reduction Act](#) incentives coming online to support the multifamily sector to reduce GHG emissions.

"Affordable housing must be part of a just energy transition, and HUD is committed to ensuring lower-income families receive the health, resilience and economic benefits of high-performance multifamily homes. Better Buildings is integral to achieving that goal."

Alexis M. Pelosi,
Senior Advisor for Climate,
U.S. Department of Housing
and Urban Development

LEADERSHIP IN ACTION

[RiseBoro Community Partnership's](#) Passive House-certified Woodlawn Senior Living in the Bronx, NY, will consume up to 60% less energy than a conventional housing project and will provide 80 units of affordable housing for seniors. The design included energy recovery ventilation, variable refrigerant flow units, minimized thermal bridging, solar sensitive massing, and high-performance windows, allowing RiseBoro to absorb the cost of residents' in-unit electricity usage.

[Foundation Communities](#) completed construction of the LEED™ Gold certified and Austin Energy Green Building 4-star-rated Waterloo Terrace, a 132-unit permanent supportive housing property for seniors in Austin, TX. The site includes a user-friendly HVAC system that combines 1:1 packaged terminal heat pumps with a centralized energy recovery ventilator, and a 180 kW solar array that avoids 220 metric tons of CO₂ emissions annually.

[Veris Residential](#) has installed more than 100 electric vehicle charging ports across 13 of its 20 multifamily properties. The first U.S.-based real estate company to join the Climate Group's EV100 Initiative, Veris has leveraged utility incentives and state funding opportunities to install charging ports that reduce resident and operational emissions and strengthen the marketability of Veris' properties.

[Maloney Properties](#) reduced energy use by nearly 35% and saved over \$100,000 at Riley House in Boston, MA. Riley House received phased upgrades over six years through the Low-Income Energy Affordability Network (LEAN) Program including lighting, boilers, and domestic hot water heater systems, increasing its ENERGY STAR Score by 46 points.

[Seattle Housing Authority](#) (SHA) has saved roughly 135,000 kWh annually with a central heat pump water heater (CHPWH) at Bayview Towers, a 100-unit property in Seattle, WA. The CHPWH was packaged, skid mounted and installed in a few hours. SHA is piloting the CHPWH as a battery, preheating water during off-peak hours and turning the system off during peak hours, cutting the energy to near zero during peak hours while keeping the same level of comfort.

[Mercy Housing](#) installed toilet leak detectors, baseboard flood sensors, and a continuous monitor on the main water meter at Decatur Place, a 106-unit multifamily property serving extremely-low-income households in Denver, CO. These real-time alerts led to faster, more targeted maintenance, reducing water consumption at the property by over 30%. Mercy Housing expects savings of over \$10,000 annually.

Click [here](#) to access additional solutions and resources for organizations in this sector.

CASE STUDY

Atlanta Housing Authority's Housing Choice Voucher Program

Participating landlords with 225 units in [Atlanta Housing Authority's \(AHA\)](#) Housing Choice Voucher program have taken advantage of the Energy Efficiency Rent Boost (EERB) to invest in energy efficiency with an estimated savings of 27% per unit. The EERB eliminates the split incentive and provides a way for landlords to recover the cost of energy efficiency upgrades through increases to contract rents (\$50-\$125 per month) based on the level of energy efficiency improvements made to the unit. The EERB demonstrates how existing voucher subsidies can be used to overcome the split incentive, helping landlords cover the cost of energy efficiency improvements while lowering the energy burden for residents.



Multifamily sector lead Josh Geyer presents a Better Practice Award to Kenneth Mingo, Adelaide Steedley and Priya Wildman from Atlanta Housing at the 2023 Better Buildings, Better Plants Summit.



Better Climate Challenge Financial Allies funded projects that resulted in more than 145 thousand metric tons of CO₂e emissions avoided in 2022.

60 UNIQUE SECTOR PARTNERS

\$32 BILLION FINANCED SINCE 2012

\$4.4 BILLION FINANCED SINCE 2022

SECTOR SPOTLIGHTS | Financial Allies

Financing continues to be one of the top challenges in the marketplace for implementing decarbonization projects, energy retrofits, and renovations. Financial Allies support necessary energy efficiency and renewable energy investments by creating innovative financing products and demonstrating their approaches through solutions published on the Better Buildings Solution Center.

In the past year, the following financial services companies became the first to join the Better Climate Challenge: Ecosave Inc., Kyotherm, Hawaii Green Infrastructure Authority, Metrus Energy, Renew Energy Partners, Skyven Technologies, and Solaris Energy Inc. These organizations are working with partners in different sectors to address the following barriers to financing decarbonization projects:

- ▶ New financing resources are needed to tackle the deployment of clean energy finance to accelerate decarbonization and unlock pathways to net zero. The [Efficiency-as-a-Service fact sheet](#) was updated to accommodate changes in the finance industry, including the new inclusion of Energy-as-a-Service. This fact sheet provides a taxonomy of the market and equips partners to assess different contracts based on their unique needs and priorities.
- ▶ Partners need increased connectivity with Financial Allies and tools, resources, and events to help them move decarbonization projects forward at scale and speed. The [Show Me the Money webinar](#) provides insights for partners to engage with the Financing Navigator and to help them fund their decarbonization goals. Additionally, the Financial Allies team presented at two SCIP Webinars to promote the Financing Navigator and Finance and Resilience toolkit. More financing resources and tools are available [here](#).



A speaker from Redaptive presents at the 2023 Better Buildings, Better Plants Summit.

LEADERSHIP IN ACTION

Counterpointe SRE has adapted the property assessed clean energy (PACE) financing structure to provide capital for resiliency projects in Florida and California as buildings face risks due to the changing climate.

Skyven decreased CO₂ emissions from industrial steam by at least 50% by specializing their offerings to an industrial context and developing technology to implement steam-generating heat pumps as a part of their financed contracts.

Connecticut Green Bank developed a specialized Commercial PACE (C-PACE) offering for new builds which enables greater access to capital in pursuit of sustainably designed buildings. The project allows up to 35% of eligible construction costs to be accessed through C-PACE, depending on energy efficiency measures above code requirements.

