



Industry Brief: How Green Building Helps the U.S. Economy

Green building is steadily becoming one of the fastest growing sectors within the American economy. The business case for high performance buildings is being made by both Fortune 100 companies and small businesses, along with local, state and federal governments. Property owners can build and manage smarter, healthier, more resilient buildings while saving money on energy and water bills; a combination that enhances their triple bottom line while creating a more pleasant, productive and healthier occupant and worker experience.

According to a recent report released by the U.S. Green Building Council¹, green construction's growth rate is rapidly outpacing that of conventional construction, and by 2018, green construction will support more than 3.3 million U.S. jobs – more than one-third of the entire U.S. construction sector – and generate \$190.3 billion in labor earnings.

Green building is an important part of addressing climate change, which, if unmitigated, will cost the economy billions in economic damage over coming decades. Green building standards, if applied comprehensively nationwide, can achieve about 10 percent of the total carbon reduction that the U.S. must deliver as part of a comprehensive global climate solution.

Green building is the process of creating or retrofitting a building through an environmentally- and resource-minded process, from conception to design and through operations and maintenance. This process requires cooperation and involvement from all team inputs in order to maximize sustainability outcomes, including (but not limited to) architects, engineers, product manufacturers, building owners and operators.

Green building rating systems have been around for decades, but the last ten years have seen aggressive consumer demand and market uptake in policies and practices.



The Los Angeles Convention Center became LEED Gold in 2015. The building features solar generation plants, low-flow plumbing fixtures, and a comprehensive waste management program.

¹ 2015 Green Building Economic Impact Study. <http://go.usgbc.org/2015-Green-Building-Economic-Impact-Study.html>

Certification Systems Set the Bar

Green building rating systems offer a prescriptive and third-party-verified path for achieving a successful, transparent and holistically-considered green building. While different rating systems have some basic variances, they all strive to ensure that buildings – major consumers of energy and water, and places where millions of people spend as much as 90 percent of their time – are as environmentally friendly and healthy as possible.

Some prominent domestic systems are:



LEED (Leadership in Energy & Environmental Design)

is the most widely-used green building rating system in the world. LEED buildings are constructed or retrofitted to meet certain sustainability requirements; points toward

certification are awarded based on which green strategies were used. Qualified buildings earn enough credits to be certified Silver, Gold or Platinum (the highest level attainable) based on the number of points they earn within six component areas: Energy and Atmosphere, Water Efficiency, Sustainable Sites, Indoor Environmental Quality, Materials and Resources, and Innovation and Design.

LEED certification has become a market- and consumer-driven top priority for property owners, with the value of LEED-certified buildings increasing substantially. Today, more than 14.4 billion certified and registered square feet of space exists across 155 countries and territories – 1.85 million square feet of space is LEED-certified every day. No one region has a monopoly on LEED; in 2015, states like Texas and Utah joined Illinois, California, and Virginia as top 10 states in terms of total LEED-certified sq. ft. per capita. ²



The ENERGY STAR program

was established by the U.S. Environmental Protection Agency (EPA) in 1992 and has become a well-established program whose mission is to “identify and promote energy-efficient products and buildings

in order to reduce energy consumption, improve energy security, and reduce pollution through voluntary labeling of or other forms of communication about products and buildings that meet the highest energy efficiency standards.” ³ ENERGY STAR has certified more than 1.5 million new homes, which are designed to use less energy, and are responsible for substantially less greenhouse gas emissions than their peers.

The Living Building Challenge is a third-party building certification system that defines a more advanced measure of sustainability in the built environment, ultimately seeking to create the most efficient buildings possible in order to rapidly diminish environmental impacts. The Living Building Challenge is recognized by the U.S. Green Building Council (USGBC) as an additional way to view environmental and social responsibilities as it pertains to the built environment. ⁴

The Business Case for Green Building

Green jobs are good jobs. It is projected that by 2018, construction of green buildings will support more than 3.3 million U.S. jobs, more than one-third of the entire U.S. construction sector. Total combined state earnings related to LEED building construction projects alone are estimated to total \$8.4 billion by 2018. For Texas, as one example, this projects to almost 1.26 million jobs in the green building sector between 2015 and 2018. ⁵

To further the education of building industry workers with regards to sustainability, many accreditation programs help teach the specific ins and outs of green building and the green building rating systems that are standard in the field. For example, one can complete a training program to become a RESNET-Certified Home Energy Rater through the ENERGY STAR program. Also, USGBC offers a variety of accreditation programs that educate the industry on LEED and more. Currently, more than 200,000 professionals hold LEED accreditation.

