Executive Summary

The U.S. Department of Energy's (DOE) Better Buildings, Better Plants Program and Challenge (Better Plants) is working with leading manufacturers to improve energy efficiency in the industrial sector. Better Plants is part of DOE's Better Buildings Initiative, a multi-sector effort with the overarching goal of significantly improving the energy efficiency of commercial, residential, and industrial buildings in the United States. Through the Better Plants program, manufacturers set a specific goal, typically to reduce energy intensity by 25% over a 10-year period across all their U.S. operations. Industrial organizations may also commit to the higher-level Better Plants Challenge and share their energy performance data and energy-efficiency solutions—in addition to setting an energy-saving goal—so that many more companies can see a pathway to savings. DOE supports these efforts with technical assistance and national recognition.

Better Plants has grown in participation, scope, and impact. Over the last year, the program has welcomed 21 new partners—12 through an expansion into the water and wastewater treatment sector, including two of the Nations' largest and most complex water systems, those servicing the cities of Los Angeles and New York. Through Better Plants, DOE has also built up initiatives to improve water efficiency and promote supply chain energy management. Ten partners committed to the Better Plants Challenge.

Today, 157 industrial organizations representing 11.4% of the total U.S. manufacturing energy footprint are Better Plants partners, a combined energy footprint greater than the state of Tennessee (see Figure 2, the next page).[1] Partners have reported[2] estimated cumulative energy savings of roughly 457 trillion British thermal units (TBtu) and $2.4 billion in energy costs (see Table 1). The average annual improvement rate across the partnership is about 2.1%,[3] which is above business-as-usual rates estimated by government agencies. Nine partners met their 25% energy-intensity reduction targets this year and three—3M, Bentley Mills, and Volvo Group North America (NA)—have already set ambitious new targets to build on their achievements (see page 4).

Better Buildings Initiative 2015 Updates

Better Buildings Alliance — Winter 2015
Latest from sector, technology, and market solutions leaders

Better Buildings Challenge — Spring 2015
Public and private sector leaders share strategies, solutions, and results

▶ **Better Plants** — Fall 2015
Leading manufacturers share progress toward ambitious energy savings goals

Figure 1: Program Growth Over Time

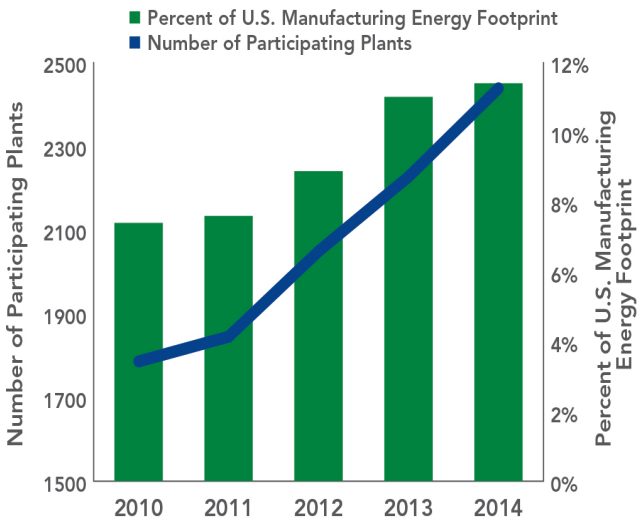


Table 1: Better Plants Snapshot

Partnership Size	Total
Number of Partner Companies	157
Approximate Number of Facilities	2,400
Percent of U.S. Manufacturing Energy Footprint	11.4%
Reported Savings through 2014	
Cumulative Energy Savings (TBtu)	457
Cumulative Cost Savings (Billions)	$2.4
Cumulative Avoided CO_2 Emissions (Million Metric Tons)	26.6
Average Annual Energy-Intensity Improvement Rate	2.1%

Driving Energy and Cost Savings

The manufacturing sector accounts for almost 25% of all U.S. energy use.[4] Industry spends almost $230 billion on energy each year,[5] but a significant portion of these costs could be avoided through improved energy efficiency. The manufacturing sector has the potential to invest more than $100 billion in cost-effective energy-efficiency technologies by 2020, which would result in annual energy savings of almost $50 billion.[6] Money saved through energy efficiency can be redirected toward new technologies, upgraded equipment, additional employees, and other investments that help businesses stay competitive.

While, on average, energy consumption represents a relatively small percentage of total U.S. manufacturing costs, that share is much higher for key energy-intensive manufacturing sectors like cement, glass, forest products, and iron and steel. For these sectors, energy efficiency is an especially important strategy for reducing costs and staying competitive. For some of these sectors, energy can be one of their most significant controllable costs, because labor and material costs are often difficult to impact, at least in the short term.