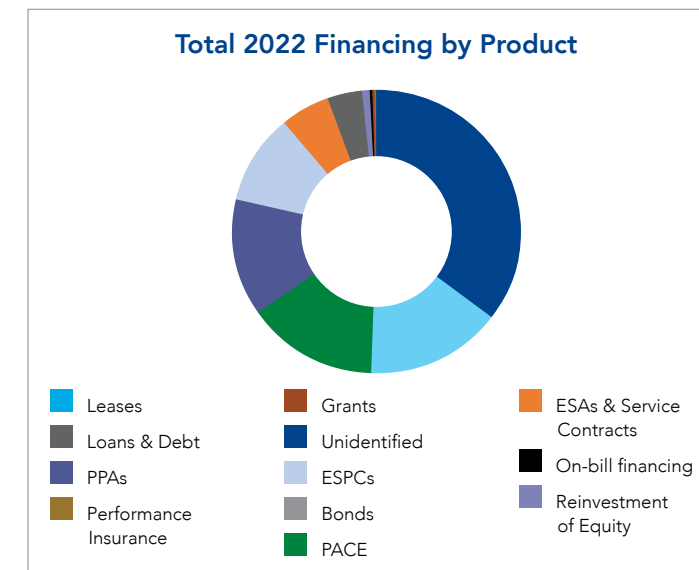
Redaptive partnered with the Institute for Advanced Study (IAS) to install 190 geothermal wells and various equipment efficiency upgrades on their research campus in Princeton, NJ. These upgrades are expected to reduce the campus's annual energy use by 2.83 million kilowatt-hours (kWh) and 226,000 therms, and CO₂ emissions by 3,200 metric tons (MT).

Allumia developed an EaaS offering that can be applied across portfolios with a contract structure is easily replicable for assets across state lines. This offering was applied to a small commercial retail portfolio to complete nearly 190 total projects across 16 states, resulting in savings of 4 million kilowatt-hours, nearly \$500,000, and over 2,900 MTCO₂e annually.

Click [here](#) to access additional solutions and resources for organizations in this sector.

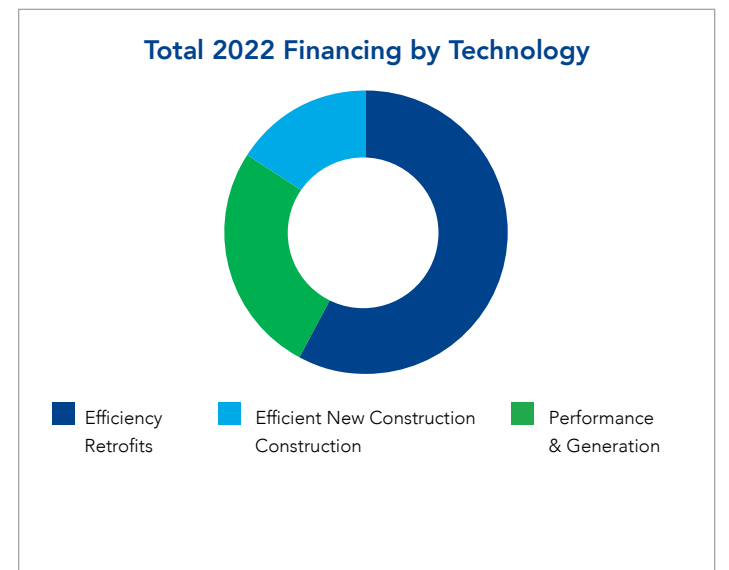
Financing Products

Financial Allies offer a variety of financial products to meet diverse needs for decarbonization in the marketplace. Product offerings represent traditional financing mechanisms like leases, loans, and debt, as well as products designed specifically for energy efficiency and renewable energy projects such as power purchase agreements (PPAs), energy savings performance contracts (ESPCs), and service contracts including energy or efficiency as a service.



Financing Technologies

Financial Ally offerings can support a variety of decarbonization project types including energy efficiency retrofits, renewable energy procurement and generation, and efficient new building construction. An offering like efficiency as a service or an energy savings performance contract is specialized to efficiency retrofits, power purchase agreements and energy-as-a-service contracts are specialized to renewables and generation, and PACE can be specialized to efficient new construction.





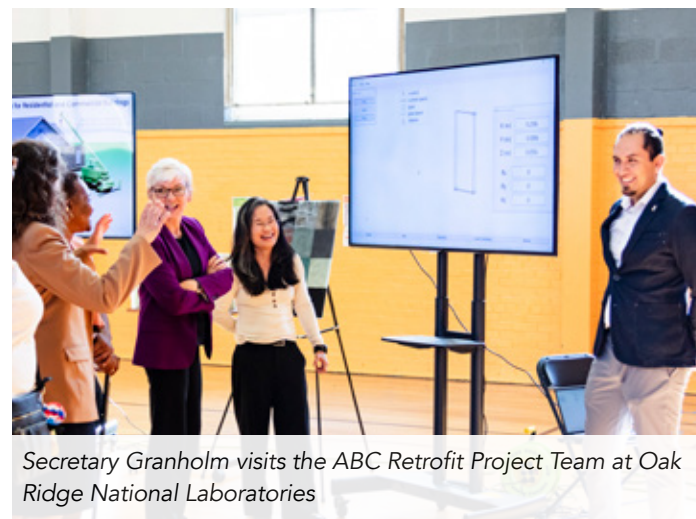
SECTOR SPOTLIGHT | Residential

Better Buildings Residential Network members have undertaken work to save consumers money, make homes more comfortable, and improve the health of homes through continued engagement of state and local governments, businesses, utilities, nonprofits, and other stakeholders.

In the past year, the network organized 21 Peer Exchange calls with some 2,000 participants that shared innovative strategies and best practices for energy-efficient homes.

Additional highlights include:

- 490K+** Energy efficiency upgrades completed by 470+ Better Buildings Residential Network members
- 30K+** Home Energy Scores™ generated in 2022, with recommendations to reduce energy use by \$14 million a year
- 220K+** Home Energy Scores™ Completed since 2012 Network members



Secretary Granholm visits the ABC Retrofit Project Team at Oak Ridge National Laboratories

Click [here](#) to access additional solutions and resources for organizations in this sector.

LEADERSHIP IN ACTION

Highlights from Better Buildings Residential Network members:

CLEARResult achieved over 419,000 home energy upgrades of single-family home, multifamily, and low-income customers during FY 2022 in 26 states, and has achieved \$106 million in savings to low-income customers on their energy bills since 2018.

Elevate, a founding member, completed nearly 29,000 residential energy efficiency upgrades in the past fiscal

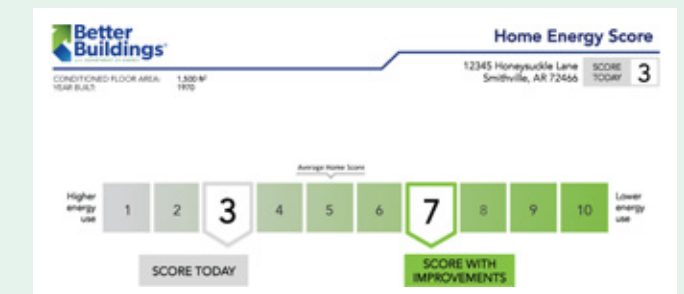
year, which resulted in GHG emissions reductions of more than 26 metric tons.