² McCadden, L. (2016) USGBC Releases the 2015 Top 10 States for LEED Green Building Per Capita in the U.S. <http://www.usgbc.org/articles/usgbc-releases-2015-top-10-states-leed-green-building-capita-us>

³ ENERGY STAR (2016). About Energy Star. <http://www.energystar.gov/about>

⁴ Living Building Challenge (2016). <http://living-future.org/lbc>

⁵ Shutters, C. (2015). New Study Finds Green Construction is Major U.S. Economic Driver. <http://www.usgbc.org/articles/new-study-finds-green-construction-major-us-economic-driver>

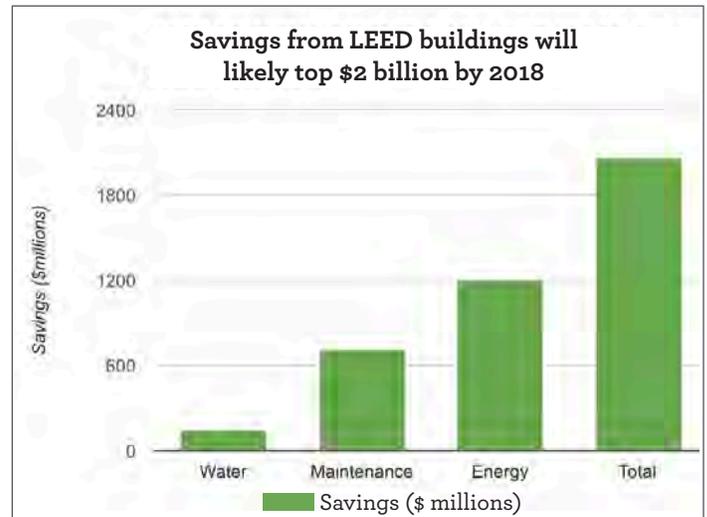
Green buildings save money for businesses and homeowners. According to the National Federation of Independent Business, energy costs are one of the top three business expenses for over a third of small businesses.⁶ Combine that with water usage, and costs rise even further. Companies look to green building strategies to improve their bottom line. One study found that green building reduced operating costs by 13.6 percent for new construction projects and 8.5 percent for existing buildings – while at the same time, new construction projects saw building values increase by 10.9 percent and existing building projects saw an increase of 6.8 percent.⁷

LEED-certified buildings are estimated to provide as much as \$1.2 billion in energy savings, \$149.5 million in water savings, and \$715.3 million in maintenance savings by 2018, which goes back into the pockets of the American people.⁸



Graph created by ASBC with numbers sourced from the U.S. Green Building Council
<http://www.usgbc.org/articles/business-case-green-building>

Green buildings protect the economy from the cost of environmental degradation. Green buildings, and the sustainable way they are built, are critically important to our environment. Buildings account for 39 percent of CO2 emissions in the U.S., which contributes heavily to climate change worldwide. That, in turn, is causing more severe weather events, disrupted supply chains, health problems for Americans and thus higher health care spending. This helps explain why polling commissioned by the American Sustainable Business Council in 2014 found that most business owners are concerned about climate change, and felt it would negatively impact their business – and why nearly one in five said extreme weather events associated with climate change already had. Mitigating climate change is good business.⁹



Graph created by ASBC with numbers sourced from the U.S. Green Building Council
<http://go.usgbc.org/2015-Green-Building-Economic-Impact-Study.html>

⁶ National Federation of Independent Business (2016) Energy. <http://www.nfib.com/advocacy/energy>

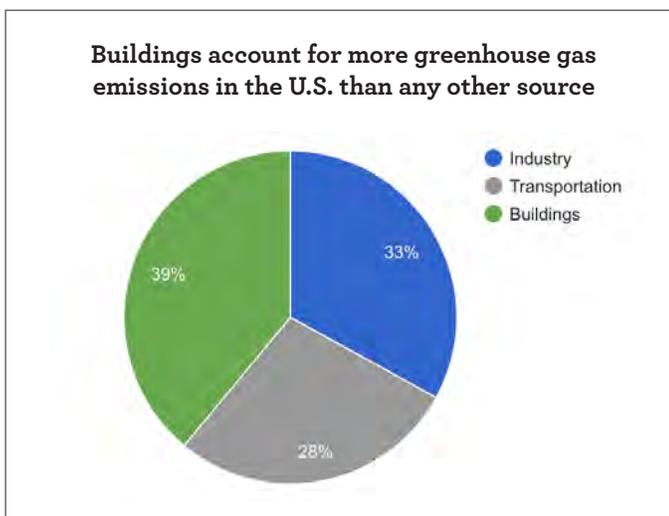
⁷ McGraw Hill Construction (2012). World Green Buildings Study.