The industrial sector also accounts for the largest share of the Nation's greenhouse gas emissions by end use sector—about 34%, ahead of the transportation sector at 28%.[7] By lowering energy consumption, energy efficiency is a key tool for manufacturers to reduce their carbon footprint and help meet corporate sustainability goals. DOE is working with Better Plants partners to give them the tools and resources to improve energy efficiency, reduce costs, remain competitive, and lower their environmental impact.

To date, Better Plants partners have reported estimated cumulative energy cost savings of $2.4 billion. If the existing group of partners is able to sustain an average energy intensity improvement rate of 2.5% per year—consistent with the program's 10-year, 25% target—cumulative savings could potentially grow to $11 billion in 2020 (see Figure 3). Better Plants partners have also reported estimated cumulative avoided CO_2 emissions of almost 27 million metric tons (see Table 1), the equivalent to annual emissions from seven coal-fired power plants, 3.7 million U.S. homes' energy use, or 5.6 million passenger vehicles (see Figure 4).[8]

Figure 2: Better Plants' Energy Use Compared to U.S. States

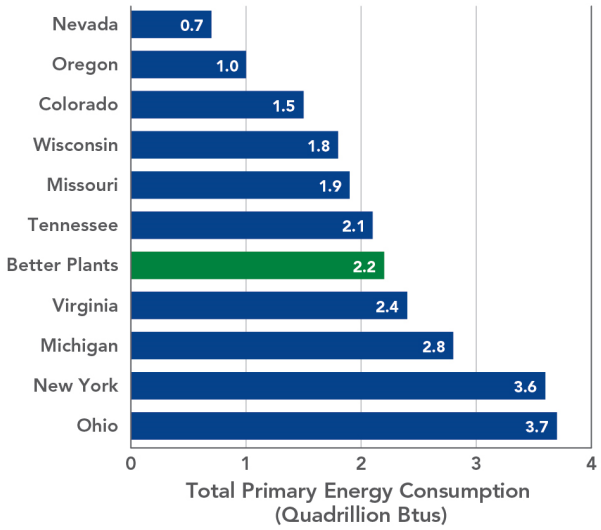


Figure 3: Better Plants' Potential Cumulative Cost Savings

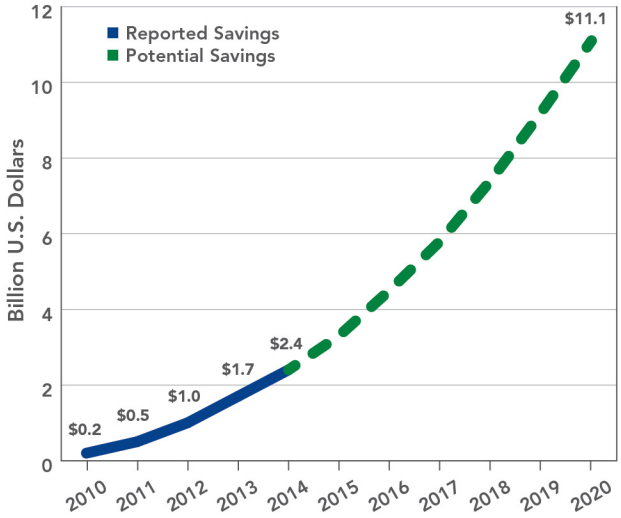


Figure 4: Estimated Cumulative Avoided CO_2 Emissions Are Equivalent to Annual Emissions From:

7 coal-fired power plants

3.7 million U.S. homes' energy use

5.6 million passenger vehicles

Representing a Diverse Industry Mix

Better Plants includes partners from almost every manufacturing sector, which are reporting varying rates of energy-efficiency progress. Figure 7 shows the average change in energy intensity per year for a select group of the largest manufacturing sectors within Better Plants. Sector sizes are represented by number of plants (x-axis) and energy consumption footprint in trillion Btus (circle size and parentheses in the key). The industrial machinery sector is one of the top-performing sectors in the program, with an average energy-intensity improvement rate of almost 4%. The chemicals sector, with more than 250 facilities in Better Plants, achieved an improvement rate of 3.1%. And the transportation equipment sector, one of the largest sectors in the program in terms of energy footprint and number of plants, achieved an improvement rate of 3.3%.

Partner facilities can be found in all 50 states, with the greatest concentration in California, Georgia, Illinois, Indiana, North Carolina, Ohio, Pennsylvania, and Texas (see Figure 5). A number of large multinational corporations with multiple facilities participate in the program, although many partners are also small, single-plant operations. For example, 13 partners are members of the Fortune 100, the largest U.S. corporations by gross revenue. Three—Ford Motor Company, General Electric, and General Motors—rank in the top 10. There is a similarly broad range of energy expenditures, with the smallest partners spending less than $1 million a year on energy and the largest, more than $100 million (see Figure 6).