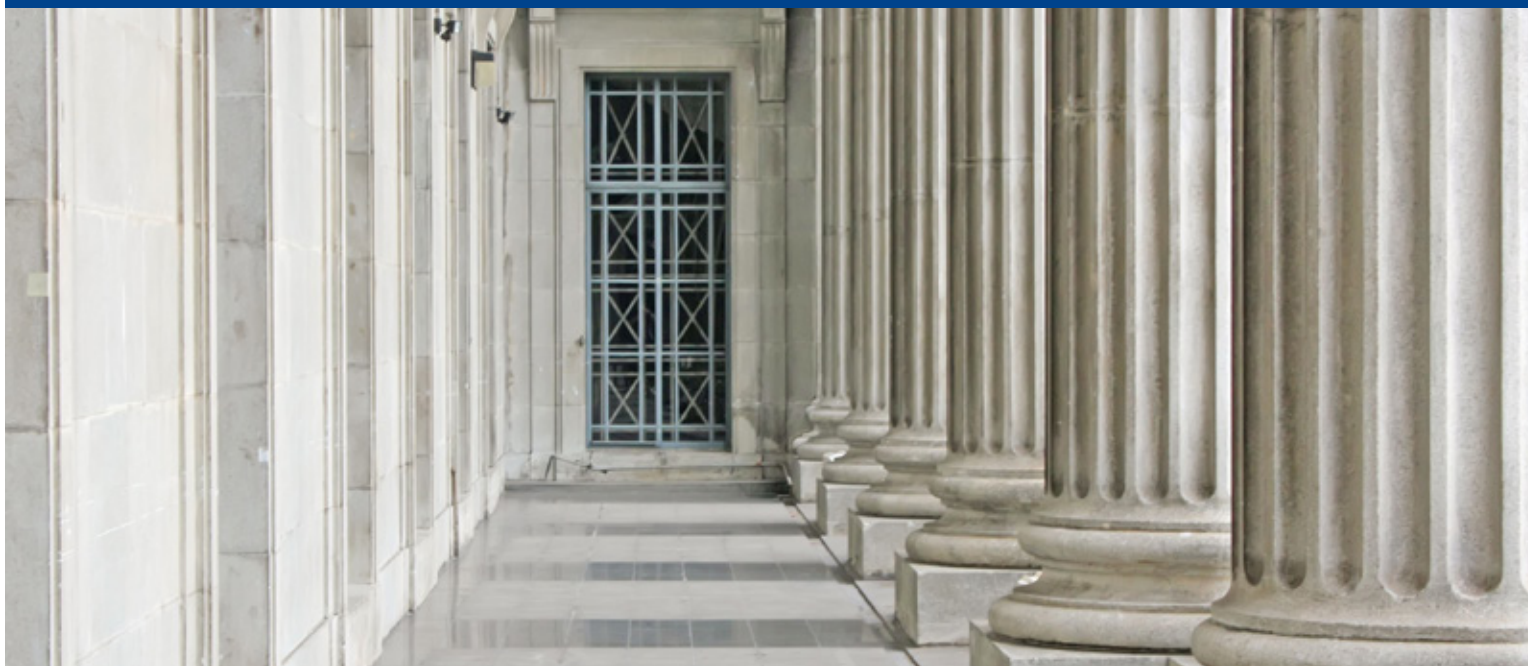
Efficiency Maine, the state agency established to plan and implement energy efficiency programs, completed more than 26,000 residential energy efficiency upgrades in the past fiscal year, and paid rebates for nearly 18,000 residential heat pumps that save an equivalent of more than 250,000 MMBtu annually.

Click [here](#) to access additional solutions and resources for organizations in this sector.

PROGRAM HIGHLIGHTS

- ▶ U.S. Energy Secretary Jennifer Granholm visited Oak Ridge National Laboratory (ORNL) in Tennessee in October, 2022, to learn about the laboratory's plans for the second phase of its Department of Energy-funded **Advanced Building Construction (ABC) Initiative** retrofit project. A live demonstration was given of the Real-Time Evaluator tool used to generate a digital twin of the existing building façade and the expected location of prefabricated panels for siding retrofits. The tool provides instant feedback to installers on how to position the panels so that they meet the required tolerances, thereby reducing installation time and cost. The project's easy-to-install panel design and state-of-the-art integrated system that includes heat pumps, energy recovery units, heat pump water heaters, and sensors and controls, is being incorporated into up to twelve duplexes in the local Western Heights affordable housing community, as well as a local Boys and Girls Club. The upgraded design is expected to reduce residents' heating and cooling energy bills by 75%. ORNL is **one of seven teams** awarded for this second phase in their ABC retrofit projects where they will be demonstrating cutting-edge retrofits in real buildings.
 - ▶ The DOE Building America program and National Laboratories, research teams, and subject matter experts conduct research, development, field validation, and demonstration projects that prioritize retrofit solutions to improve existing homes, and scalable retrofit solutions to equitably decarbonize the U.S. housing stock and disseminate best practices and guidance. A key initiative in the Building America portfolio is **Subject Matter Experts (SMEs) Technical Support**, which published six technical reports, five fact sheets, and six **Building America Solution Center (BASC)** guides in the past year.
 - ▶ Home Energy Score™ continues to gain momentum as new research links the **Score** to home values and energy efficiency investments. A first-ever **study** from DOE's Lawrence Berkeley National Laboratory demonstrated a link between the Score, sale price, and mortgage repayment in cities with Score listing policies. An American Council for an Energy-Efficient Economy (ACEEE) **study** found that prospective renters would be more likely to choose an energy efficient home if they are shown an energy label, and a third study determined that requiring energy audits at the time of sale increases price premiums for energy efficiency and encourages energy-saving investments. The scoring tool was updated to include new home features and additional recommendations, including high-efficiency cold climate heat pumps.
- Home Energy Score is also gaining traction among state and local policymakers. The City of Bend, Oregon, began to require the Score in real estate listings July 1, 2023, allowing homebuyers to compare the efficiency of homes and access information about cost-effective upgrades. Bend joins eight other cities that require the Score in real estate listings, rental inspections, or major renovations. In Maine, the legislature passed a law to establish a home energy scoring system and database by June 30, 2024.





SECTOR SPOTLIGHT | Federal

As the nation’s single largest energy consumer, with more than 360,000 buildings and 600,000 vehicles, the Federal Government has a significant opportunity and responsibility to cut its energy and water costs. Buildings and facilities represent about 57% of the government’s total energy use, with vehicles and equipment accounting for the remaining 43%. In fiscal year 2022, the Federal Government used nearly 830 trillion Btu of primary energy at a cost of more than \$19 billion.¹²

The DOE’s Federal Energy Management Program (FEMP) facilitates savings opportunities and supports agency efforts to be more efficient, resilient, sustainable, and secure by providing access to carbon-free solution sets, tools, training, guidance, and resources that optimize energy and water infrastructure.