⁸ 2015 Green Building Economic Impact Study. <http://go.usgbc.org/2015-Green-Building-Economic-Impact-Study.html>

⁹ American Sustainable Business Council (2015). Polling of Small Business Owners. <http://asbcouncil.org/poll-small-business-owners#Climate>

Energy-efficient buildings can have a profound effect on the overall carbon footprint of the U.S. economy. This can protect the U.S. economy and U.S. jobs against damages from climate change. Building occupancy accounts for 41 percent of total U.S. energy usage – more than industry or transportation.

Carbon savings mount as old, inefficient buildings are replaced with new (or retrofitted) buildings, and the savings accumulate with each upgrade. LEED-certified buildings use roughly 25 percent less energy than non-LEED buildings.¹¹ Replacing or retrofitting buildings on a 40-year lifecycle means that about 2.5 percent of America’s building stock is replaced or retrofitted every year. By 2025, this gradual change would reduce emissions by 146 million metric tons, nearly seven percent of the carbon reductions the U.S. committed to for that year. By ASBC calculations, if the U.S. required all new construction to be efficient at the minimum LEED-certified level, total carbon reduction would reach more than 500 million metric tons by 2050. This reduction alone would meet 10 percent of the total U.S. commitment to carbon reduction, as negotiated at the Paris COP21 international negotiations in December of 2015.¹⁰



Source: Center for Climate and Energy Solutions
<http://www.c2es.org/technology/overview/buildings>

Industry Spotlight – Bank of America

Bank of America (BoFA) is one of the largest banks in the U.S. and has multinational banking and financial services operations. BoFA has emerged as a leader in the green building world, taking action in unexpected ways to positively impact the environment.

BoFA has made operational commitments to reduce its global environmental footprint, including reducing water and paper consumption by 20 percent, diverting 70 percent of waste from landfills, and reducing energy consumption by 20 percent. Additionally, the company has set a goal of greening 20 percent of its corporate real estate portfolio through LEED.

BoFA continues to pursue its lending, investing and capital raising for its clients worldwide. The company recently increased its environmental business initiative from \$50 billion to \$125 billion in low-carbon business by 2025, which demonstrates a focus on sustainable technologies and addressing global issues.

BoFA has partnered with USGBC to help fund the Affordable Green Neighborhoods Grant Program, an initiative that provides funding and education to affordable housing developers who are committed to building green through the use of the LEED for Neighborhood Development rating system. This leadership effort extends BoFA’s environmental impact even further, into our communities and homes.



Bank of America Tower in NYC was the first skyscraper to be LEED Platinum-certified. The building uses combined heat and power to provide approximately 65 percent of building’s annual electricity requirements.

¹⁰ Columbia University, What is the U.S. Commitment in Paris? <http://blogs.ei.columbia.edu/2015/12/11/what-is-the-u-s-commitment-in-paris/>

¹¹ USGBC. The Business Case for Green Building. <http://www.usgbc.org/articles/business-case-green-building>

Industry Spotlight – Kohl's

Kohl's is a national retailer on a green building mission, and has set the bar high for green retail construction. Over 1,000 of their stores carry an ENERGY STAR certification. They practice green procurement, commit to using green power and water-efficient plumbing, and they have an established green cleaning program. Kohl's proudly shares its usage of the LEED rating system on their dedicated website, KohlsGreen.com, in the company's annual CSR report, and through door decals at the entrance to their LEED-certified stores.

The company joined the U.S. Green Building Council (USGBC) in 2007 and has been an active part of the industry since. In 2008, the company began pursuing LEED certification for the new stores in their rapidly growing operation. Kohl's now has more than 465 LEED-certified properties covering more than 38 million square feet.