Figure 5: Regional Distribution of Better Plants Facilities

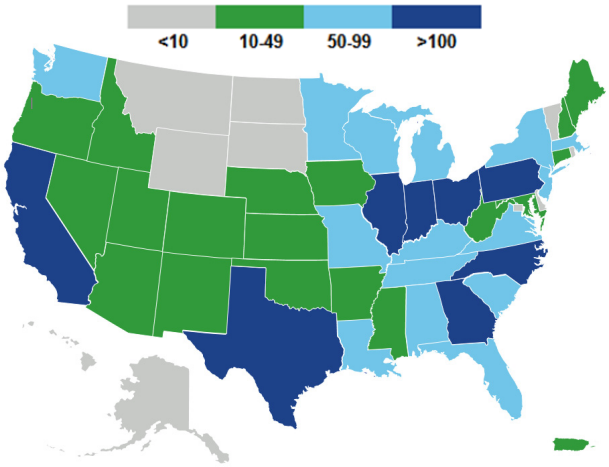


Figure 6: Better Plants Partners' Estimated Annual Energy Spending

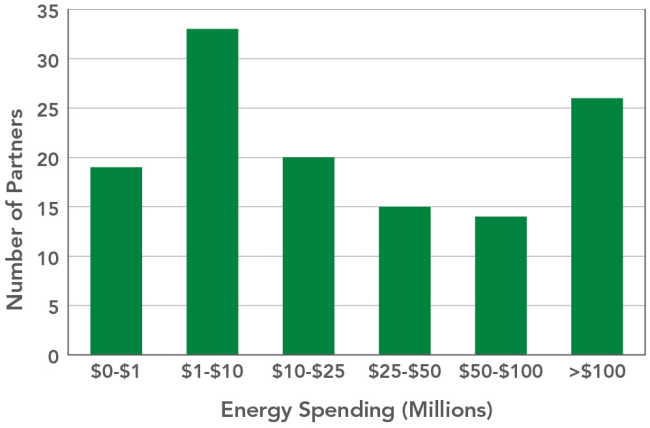
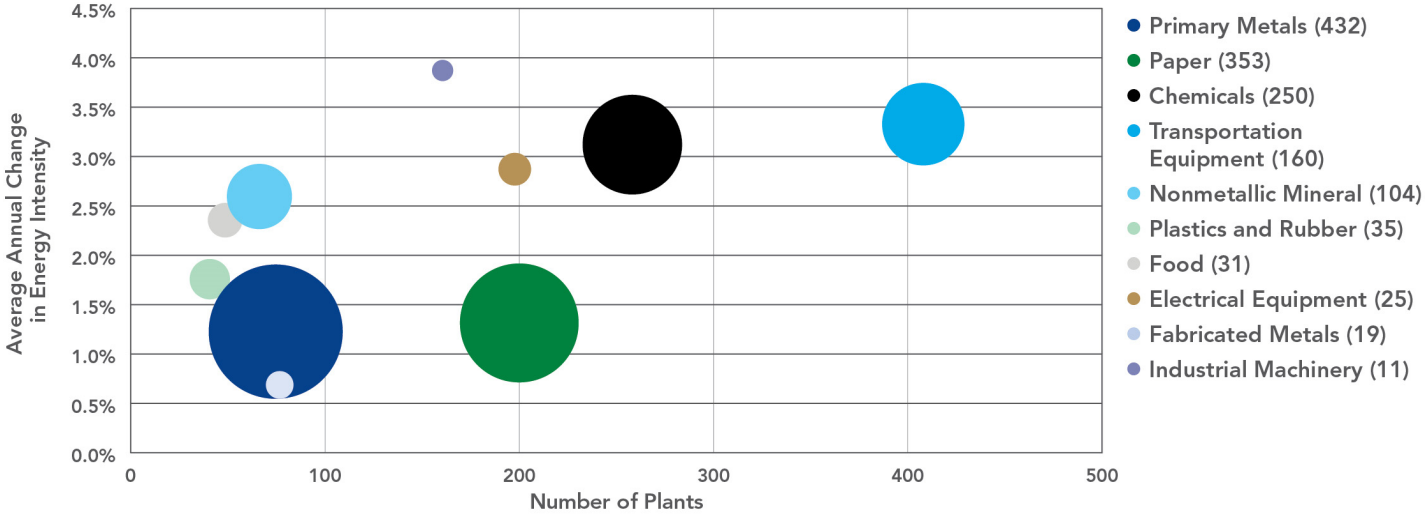


Figure 7: Average Energy Intensity Improvement by Number of Plants and Program Energy Footprint



Most Recent Goal Achievers

3M, a Better Plants Challenge partner, met its goal by improving energy intensity 25% over nine years across 111 U.S. facilities. The diversified product manufacturer set a new goal of improving energy intensity by another 30% over 10 years.