FEMP works with its stakeholders to enable Federal agencies to meet energy requirements and provide energy leadership to the country. Executive Order 14057 on catalyzing American clean energy industries and jobs through federal sustainability, which focuses on catalyzing American clean energy industries and jobs through federal sustainability, set out a range of ambitious goals to deliver an emissions reduction pathway consistent with President Biden’s goals, which include:

- ▶ Reducing U.S. greenhouse gas emissions by 50%-52% from 2005 levels by 2030.
- ▶ Transitioning to 100% zero-emission vehicle acquisitions by 2035 (including 100% light-duty acquisitions by 2027).
- ▶ Achieving net zero emissions buildings by 2045 (including a 50% reduction by 2032), net zero emissions procurement by 2050, and net zero emissions operations by 2050 (including a 65% reduction by 2030).

LEADERSHIP IN ACTION

In the past year, FEMP:

- ▶ Launched the [Federal Smart Buildings Accelerator](#) to increase the uptake of connected technologies and grid-interactive energy management strategies throughout government-owned facilities. The program works with six partner agencies to evaluate 13 individual sites for technical opportunities and connect them to resources that aid deployment.
- ▶ Launched the [Customer Damage Function Calculator](#), a web tool that helps facility owners and resilience planners understand the costs of an electric grid outage at their site and justify resilience investments.
- ▶ Released the online [Federal Fleet ZEV Ready Center](#), which provides a step-by-step process and resources to help federal fleet and facility managers select and acquire zero-emission vehicles (ZEVs) and electric vehicle (EV) charging stations for their fleet.
- ▶ Kicked off energy and water treasure hunts for federal agencies, a two-to-three-day free guided training program that helps participants learn how to identify and quantify low-to-no-cost energy conservation measures that support energy and water use reduction, decarbonization, and electrification milestones.
- ▶ [Created the Federal Utility Carbon Pollution-Free \(CFE\) Electricity Program Availability Map](#), a searchable database of clean energy purchasing programs offered by vertically integrated utilities (which generate, transmit, and distribute electricity in their service territory). The database helps federal stakeholders identify CFE options that meet E.O. 14057 requirements.
- ▶ Released the [Climate Smart Building Initiative \(CSBI\) Tool](#), which helps agencies estimate GHG reductions from their planned performance contracts and fulfill the White House Council on Environmental Quality’s requirements to submit a Net Zero Emission Building Strategic Plan for FY 2024.
- ▶ Launched the [Distributed Energy Resource Risk Manager \(DER-RM\)](#) tool and training, which walks agencies through the risk-management process to achieve authority to operate distributed energy resources.
- ▶ Updated the [REopt® web tool](#)—used to optimize distributed energy resources—with Inflation Reduction Act incentives and updated default values, and an expanded geothermal heat pump (GHP) model including hybrid geothermal heat exchange systems.
- ▶ Launched the [Smart Labs’](#) Federal National Labs Working Group as a part of an ongoing commitment to help agencies achieve energy efficiency goals and collaborate on their experiences, along with a Decarbonizing Labs resource on the Smart Labs Toolkit website.

PROGRAM HIGHLIGHTS

- ▶ Delivered more than 52,000 hours of accredited training through FEMP’s Training Catalog, webinars, and the annual Energy Exchange technical training workshop, enabling energy and water management professionals to earn more than 2,500 continuing education units (CEUs). New on-demand trainings included a EV Champion Training on Advanced Site Operations, Decarbonization Considerations for Performance Contracting, the Performance Contracting National Resource Center’s Overview of Energy Savings Performance Contracts (ESPCs), and an Indoor Environmental Quality Analysis and Solutions interactive training.
- ▶ Announced \$250 million in funding from President Biden’s Bipartisan Infrastructure Law to help federal agencies implement net-zero building projects under the Assisting Federal Facilities with Energy Conservation Technologies (AFFECT) grant program. The AFFECT program seeks applications from federal agencies that would use the funding to make energy and water efficiency upgrades to new and existing federal buildings and helps them achieve net zero through initiatives like electrification, on-site clean energy generation, and sustainable design.

LOOKING AHEAD

Decarbonization—and ensuring the availability and adoption of proven and profitable pathways—remains the focus looking ahead. Working with our partners, DOE will focus on identifying actionable, real-world solutions to accelerate the adoption of proven emissions reduction strategies. As partners continue to share decarbonization, electrification and resilient solutions in their portfolios of buildings and plants, DOE will also be working to address and overcome barriers.

In the coming year, DOE and Better Buildings Initiative partners will:

Showcase Actionable Decarbonization Pathways

DOE will continue prioritizing working with partners across the US economy to share their innovative solutions. We will also highlight how organizations have successfully planned and prioritized across their portfolio of buildings, plants and/or homes. New partner solutions will also be featured on the revamped Better Buildings Solution Center, and partners will be featured during site visits and through social media and news stories throughout the year. The next installment of the Better Climate Challenge Road Show series will focus on Cleveland. In this season, DOE will walk through the work happening all over the city to make their buildings and plants more resilient places.

Rely on Partner Input and Feedback

As a partnership designed to drive successful decarbonization, partner feedback is essential. Collaborating with partners several times a year, both one on one and in working groups, helps DOE gather a variety of perspectives on challenges and opportunities. This feedback informs the way DOE prioritizes its research, development, and deployment resources by focusing DOE's attention on the specific needs and gaps experienced by partners. DOE will also continue to convene partners in forums that accelerate the dissemination of proven best practices, including the 2024 Better Buildings, Better Plants Summit in April of 2024 in Washington, D.C.

Focus on Workforce Development

A skilled workforce is essential for any organization to achieve ambitious and meaningful emissions reduction and energy efficiency goals. Through the Better Buildings Initiative, DOE will support and grow our workforce by developing and offering trainings and educational opportunities, as well as partnering with organizations that connect job seekers with opportunities.

Highlight Technology Solutions

More than 8,300 people attended the 2022-2023 Better Buildings webinar series; looking ahead, the newest series connects organizations with new technology solutions, featuring webinar titles like the following:

- ▶ Accelerating Electric Vehicle Adoption
- ▶ Bridging Building Data Analytics with Fault Detection and Diagnostics and Work Order Systems
- ▶ Using Thermal Energy Storage in Commercial Buildings
- ▶ The (Not So) Shocking Shift Towards Industrial Electrification

These presentations, and the resources featured in them by partners and DOE experts, will be available on the Better Building Solution Center.

Identify and Highlight Financing Solutions

A frequently cited obstacle to decarbonization is financing. DOE will focus on facilitating connections between partners and financial services companies with the goal of educating partners on the financing options available and addressing the financial and operational nuances of specific property types. The goal is to build a robust collection of solutions to address a variety of financial products and strategies in the context of each sector. These solutions will provide actionable, real-world models of financing decarbonization projects so that building owners and organizations seeking financial insight can replicate and act on successful project models.