Beyond using LEED, Kohl's has taken their commitment a step further through their active membership with USGBC. Kohl's was one of the first companies to sign up with the LEED Volume Program, which helps scale up green building design and construction for companies who are building similar buildings very rapidly. They have also been very open and transparent with their building data, showing how their green buildings are performing across large parts of their portfolio. According to Kohl's LEED volume prototype, building energy consumption and costs are 26-36% below baseline.



Green buildings contribute to occupant satisfaction and productivity.

Another upside to green building and certification programs is occupant satisfaction. Recent scholarly studies have found that workers in LEED-certified buildings of the same institution were more productive and engaged in their work than coworkers in non-LEED buildings, and that LEED buildings correlated with better recruitment and retention rates.¹²

This is not an idle concern – according to one study by the Center for American Progress, the average cost of replacing an employee who earns less than \$50,000 a year can reach 20 percent of their annual salary. The cost of losing an executive can be many times worse – as much as a staggering 213 percent of their salary.¹³

Governments are saving money with green building.

Third-party green building certification for projects represents an easy way for local, state and federal governments to cut expenses while proving to citizens that they are responsible stewards of both taxpayer dollars and the environment.

Over 3,700 state and local government projects are currently pursuing LEED certification, with nearly 3,000 already certified. Much of this is due to legislation passed at both the federal and state levels that incentivizes or requires more energy-efficient building projects. Several state and local governments have passed legislation requiring LEED certification for new government-owned buildings or have otherwise incentivized LEED projects¹⁴. For example, the District of Columbia adopted new construction codes in 2013 which require that all new buildings over 10,000 square feet, except for single-family homes, will have to meet new sustainability requirements, such as achieving LEED certification. At the federal level, there are more than 1,950 LEED-certified projects.

The LEED Silver Kohl's store in Oro Valley sports an ENERGY STAR score over 90. The rooftop solar panels generate more than 600,000 kilowatts (kWh) of power, enough to offset 20 to 50 percent of the store's energy use.

¹² Conlon, E. and Glavas, A. (2012). The Relationship Between Corporate Sustainability and Firm Financial Performance <http://business.nd.edu/uploadedFiles/Conlon%20and%20Glavas%202012.pdf>

¹³ Boushey, H. and Glynn, S.J. (2012). There Are Significant Business Costs to Replacing Employees <https://www.americanprogress.org/issues/labor/report/2012/11/16/44464/there-are-significant-business-costs-to-replacing-employees/>

¹⁴ Sigmon, J. (2013). States Open Doors for Green Building Growth: Another Top 10 List for 2012 <http://www.usgbc.org/articles/states-open-doors-green-building-growth-another-top-10-list-2012>, slide 11 http://ftp.dot.state.tx.us/pub/txdot-info/energy/presentation_031113.pdf

Why does the American Sustainable Business Council (ASBC) care about green building?

American Sustainable Business Council supports green building. We see it as a source of tremendous direct and indirect economic benefit to individual businesses and to the economy as a whole. First, green building contributes directly to reducing operating expenses. The money saved on energy and water bills can be applied to expanding operations, purchasing equipment, improving employee benefits, adding staff, and/or boosting profits.

In addition, green building helps avoid the cost of climate change – a cost that will ultimately challenge most businesses, directly and indirectly. As green

building reduces the need for carbon-based fuels, it lessens the need for mitigation such as hardening coastal infrastructure and developing alternative water supplies.

Finally, the drive towards safer chemicals and products is a key opportunity that supports the shift to healthier buildings. Advances in green chemistry and breakthroughs in the construction sector make safer buildings possible. Conversely, failing to build safer buildings will probably lead to higher health care spending, lost work hours, and lost productivity.

Overall, green building represents one of the best opportunities for businesses to save money and protect the environment at the same time.

Policy Opportunities

What is needed now is for policymakers at all levels of government, from state capitals to our nation's capital, to fully support this movement and make it easier for consumers and businesses to take advantage of green building.