Bentley Mills met its goal by improving energy intensity by 29% over four years at its one U.S. facility. The company, which manufactures and markets broadloom, carpet tile, and area rug products, set a new goal of achieving an additional 25% improvement over 10 years as a Better Plants Challenge partner.

Harbec, a Better Plants Challenge partner, met its goal by improving energy intensity by 30% over four years at its one U.S. facility. Harbec is a custom injection molder and precision component parts manufacturer based in Upstate New York.

Ingersoll Rand met its goal by improving energy intensity by 26% over four years across 36 U.S. facilities. The company is a diversified manufacturer with brands like Club Car golf cars, Ingersoll Rand industrial equipment, and Trane air conditioning.

Johnson & Johnson met its goal by improving energy intensity by 29% over four years across 67 U.S. facilities. The company develops, manufactures, and sells a broad range of products in the healthcare field.

Roche Diagnostics met its goal by improving energy intensity by 41% over six years at its one U.S. facility. The company produces a broad portfolio of tools that help healthcare providers in the prevention, diagnosis, and management of diseases.

Shaw Industries Group, Inc. met its goal by improving energy intensity by 33% over seven years across 105 U.S. facilities. The company supplies carpet, hardwood, laminate, and other flooring products to residential and commercial markets.

Volvo Group NA, a Better Plants Challenge partner, met its goal by improving energy intensity by 27% over five years across eight U.S. facilities. The bus and truck manufacturer set a new goal of improving energy intensity by another 25% over 10 years.

Weyerhaeuser Wood Products met its goal by improving energy intensity by 27% over five years across 26 U.S. facilities. The company grows and harvests trees and makes a variety of forest products.

3M Recognizes Plant-Level Excellence in Energy Leadership

For more than a decade, 3M has been driving energy-efficiency improvements through its annual internal Energy Recognition Program. Established in 2003 to boost employee participation in the company's energy-efficiency efforts, the Plant Energy Awards provide recognition to employees for quality work and innovative ideas that improve performance toward broader corporate energy goals. Since 2005, 3M has successfully reduced its energy intensity by 25%. The awards program has contributed to these savings by motivating 3M employees to identify projects and implement best practices that save energy.

Learn more at the Better Buildings Solution Center: betterbuildingssolutioncenter.energy.gov.

An aerial view of 3M's Alexandria, Minnesota facility, which received the company's Platinum-level Plant Energy Award in June 2014. Photo courtesy of 3M.

Welcoming New Partners

The Better Plants Program is pleased to welcome 21 new industrial organizations that have made corporate-wide commitments to energy improvement. Seventeen joined the Better Plants Program, and another four new partners joined the Better Plants Challenge (see the next page). Much of the growth this year came as the program expanded to partner with water and wastewater treatment agencies. This sector accounts for approximately 4% of the nation's total electricity use[9] and faces high energy costs as a proportion of total operating costs. Twelve water and wastewater agencies set new energy-intensity targets through Better Plants this year, including four that joined the Better Plants Challenge. DOE will work with these partners to help advance energy-efficiency solutions, identify appropriate energy-intensity metrics, and explore other topics relevant to the sector, such as biogas conversion, strategic energy management, and financing solutions.

Better Plants Program

AbbVie Inc. is a global research-based biopharmaceutical company.

BD manufactures a broad range of medical supplies.

Delta Diablo provides water resource recovery services to the cities of Antioch, Pittsburg, and the Bay Point area in California.

Encina Wastewater Authority provides wastewater treatment service to roughly 300,000 residents in northwestern San Diego County, California.

Johnson Matthey Emission Control Technologies Division is a catalyst manufacturer for exhaust emissions control technology.

Kent County Department of Public Works treats wastewater in central Delaware.

Lineage Logistics is a cold storage warehousing and logistics company.

Los Angeles Bureau of Sanitation collects, cleans, and recycles solid and liquid waste for the City of Los Angeles.

Narragansett Bay Commission collects and treats wastewater for 10 Rhode Island communities.

New York DEP – Bureau of Wastewater Treatment manages New York City's water supply and treates roughly 1.3 billion gallons of wastewater daily.

O'Fallon Casting manufactures a variety of composite metal castings.

OFD Foods, Inc. is the largest diversified food freeze dryer in North America.

Oshkosh Corporation manufactures a range of specialty trucks, truck bodies, and access equipment.

Pactiv is a food packaging and food service product manufacturer and distributor.