MEET THE PARTNERS

COMMERCIAL

adidas

Affinius Capital*

Akachi Development LLC

AKSAN United Fortune, Inc.*

Allina Health

American Family Insurance

Anthem*

Arby's Restaurant Group, Inc.*

Ascension*

Atlantic Health System*

AtSite

AvalonBay+

Baptist Memorial Hospital Desoto

Berkshire Residential Investments

Berlin Packaging*

Best Buy*

Briad Wenco*

Brixmor Property Group

Broward Health North

BXP+

Calhoun Management*

Carnival Corporation

Carlisle, LLC*

CBRE

*Century Partners**

CKE Restaurants Holdings, LLC*

Clarion Partners

Cleveland Clinic*+*

Colliers

Columbia Association*+*

CommonWealth Partners*

Corewell Health

Cotti Foods Corporation*

DaVita+

Delight Restaurant Group*

DWS*

Eastbay Equities*

Eddie Cheng Corporation*

Elevance Health, Inc.*+*

Elme Communities*+*

Empire State Realty Trust*+*

EQT Exeter

Evoque+**

Flagstar Bank

General Services Administration (GSA)

Giant Eagle, Inc.

Gundersen Health System

H&M

Hackensack Meridian Health*

Hamra Enterprises*

Hannaford

Havertys*

Hawaiian Airlines*

Healthcare Realty

Highwoods Properties*

Hilton Worldwide*+*

Hoover Foods*

Howard Hughes Corporation

Hudson Pacific Properties

Hyatt Hotels Corporation

IHG Hotels & Resorts

IKEA Retail U.S.+

JAE Restaurant Group*

Jamestown*+*

JBG Smith*

Jones Lang LaSalle

Kaiser Permanente

Kayne Anderson Real Estate

Kilroy Realty*

Kimco Realty Corporation

Kohl's, Inc.*+*

Las Vegas Sands Corporation*

LaSalle Investment Management+

LBA Realty*

Legacy Capital Maine LLC

Legacy Vacation Resorts+

Lendlease*+*

Life Time, Inc.*

Link Logistics+

Loews Hotels & Co.*

Lush Cosmetics

Macy's*

Marriott International+

Mayo Clinic+

MetLife Investment Management*+*

MGM Resorts International*+*

Montefiore Medical Center*

Mountain West Wendy's*

Neema Hospitality

Newmark

NewYork-Presbyterian Hospital*

Nike*

Nuveen*

Oregon Health & Science University

Paramount Pictures+

Parkland Health & Hospital System

Parkway Properties*

Pertoria

Physicians Realty Trust*

PNC Financial Services Group*

Primary Aim, LLC*

Prologis

Promar Corporation*

Providence Health & Services

Publix

Qurate Retail Group*

Regency Centers

Regions Bank

REI

RXR Realty+*

Schmidt Family Restaurant Group*

Shari's Cafe & Pies*

Sheetz, Inc.*

Shorenstein Properties, LLC*

Sprint*

St. John Properties

Staples*

Starboard Group*

KEY

Partners with names in bold are emissions, energy, water, or waste goal achievers

Partners with a * have taken the Better Buildings Challenge

Partners with a + have taken the Better Climate Challenge

Partners with names in italics are new to Better Buildings

MEET THE PARTNERS

Starbucks Coffee Company*

Summa Health System

Tar Heel Capital*

Target Corporation+

The Hartford Financial Services Group, Inc.*

The Home Depot

The Paradigm Group*

The Tower Companies*+

The Walt Disney Co.

The Wendy's Company*

Theobald Management Inc.*

Tishman Speyer

T-Mobile

Travel + Leisure Co.*

Twin Coast Enterprises*

U.S. Department of Veterans Affairs (VA)

Uber Technologies, Inc.

Ulta Beauty, Inc.