Pima County Regional Wastewater Reclamation Department treats wastewater for 1 million people in southern Arizona.

Richmond Industries Inc. provides raw and fully machined castings to a wide variety of industries.

St. Petersburg Water Resources Department manages water and wastewater treatment for the City of St. Petersburg, Florida.

Better Plants Challenge

In addition to setting energy-efficiency goals, Better Plants Challenge partners commit to added transparency around their energy performance data and energy-efficiency solutions. This year, 10 organizations joined the Challenge. Of these, four came from the water and wastewater treatment sector. The other six—Bentley Mills, Celanese, Holcim (US) Inc., Lennox International, TE Connectivity, and Toyota—met their initial 25% goals as part of the Better Plants Program and then joined the Better Plants Challenge with new targets. The Better Plants Challenge now consists of 29 organizations.

Bentley Mills, Inc. is the largest commercial carpet manufacturer in California.

Bucks County Water and Sewer Authority provides water and sewer services to roughly 385,000 people in southeastern Pennsylvania.

Celanese Corporation produces differentiated chemistry solutions and specialty materials.

Holcim (US) Inc. manufactures cement and mineral components.

Ithaca Area Wastewater Treatment Facility treats wastewater for the City and Town of Ithaca, New York.

Lennox International provides climate control solutions for HVAC markets.

Los Angeles Department of Water and Power's Water System provides water service to the City of Los Angeles.

TE Connectivity designs and manufactures connectors, sensors, and electronic components for a variety of industries.

Toyota is a leading automotive manufacturer.

Victor Valley Wastewater Reclamation Authority treats wastewater for 300,000 people in the Mojave Desert.

Expanded Impact: Superior Energy Performance

A growing number of Better Plants partners are taking advantage of DOE's Superior Energy Performance® (SEP™) program to improve and sustain energy efficiency (see Table 2). To become certified, facilities must (1) implement an energy management system that conforms with the International Organization for Standardization (ISO) 50001 standard, and (2) demonstrate independently verified energy performance improvement. Facilities can qualify for SEP at the Silver, Gold, or Platinum levels, based on their level of energy performance improvement.

To date, industrial facilities that have earned SEP certification achieved energy performance improvements ranging from 6% to 31% over three years. DOE recently initiated the Industrial SEP Accelerator to streamline and reduce the cost of implementing SEP and to engage new partners through two pathways: for utilities and energy efficiency program administrators, and for corporations, business units, or multiple plants.

Table 2: 2014-15 SEP Platinum-Certified Better Plants Facilities

Company – Location	Energy Performance Improvement
Nissan – Smyrna, TN*	17.7% over 3 years
Schneider Electric – Clovis, CA	16.7% over 3 years
Schneider Electric – Smyrna, TN*	23.1% over 3 years
Volvo Group NA – Dublin, VA	28.4% over 10 years
Volvo Group NA – Hagerstown, MD*	20.9% over 3 years

**Recertified Platinum in 2015.*

Expanded Impact: Supply Chain Efficiency

In 2014, DOE launched a new initiative to support Better Plants partners' efforts to improve energy efficiency in their supply chains. Around 40% to 60% of a manufacturing company's energy and carbon footprint can reside upstream in its supply chain, making it an area ripe for focused energy-efficiency efforts.[10] Energy efficiency can help suppliers cut costs and remain competitive. Additionally, large consumer-oriented companies are facing pressure from external stakeholders to address the lifecycle energy and environmental impacts of their products.

Through this initiative, DOE collaborates with a select group of Better Plants partners to extend the program's resources to their suppliers. Partners are leveraging Better Plants resources to help their suppliers set, track, and meet energy-savings goals; typically aiming to reduce energy intensity by 25% over 10 years. To date, Legrand and United Technologies Corporation (UTC) have recruited eight and five suppliers, respectively. Separately, DOE is working with Johnson Controls to help the company as it scales up its supply chain energy management program (see box below).

DOE hosts webinars for each cohort of suppliers that cover energy-efficiency tools and best practices. Participating suppliers have priority access to no-cost energy assessments from DOE's Industrial Assessment Centers (IACs). To date, 12 assessments have been conducted for supplier facilities, identifying 56 total energy-efficiency improvement recommendations with collective potential savings of $1.1 million a year and an average simple payback of less than a year (see Table 3).

An IAC student examines pumps at an industrial facility. Photo courtesy of the San Francisco State University IAC.