University of Kansas Health System

University of Maryland Medical Center (UMMC)*

University of Nebraska Medical Center (UNMC)*

University of Pittsburgh Medical Center (UPMC)*

University of South Alabama Medical Center

University of Utah Health Care

UW Health*+

Ventas

VESTCO, Inc.*

Veterans Health Administration

Vornado Realty Trust+

Walgreens*

Welltower

Wen JAI Restaurant Group*

Wendium of Florida, Inc.*

Wend-Rockies, Inc*

Wen-GAP, LLC*

Wenescos*

Wenco Restaurant Group*

WenMarr Management Company, LLC*

Westchester Medical Center

Whole Foods Market*

Wiley Management*

WKS Restaurant Group*

Wyndham Hotels and Resorts

Yum! Brands

DATA CENTERS

Iron Mountain Data Centers*

QTS Data Centers+

Sabey Data Center Properties*+

EDUCATION

Agnes Scott College+

Alachua County Public Schools, FL*

Albuquerque Public Schools, NM*

Allegheny College*

Anne Arundel County Public Schools, MD*

Arizona State University

Aurora Public Schools, CO*

Bard College*+

Boulder Valley School District, CO

Bullitt County Public Schools, KY*+

California State University, Sacramento+

Camas School District, WA*

Carleton College

Case Western Reserve University

Catholic University of America*

Chesapeake College*

Chicago Public Schools*+

Clark Atlanta University

Colorado State University+

Community College of Allegheny County*

Cornell University

CUNY: The City University of New York

Douglas County School District, NV*

Duke University

Dysart Unified School District 89, AZ*

Emory University

Fairfax County Public Schools, VA*

Florida A&M*

Fort Worth Independent School District, TX*

Grand Valley State University

Hillsboro School District, OR*+

Indianapolis Public Schools, IN*

Lane Community College

Los Angeles Unified School District, CA*+

Loyola University

Madison City Schools, AL*

Manchester School District, NH*

Massachusetts Institute of Technology

Michigan State University*

Morehouse College*

Parkway School District, MO*

Pasadena Independent School District, TX*

Penn State University*

Portland Public School District, OR*

Portland State University

Poudre School District, CO*

Ramapo College

River Trails School District 26, IL*+

Roxbury Community College

San Francisco Unified School District*

San Mateo Community College District

Sewanee: The University of the South*

Simpson College

Southern Oregon University+

Stanford University

Stevens Institute of Technology*

Towson University*

Tulane University

University of California, Berkeley*

University of California, Davis

University of California, Irvine*

University of California, Merced

University of Chicago+

University of Colorado Boulder

University of Hawaii at Manoa

University of Maryland

University of Miami

University of Michigan+

University of South Carolina

University of Tulsa*

University of Utah*

University of Virginia*+

University of Wisconsin

Washington College*

Washington University in St. Louis*

Xenia Community Schools, OH*

FINANCIAL ALLIES

Abundant Power Group*

Advantage Energy Capital Partners, LLC*

AFL-CIO Housing Investment Trust*

All American Investment Group*

Allumia*

Alturus*

Bank of America*

BioStar Renewables*

BlocPower*

Blue Hill Partners, LLC*

Bostonia Partners LLC*

Budderfly*

Byline Financial Group*

Centrica Business Solutions*

Citi*

Citizen Energy*

CleanFund LLC*

Commercial Power Partners, LLC*

Community Investment Corporation*

Connecticut Green Bank*

Counterpointe Sustainable Real Estate*

Ecosave+

EDF Renewables*

eMaxx*

Enhanced Capital*

Enterprise Community Partners*

Flywheel*

Hannon Armstrong*

Hawaii Green Infrastructure Authority*+

Imperial Ridge Real Estate Capital (Formerly Lever Real Estate Capital)*

Jua Capital LLC (formerly BlueFlame Energy Finance)*

Kyotherm*+

LISC*

Low Income Investment Fund*

Metrus Energy*+

Minimise*

New York City Energy Efficiency Corporation*

Nuveen Green Capital (Formerly Greenworks Lending)*

NYCEEC+

Onsite Utility Services Capital*

Onyx Renewable Partners L.P.*

PACE Equity*

Petros PACE Finance, LLC*

Redaptive*

Renew Energy Partners*+

Renew Financial*

Samas Capital*

Skyven Technologies*+

Skyview Ventures*

Sol Systems*

Solaris Energy Inc.+

Southeast Capital & Finance*

Sparkfund*

Structured Finance Associates, LLC*

The Hartford Steam Boiler Inspection and Insurance Co.*

Triple Bottom Line (TBL) Foundation*

Urban Ingenuity*

Ygrene Energy Fund*

INDUSTRIAL

3M*+

ABB+*

AbbVie Inc.

Acuity Brands, Inc.

Agropur

Ahlstrom-Munksjö

Alcoa*

Alexandria Renew Enterprises*

Alumalloy Metal Casting Company

Amcors Rigid Plastics

American MITSUBA Corporation

Archer Daniels Midland

Armstrong Flooring, Inc

Asama Coldwater Manufacturing

Astec

AstraZeneca+

AT&T+

Autodie LLC*

Autoliv

Avient Corporation

Avon Lake Regional Water

Ball Corporation

BD*+

Bendix Commercial Vehicle Systems+

Bentley Mills*+

Billerud Americas Corporation+*

Boardman Foods

BorgWarner*+

Bosch Rexroth Corporation

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

Bradken

Brewery Vivant*+

Bridgestone Americas, Inc.

Briggs & Stratton*

Bristol-Myers Squibb*

Brose North America

Bucks County Water & Sewer Authority*+

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

Cabot Corporation

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

Campbell Soup Company

Cardington Yutaka Technologies, Inc.*

Carlton Forge Works

Cascade Engineering Technologies, Inc.

Celanese Corporation*

Chapco, Inc.

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Charter Steel
 Chippewa Valley Ethanol Company
 City of Charleston Water System
 City of Grand Rapids Water Resource Recovery Facility*+
 City of Phoenix Water Services Department
 City of Roseville, Environmental Utilities Department
 Clearwater Engineering, Inc.
Cleveland-Cliffs Inc.+
 Coca-Cola Consolidated*
 CoilPlus, Inc.
 Colgate-Palmolive Company+
Comau Inc.
 Commercial Metals Company
 Commercial Vehicle Group
 Connector Castings, Inc.
 Cooper Standard
 Co-Operative Industries Aerospace & Defense
Cummins Inc.*+
 Custom Glass Solutions
Daikin Applied Americas, Inc.
 Danaher Corporation
 Delta Diablo
 Denison Industries
 DENSO Corporation
 Des Moines Water Works*
 Deschutes Brewery+
 Detroit Diesel Corporation
 Didion Milling
 Dixline Corporation
 Donsco Inc.
 Dow Chemical
DSM North America+
 Durable Products, Inc.
 Dura-Line Corporation
 Durex Inc.
 Earth2O (d.b.a. The Sweetwater Company Inc)
 East Penn Manufacturing Co.
 Eastman Chemical Company*+
Eaton Corporation
 Eck Industries

Electrolux*+
 Emerson*+
Encina Wastewater Authority*
 EnerSys
 Entegris
 FLEXCO Corporation
 Flowers Foods
 FMC Corporation
Ford Motor Company*+
 Fort Wayne City Utilities - City of Fort Wayne
 GB Manufacturing
Genentech Inc. +
 General Aluminum Manufacturing Company
General Dynamics Ordnance and Tactical Systems
 General Electric*+
General Mills*
General Motors*+
 General Stamping & Metalworking
 Gibraltar Industries
 GKN Aerospace Services Structures
 Golden Renewable Energy, LLC
 Goodyear Tire & Rubber Company+
 Graham Packaging Company, LP
Graphic Packaging International, LLC
HARBEC*
 Harley-Davidson Motor Company+
 Harrison Steel Castings Co.
 Harva Company
 Haynes International
 Hershey
 Hewlett Packard Enterprise+
HNI Corporation+
Holcim U.S.*+
 Holingsworth & Vose
 Honda North America
 Honeywell International
 Huntsman Corporation
 IAC Group
 Imerys Performance Minerals
Ingersoll Rand*+

Ingevity
 Intel
 International Paper Company+
 Intertape Polymer Group+
 Intralox LLC
Isringhausen, Inc (ISRI)
J.R. Simplot*
JBT Corporation
 Jedco Inc.
Johnson & Johnson
Johnson Controls*+
Johnson Matthey
JSW Steel USA
 Kent County Levy Court
 Kenworth Truck Company
Kingspan Insulated Panels, Inc.+
 Krage Manufacturing
 KYB Americas Corporation+
Lamb Weston
 Land O'Lakes
 Lear Corporation+
 Leggett & Platt, Inc.
Legrand North and Central America*+
Liberty Tire Recycling
Lincoln Electric
Lennox International*
 Lineage Logistics*
Lockheed Martin*
 Lopez-Dorada Foods+
 L'Oréal USA*
Los Angeles Bureau of Sanitation
 Los Angeles Department of Water and Power*+
 Lundberg Family Farms+
 Lynam Industries Inc.
 Magnetic Metals Corp.
 MAHLE Engine Components USA
 Manitowoc Grey Iron Foundry
 Mannington Mills
 Marquis Energy
 Massachusetts Water Resources Authority
Michael Foods, Inc.
 MB Aerospace East Granby