Table 3: 2015 Supply Chain Initiative IAC Assessments

Summary of Assessments	Results
Number of Assessments	12
Number of Recommendations	56
Average Percent Savings Per Plant	13%
Average Cost-Savings Potential	$119,000
Average Simple Payback	0.9 years
Total Potential Savings	$1.1 million

Johnson Controls Engages Suppliers on Energy Efficiency

Johnson Controls, a Better Plants Challenge partner, launched its own pilot supplier efficiency program to train suppliers on key energy management skills. Through this program, Johnson Controls' experts visit supplier sites to lead onsite assessments, share efficiency checklists and tools, and provide guidance on developing business cases for capital improvements. The onsite assessments follow an industry practice known as "energy hunts," which Johnson Controls has long used to engage its facility staff in identifying and implementing energy-savings measures. Energy hunts at supplier facilities have resulted in average savings estimates in the range of 5% to 10%. The company has made a commitment through the Clinton Global Initiative to ramp up its supplier energy-efficiency program in an effort coordinated by the American Council for an Energy-Efficient Economy (ACEEE) and supported by DOE.

Learn more at the Better Buildings Solution Center: betterbuildingssolutioncenter.energy.gov.

Johnson Controls' headquarters in Glendale, Wisconsin. Photo courtesy of Johnson Controls.

Expanded Impact: Water Savings

In 2014, the Better Buildings Challenge launched a water-savings pilot with 23 multi-sector partners that committed to set water-reduction goals, report progress, and share solutions. Based on the success of the pilot, DOE announced at the May 2015 Better Buildings Summit that it was expanding the initiative and inviting Challenge partners to set water-savings goals in addition to their energy targets. Water efficiency is growing in importance as certain regions across the country and the world struggle with drought conditions and limited fresh water availability. Also, because energy is required to transport and treat water, saving water saves energy, as well as greenhouse gas emissions.

Industrial partners in the initiative that have reported data (see Table 4) have cumulative water savings of more than 357 million gallons, which could fill 540 Olympic-sized swimming pools and provide a year's worth of water for more than 3,000 American households, or 20 million showers (see Figure 8).[11]

Partners are also adopting and sharing innovative water-saving solutions. UTC developed a comprehensive water conservation guidance document for its facilities worldwide. Harbec is using a rain collection pond as a cooling medium, offsetting water evaporated from its cooling towers. This is helping the company pursue its goal of eliminating its reliance on publically supplied water for non-potable uses. And Cummins has built a tool that evaluates the "true cost of water," including the costs of energy consumption and chemical treatment, and the business risk associated with losing access to water.

Table 4: Water Savings Initiative Progress

Company	Baseline Year	Average Annual Improvement
Cummins	2010	9.9%
Ford	2009	7.4%
General Motors	2010	2.9%
Nissan	2013	16.1%
Saint-Gobain	2012	6.5%
UTC	2006	4%

Figure 8: Estimated 2014 Water Savings Are Equivalent to:

540 Olympic swimming pools

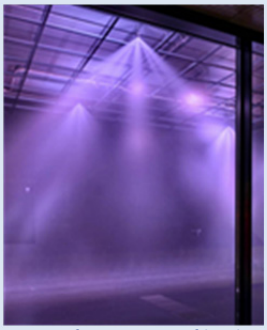
3,000 households' average annual water consumption

20 million showers

UTC Provides Water Conservation Guidance on a Global Scale

Better Plants Challenge partner UTC is working toward a global target to reduce water use by 40% by the end of 2015 and is in the process of setting a new water-reduction goal out to 2020. To help meet its ambitious goals, UTC developed a detailed internal guidance document that describes the company's global water scarcity assessment and provides a tracking list for water management best practices, such as establishing a basic water leak management program, installing flow meters, reducing or eliminating rinse tank overflow, recycling process wastewater, and rainwater harvesting. Sites are required to implement a set number of best practices depending on the water scarcity of the surrounding region as established by a tool developed by the World Business Council for Sustainable Development (WBCSD).

Learn more at the Better Buildings Solution Center: betterbuildingssolutioncenter.energy.gov.



Water from tests of high-efficiency sprinklers at UTC is reclaimed. Photo courtesy of UTC.

Looking Ahead to 2016

In the coming year, DOE will continue partnering with leading organizations to help them save energy, document their innovative energy-efficiency strategies, and recognize their progress. Additional focused efforts will be made to build out the newer program areas targeting supply chain energy efficiency, water savings, and energy management in the water and wastewater treatment sectors. Specific new intiatives to look forward to later in 2015 and into 2016 include:

- **Additional In-Plant Training Opportunities:** DOE is seeking to expand its In-Plant Trainings to cover additional topics. Training on topics such as process cooling/refrigeration, strategic energy management, and water efficiency are being evaluated. DOE aims to roll out new offerings in 2016 and will seek input from partners on additional topics to explore. For more information, contact BetterPlants@ee.doe.gov.

- **New Better Buildings Packaged Combined Heat and Power (CHP) Accelerator:** This new Accelerator is designed to increase deployment of CHP systems sized at 10 megawatts or less in commercial buildings and manufacturing plants. A key feature of the Accelerator will be the development of an electronic catalogue of packaged CHP solutions from pre-approved vendors. For more information, contact CHP@ee.doe.gov.

- **Improved eGuide for Energy Management:** DOE's updated eGuide was designed to help organizations implement an energy management system through an organized step-by-step process at three different, progressively rigorous levels: Foundational, ISO 50001, and Superior Energy Performance. The new eGuide toolkit includes forms, checklists, templates, examples, and guidance to assist energy managers and their teams build their energy programs. The improved eGuide is available at energy.gov/eguide.

A look at the expanded Better Buildings Solution Center, an online repository of leading energy-efficiency solutions.

- **Expanded Better Buildings Solution Center:** In May 2015, DOE unveiled its Better Buildings Solution Center, which currently houses nearly 200 energy efficiency solutions tested and proven by partners in the Better Buildings Initiative. Solutions are searchable by topic, barrier, sector, technology, and more. Through 2016, DOE will add more solutions covering key topics from across sectors, while continuing to improve the layout and navigation of the site. Visit the Better Buildings Solutions Center at betterbuildingssolutioncenter.energy.gov.

- **2016 Better Buildings Summit:** The next annual Better Buildings Summit is scheduled for May 9-11, 2016. Registration will open in late 2015. The 2015 Summit drew more than 900 participants and featured presentations from 225 speakers from the commercial, industrial, public, multifamily, residential, and data center sectors. Now in its third year, the Summit brings together partners from across the Better Buildings Initiative to share best practices and solutions to common energy-efficiency barriers. To view presentations from the 2015 Summit, visit the Better Buildings Solution Center at betterbuildingssolutioncenter.energy.gov.

Partners as of September 2015

3M*
AbbVie Inc.
Alcoa Inc.
Amcor Rigid Plastics
ArcelorMittal USA
Arkema
AT&T*
Ball Corporation
BD
Bentley Mills*
BIC Graphic USA Manufacturing Co., Inc.
BPM, Inc.*
Bradken
Bridgestone Americas, Inc.
Briggs & Stratton Corporation
Buck Company
Bucks County Water and Sewer Authority (BCWSA)
CalPortland Company
Carlton Forge Works
Carus Chemical Company
Celanese International Corporation*
Chapco Inc.
Chippewa Valley Ethanol Company
Citrus World, Inc
Coilplus Inc.
Comau Inc.
Commercial Metals Company (CMC)
Complete Design and Packaging
Cummins, Inc.*
Daikin Applied Americas Inc.
Darigold
Davisco Foods
Delta Diablo
Denison Industries
Didion Milling
Dow Chemical Company
DSM North America
Duke Manufacturing Company
Durex Inc.
EARTH$_2$O
Eastman Chemical Corporation
Eaton Corporation
Eck Industries
Encina Wastewater Authority
Expera Specialty Solutions
Flambeau River Papers
Flying Foods Group
Ford Motor, Co.
General Aluminum Manufacturing Company
General Dynamics Ordnance and Tactical Systems Scranton Operation
General Electric
General Mills
General Motors
General Sheet Metal Works, Inc.
GKN Aerospace Services
Golden Renewable Energy, LLC
Goodyear Tire and Rubber Company, U.S. Tire Plants
Graphic Packaging
Harbec Inc.*
Harley-Davidson
Harrison Steel Castings Co.
Haynes International
Hitchiner Manufacturing Co. Inc.
HNI Corporation
Holcim (US) Inc.*
Huntsman Corporation
Ingersoll Rand*
Intel
International Paper
Intertape Polymer Group
Ithaca Area Wastewater Treatment Facility
J.R. Simplot
JBT Corporation
Johnson & Johnson*
Johnson Controls
Johnson Matthey Emission Control Technologies Division
Kent County Department of Public Works
Kenworth Truck Company
Los Angeles Bureau of Sanitation
Kingspan Insulated Panels, Inc
Land O' Lakes
Legrand North America*
Lennox International*
Lineage Logistics
Lockheed Martin
Los Angeles Department of Water & Power
Lufkin Industries, Inc.
Lynam Industries Inc.
Magnetic Metals Corp
Manitowoc Grey Iron Foundry
Mannington
Marquis Energy
Marquis Energy Wisconsin
MB Aerospace East Granby
McCain Foods USA, Inc.
MeadWestvaco Specialty Chemicals Division
MedImmune
Metal Industries, Inc.*
Mohawk Industries
Narragansett Bay Commission
Navistar International
Neenah Foundry
Nissan North America, Inc
Novati Technologies
Novelis Inc.
NY DEP – Bureau of Wastewater Treatment
O'Fallon Casting
OMNOVA Solutions Inc.
OFD Foods, Inc.
Oshkosh Corporation
OSRAM SYLVANIA
Owens Corning
Pactiv
PaperWorks Industries
Patrick Cudahy, Inc
Patriot Foundry & Castings*
PepsiCo
Pima County Regional Wastewater Reclamation Dept.
PPG Industries
Procter & Gamble*
Quad/Graphics, Inc.
Raytheon Company
Richmond Industries Inc.
Roche Diagnostics Operations*
RockTenn - Harrison
Rowley Spring and Stamping
Saint-Gobain Corporation
Schneider Electric
Selmet, Inc.
Serious Materials
Shaw Industries Group, Inc.*
Sherwin-Williams
Solberg Manufacturing, Inc.
Sony DADC
Spirax Sarco, Inc.
St. Petersburg Water Resources Department
Stanley Spring & Stamping Corporation
Steelcase, Inc.
SunOpta, Inc
Sunoptics Prismatic Skylights
TE Connectivity*
Tenaris
Texas Instruments*
Textron
The Shredder Company
The Step2 Company
ThyssenKrupp Elevator*
Toyota Motor Engineering and Manufacturing North America*
TPC Group
United Technologies Corporation*
Victor Valley Wastewater Reclamation Authority
Volvo Group North America*
Waupaca Foundry
Weber Metals Inc.
Weyerhaeuser*
Whirlpool Corporation
World Kitchen, LLC