McCain Foods USA, Inc.
 McWane, Inc*
 MEKRA Lang North America
Metal Industries, Inc.
Metal Technologies, Inc. +
 Miami-Dade Water and Sewer Department+
Michael Foods, Inc.
 Michels Corporation
 Mitsubishi Electric Automotive America+
 Mohawk Industries
 Mulgrew Aircraft Components, Inc.
Narragansett Bay Commission
Navistar Inc.
 ND Paper Inc.
 Neenah Foundry
Nestlé+
NEW Water (Green Bay Metropolitan Sewerage District)*
 Newman Technology
Nissan North America*+
 Novelis
 NSK Americas
 NYC DEP - Bureau of Wastewater Treatment
 Occidental Chemical Corporation
 O'Fallon Casting
 OFD Foods
Orange Water and Sewer Authority*
Oshkosh Corporation
Osram Sylvania
Owens Corning*
 Ozinga Brothers, Inc.
 Pactiv
 PaperWorks Industries
 Parker Hannifin
Patrick Cudahy
 PepsiCo
 Perrone Aerospace
 Pharmavite*
 Philadelphia Water Department
Phoenix Closures
 Pima County Regional Wastewater Reclamation Department+

Plastics Engineering Company (Plenco)
 PPC Broadband
 PPG Industries
Procter & Gamble
 Quad/Graphics, Inc.
Quanex Custom Components
Rea Magnet Wire Company, Inc.
 Research Electro-Optics
 Richmond Industries Inc.
 RING Container Technologies
Roche Diagnostics Operations
 Rowley Spring and Stamping
 RTX+
 Saint-Gobain Corporation*+
 Saputo Dairy Foods USA
 Savage Precision Fabrication
Schneider Electric*+
Sealed Air Corporation
 Sears Seating
 Selmet, Inc.
 Shape Corp
Shaw Industries Group, Inc.
 Sheboygan Regional Wastewater Treatment Facility
Sherwin-Williams*+
 Siemens+
Sika Corporation+
 Silgan Closures
 Silgan Containers
 Silgan Plastic Food Containers
 Skorpis Technologies
 SL Corporation
 Solberg Manufacturing Inc.*
 Southwest Cheese
 Spirax Sarco, Inc.
 St. Petersburg Water Resources Department
 Stanley Black & Decker+
 Stanley Spring and Stamping
Steelcase, Inc.*+
Stellantis+
Stepan Company
 Stryker+

Sugar Creek Packing Co.
 SunOpta, Inc.
 Synthomer+
 Tarkett USA Inc.+
TE Connectivity*
 Tenaris
Texas Instruments
 Texas Nameplate Co.
 Textron, Inc
 The Chemours Company*+
 The Estée Lauder Companies
 TitanX Engine Cooling, Inc.
TK Elevator
Topsoe+
Toyota Motor North America, Inc.*+
 TPC Group LLC
 TRAM Group
 Trane Technologies*+
 Tri-State Plastics, Inc.
 Tyson Foods
 United Mechanical and Metal Fabricators+
 Valmont Industries
 Valvoline Inc
 Vanguard Space Technologies
 Vermeer Corporation
Verso Corporation
Vestolit+
Victor Valley Wastewater Reclamation Authority*
 Vitro Architectural Glass
Volvo Group North America*+
 W. L. Gore and Associates+
 Waupaca Foundry, Inc.+

KEY

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 Partners with a + have taken the Better Climate Challenge
 Partners with names in italics are new to Better Buildings

MEET THE PARTNERS

Western Lake Superior Sanitary District
 West Lafayette Water Resource Recovery Facility
 Westrock
Weyerhaeuser WP
 Whirlpool Corporation+
 Xerox*+
 Zebra Technologies*+
 Zimmer Biomet

MULTIFAMILY

2Life Communities*
 Aeon*
 Atlanta Housing Authority*
 Beacon Communities*
 Boston Housing Authority*
 Boulder Housing Partners*
 Bozzuto Management Company*
BRIDGE Housing Corporation*
Cambridge, MA Housing Authority*
 Caritas Communities, Inc.*
 Cascap, Inc.*
 Century Housing*
Chicago Housing Authority+
 Codman Square Neighborhood+
 CommonBond Communities*
 Community Housing Partners*+
 Community Roots Housing*
Corcoran Management*
 Cuyahoga Metropolitan Housing Authority*
 Danville Development*
District of Columbia Housing Authority*
 EAH Housing, Inc.*
 East Bay Asian Local
 Eden Housing*+
Enterprise Community Development+
 Fort Wayne Housing Authority*
 Foundation Communities*+
 FS Energy*
 Gary Housing Authority*
 Gateway Management Services, LLC*
 High Desert Housing*
 Homeowner's Rehab Inc.+

Homes for America*
 Housing Authority City of Pittsburgh*+
 Housing Authority of Baltimore City*
 Housing Authority of City of Bristol, CT*
Housing Authority of the City of Cleveland, TN*
 Housing Authority of City of Helena, MT*
 Housing Authority of City of Palatka, FL*
 Housing Authority of City of San Buenaventura, CA*
 Housing Authority of Knox County, IN*
 Houston Housing Authority*
 Human Good*
Jamaica Plain Neighborhood Development Corporation*
Jersey City, NJ Housing Authority*
 Jonathan Rose Companies*
Keene Housing*
 Kier Property Management*
 King County Housing Authority*+
 LINC Housing Corporation*
 Maloney Properties*
 Manhattan Housing Authority*
Mercy Housing, Inc.*+
 Michigan City Housing Authority*
Minneapolis Public Housing Authority*
Mutual Housing California+
 National Church Residences*
 New Bedford Housing Authority*
 New York City Housing Authority*
 NHP Foundation*
NHT Communities*+
 Peabody Properties, Inc.*
 Philadelphia Housing Authority*
Preservation of Affordable Housing*
 Puerto Rico Public Housing Administration*
 REACH CDC*
 Retirement Housing Foundation*
 Riseboro Community Partnership*
 Rockford Housing Authority*
 Rural Ulster Preservation Company*
 San Antonio Housing Authority*
 Satellite Affordable Housing Associates*

Schochet Companies*+
 Seattle, WA Housing Authority+
 Standard Communities*+
 Stewards of Affordable Housing for the Future+
 Stoneweg*+
Sunrise Opportunities+
 Tampa Housing Authority*
Tenderloin Neighborhood Development Corporation*+
 The Community Builders, Inc.*
 The Economic Development Authority of the City of Mankato, MN*
 The Evangelical Lutheran Good Samaritan Society*
 The Housing Authority of the City and County of Denver*
 The Renaissance Collaborative*
 The Silver Street Group and Housing Management Resources, Inc.*
 Trinity Management*
 Truth or Consequences Housing Authority*
Veris Residential+
Victory Housing+
 Village of Hempstead Housing Authority*
 Vistula Management Company*
 Volunteers of America*
Wesley Living*
 Windsor Locks Housing Authority*
 WinnCompanies*+
 Yolo County Housing Authority, CA*