KEY

Bold – Better Plants Challenge Partner

Underline – New Partner

Asterisk* – Goal Achiever

Endnotes

[1] U.S. Energy Information Administration (EIA), U.S. States: State Profiles and Energy Estimates, http://www.eia.gov/state/?sid=US.

[2] Energy performance data cited in this report is based on DOE-reviewed individual annual reports submitted by Better Plants Partners. DOE will sometimes exclude from its final metrics data reports that raise technical or other issues that cannot be resolved in consultation with partners. These include, but are not limited to, reports that use inappropriate or inconsistent methodologies to calculate energy intensity, contain missing or incomplete data, or show changes in energy intensity that do not accurately reflect energy-efficiency actions undertaken by the partner. As new information comes in, DOE will sometimes revise or delete erroneous data reports that were previously submitted by partners. This can result in changes to previously published program-wide metrics.

[3] The average annual energy-intensity rate is calculated by first dividing each partner's total improvement rate by the number of years since their baseline year, then taking an average of these values across the program weighted by baseline energy consumption. Program-wide energy savings in a given year are calculated by weighting partner-reported energy-intensity improvement rates to determine the program-wide energy-intensity improvement rate and applying this to the total baseline year energy consumption for that same set of reporting partners. Cumulative energy savings are calculated by summing previous years' program-wide energy savings and accounting for the persistence of those savings over time. To estimate cost savings, DOE multiplies the energy savings by energy cost data compiled by the EIA.

[4] EIA, Annual Energy Outlook, http://www.eia.gov/forecasts/aeo/index.cfm.

[5] EIA, Annual Energy Outlook, http://www.eia.gov/beta/aeo/#/?id=3-AEO2015.

[6] McKinsey & Co., "Unlocking Energy Efficiency in the U.S. Economy," July 2009.

[7] EIA, Emissions of Greenhouse Gases in the U.S., http://www.eia.gov/environment/emissions/ghg_report/ghg_carbon.cfm.

[8] Cumulative avoided CO_2 emissions are calculated by first estimating primary energy savings by fuel type using an energy savings distribution based on DOE Energy Savings Assessments data collected from 2006 to 2011. Then, avoided CO_2 emissions are calculated by multiplying primary energy-savings by fuel type with fuel-specific CO_2 conversion factors provided by EIA and the U.S. Environmental Protection Agency (EPA). Emissions equivalencies are calculated using the EPA Greenhouse Gas Equivalencies Calculator, http://www.epa.gov/cleanenergy/energy-resources/calculator.html.

[9] Electric Power Research Institute, "Water and Sustainability: U.S. Electricity Consumption for Water Supply & Treatment—The Next Half Century," 2000.

[10] C. Brickman and D. Ungerman, "Climate Change and Supply Chain Management," *McKinsey Quarterly*, July 2008.

[11] Gallons-saved are calculated by first calculating weighted average percent improvement across the water pilot participants, then applying that percentage to baseline water consumption of those same partners. Water-savings equivalencies are then calculated by converting gallons using publically available sources, including the EIA, EPA, and the International Swimming Federation.

Better Plants®
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