STATE AND LOCAL

Albany County, NY+
 Alexandria, VA*
Ann Arbor, MI+
Arlington County, VA*
Arvada, CO*
Atlanta, GA*
 Bayfield County, WI
Beaverton, OR*
 Boston, MA*
 Burlington, VT
 Charlton, MA

Chattanooga, TN*+
Chicago, IL*
 Chula Vista, CA*+
 Clark County, NV*+
 Cleveland, OH*+
 Columbia, MO*
Cook County, IL*
 Dallas, TX+
Delaware*
 Denver, CO*
 District of Columbia*
 El Paso, TX*
 Fairfax County, VA+
Fort Lauderdale, FL*
 Fort Worth, TX*
 Glenbard, IL
 Glens Falls, NY*+
 Grand Rapids, MI
 Gwinnett County, GA
 Hall County, GA*
Hawaii+
Hillsboro, OR*+
 Houston, TX*
 Huntington, NY*
 Illinois
 Kansas City, MO+
 Kauai County, HI*
 Ketchum, ID
 King County, WA*
Knoxville, TN*+
 La Crosse, WI+
 Longmont, CO
 Los Angeles, CA*
 Louisiana
 Louisville, KY*+
 Lowell, MA
 Madison, WI+
 Maine
 Manchester, NH*
Margate, FL*
Maryland*+
 Massachusetts*
 Michigan City, IN

Milwaukee, WI*
 Minnesota*
 Mississippi
 Missouri
 Montana
 Moscow, ID
 Nevada
 Norfolk, VA*
North Carolina*
 Ohio
 Orange County, FL*
 Oregon
Orlando, FL*+
 Pennsylvania
 Philadelphia, PA*+
 Pittsburgh, PA*
 Placer County, CA*
Providence, RI+
 Racine, WI
 Reno, NV*
 Rhode Island*
Roanoke, VA*+
Rochester, NY*
Saint Louis, MO+
Saint Paul, MN +
 Salt Lake City, UT*
 San Diego, CA*+
 San Luis Obispo, CA
 Santa Fe, NM*
 Seattle, WA*
 South Burlington, VT
 South Dakota
 Southampton, NY+
 Telluride, CO
 Village of Montour Falls, NY*+
 Washington
West Palm Beach, FL*
Will County, IL*
 Wisconsin
 Worcester, MA*+
UTILITY
 AB Energy - New Jersey

AEP Ohio
 Austin Water
 AVANGRID+
 Baltimore Gas & Electric
 Commonwealth Edison
 Consolidated Edison
 D.C. Sustainable Energy Utility (DCSEU)
DC Water
 DTE Energy
 Exelon Corporation+
 GE Distributed Power
 Highland West Energy
 Kraft Power Corporation
 MacAllister Power Systems
 Martin Energy Group
 National Grid
 Nicor Gas
 Northeast-Western Energy Systems
 One Gas
Pacific Gas and Electric Company+
 Peoples Natural Gas
 Philadelphia Gas Works
 PSEG Long Island
 Silicon Valley Clean Water

PROGRAM AFFILIATES

2G Energy Inc.
 American Association of Blacks in Energy & Jonah Cooper LLC
 American Hotel & Lodging Association+
 American Society for Healthcare Engineering+
 American Society of Heating, Refrigerating, and Air-Conditioning Engineers+

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MEET THE PARTNERS

American Solar Energy Society+
 APPA - Leadership in Educational Facilities+
 Asian American Hotel Owners Association
 Association for the Advancement of Sustainability in Higher Education+
 Association of Energy Engineers+
 Auburn University Rural Studio
 BranchPattern
 Building Owners and Managers Association International+
 Building Performance Association
 Building Performance Institute
Chartered Institute of Building (CIOB)+
 Centerbrook
 CMTA, Inc.
 Coalfield Development
 Confluence Communications
 ConnexFM+
 Corporate Sustainability Strategies
 Curtis + Ginsberg Architects+
 CPL Architects and Engineers
 Cuningham Group Architecture
 DataBased+
 DPR Construction
 Earth Advantage
 Elevate+
 Emerald Cities Collaborative
 Energy and Environmental Building Alliance
 Environmental Defense Fund
 Franklin Energy Services LLC
 GEM Energy, LLC
 Green Building Alliance
Green Building Initiative+
 Green Sports Alliance
 Greenwork
 Health Care Without Harm
 Home Builders Institute
 Homes.com
Hydraulic Institute+
 ICAST+
 ICLEI: Local Governments for Sustainability+
 IDeAs Consulting

illuminating Engineering Society of North America
 IMEG Corp
 Institute for Market Transformation+
 Integral Group
Institute for Market Transformation (IMT)+
 International Facility Management Association+
International Institute for Sustainable Laboratories+
 International Union of Painters and Allied Trades (IUPAT)
 Interstate Renewable Energy Council
 Jacobs
 Leddy Maytum Stacy Architects
 Leopardo Companies, Inc.
 Little Rock Water Reclamation Authority
 Local Governments for Sustainability+
 McKinstry Co., LLC
My Green Lab+
 MCI Mechanical Contractors LLC
 Moody Nolan
 NACUBO
 National Alliance of Forest Owners
 National Apartment Association
 National Association of Real Estate Brokers
 National Association of Real Estate Investment Trusts
 National Association of State Energy Officials
 National Association of Women in Construction
 National Co-op Grocers
 National Institute of Building Sciences+
National Insulation Association+
 National Multifamily Housing Council
 National Society of Black Engineers
 Network for a Sustainable Tomorrow
 New Buildings Institute
 New Jersey Clean Energy Program (TRC Solutions)
 New York State Energy Research and Development Authority
 North America's Building Trades Unions
 North American Sustainable Refrigeration Council+

Northeast Energy Efficiency Partnerships
 Northwest Energy Efficiency Council
NOWi Sensors+
 P2S Inc.
 PAE Engineers
 Pension Real Estate Association
 Practice Greenhealth
Pump Systems Matter+
 Real Estate Research Institute
 Retail Industry Leaders Association
 Rewiring America+
 RMI+
 Second Nature+
 SeraDesign
 Slipstream+
 Smart Energy Decisions
 SmithGroup
 SOM
 Sterling & Wilson Cogen Solutions, LLC
 Stewart and Stevenson Power Product LLC, Atlantic Division
 Strategic Energy Innovations
 Sustainable Endowments Institute
 The Corps Network
 The Real Estate Roundtable+
 The Solar Foundation - Puerto Rico
 U.S. Green Building Council+
 Unison Energy, LLC
 Urban Green Council
 Urban Land Institute+
 Veterans Health Administration (VHA) Energy Engineer Advisory Board
 Willdan
 Williams Building Systems Engineering

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ENDNOTES

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