Government incentives provide a path that states and localities can take to support the green building economy. Several cities, like Berkeley, Cambridge and Milwaukee, are using financing mechanisms that allow homeowners to take advantage of energy-saving building projects at lower or no cost. Others, like San Francisco, Los Angeles, and Nashville have created structural incentives that provide density bonuses or expedited permitting. Still others offer more direct tax credits and abatements, or technical or marketing assistance. States from Alabama to California have passed laws of their own designed to boost green building growth by various means, including having energy efficiency and green building be considered in any public housing project, providing tax credits, and expanding requirements for buildings like schools.¹⁵

In addition to government policies that incentivize or require more energy-efficient building projects, or government-based financing mechanisms, ASBC supports proposals to boost funding for renewable energy and energy efficiency and backs efforts to reform the nation's chemical laws. These proposals include:

Clean Energy Victory Bonds are an investment vehicle that allows Americans to invest in one of the fastest growing sectors in the global economy, as well as a means to collectively provide a secure and sustainable energy future, create jobs, and regain our competitive advantage in clean energy technology. For as little as \$25, every American could invest in the energy sources that are needed to move our economy forward. More information is available at <http://asbcouncil.org/action-center/campaigns/clean-energy-victory-bonds>.

Chemical Policy Reform Companies are also concerned about toxic chemicals that can affect the health and well-being of employees. Addressing this issue requires meaningful reform of toxic chemicals laws, with the help of the Companies for Safer Chemicals Coalition, to keep harmful chemicals out of the marketplace and support healthier, safer alternatives that have less impact on the environment and human health. More information is available at <http://asbcouncil.org/action-center/campaigns/companies-safer-chemicals>.

State Power Plans Even as the Clean Power Plan is being fought in the courts, several states are implementing energy policies to reduce carbon emissions and accelerate the transition toward renewables. The states are utilizing a range of potential policies from carbon tax, renewable energy and energy efficiency portfolio standards to advance green buildings.

¹⁵ Ibid.

Industry Spotlight – Earth Friendly Products



Earth Friendly Products manufactures household and commercial cleaning products. Each of its 150-plus products is made using plant-derived ingredients and environmentally friendly production processes, and is free of toxic chemicals like formaldehyde, petrochemicals, and 1,4-dioxane.

The family owned and operated company has grown considerably since its founding in 1967; the company distributes its green cleaning products throughout the U.S. and to over 60 countries.

Earth Friendly Products has been a carbon-neutral manufacturer since September 2013, saving over 53 million pounds of carbon dioxide annually. Earth Friendly Products was recognized by the EPA for implementing solar power in its facilities as well as for minimizing waste and embracing green building design. Earth Friendly Products is committed to utilizing LEED or equivalent certification criteria in its renovations and new-building construction.

Earth Friendly Products received the EPA's coveted Safer Choice Partner of the Year award for its innovations in safer chemistry and the U.S. Zero Waste Business Council's Zero Waste Platinum certification for successfully diverting over 95 percent of its waste from landfill, incineration and the environment.

Industry Spotlights



AECOM is a global leader in providing fully integrated professional, technical and management support services for a broad range of markets. From transportation, energy and water systems, to enhancing environments and creating new buildings and communities, its vision is to make the world a better place. The firm's global staff — including architects, engineers, designers, planners, scientists and management and construction services professionals — serves clients in over 150 countries around the world. AECOM has been ranked as the #1 engineering design firm by revenue in Engineering News-Record magazine's annual industry rankings, and has been recognized by Fortune magazine as a World's Most Admired Company.

AECOM is heavily involved in the green building movement. It believes that sustainability demands whole-systems understanding and interdisciplinary collaboration across architecture, design planning, economics, building engineering, and program construction management. AECOM's specialized sustainability consultants lead project teams experienced in integrated planning and building processes, utilizing the most effective techniques and technologies.

Hines

Hines is a large real estate firm with global reach, with a presence in 182 cities and 20 countries. With a portfolio of more than 1,125 properties, Hines understands its responsibility to the environment when developing and managing such a large global footprint.

Hines has made a commitment to the greening of its portfolio by using green building rating systems, which helps save its clients money and reduces their environmental impact. Hines uses a variety of these systems, notably LEED and ENERGY STAR, or internationally-headquartered systems like BREEAM or DGNB. The company is proud that more than 395 of the buildings in its portfolio are certified, and says their tenants are starting to demand green.

USGBC has honored Hines' founder, Gerald Hines, as a green leader in the real estate industry. At its annual Greenbuild International Conference and Expo in 2013, he was presented with the President's Award for the company's outstanding dedication to the green building movement. The company boasts more than 90 million square feet of LEED-certified space, proving it is establishing a sound legacy of sustainability, and is moving forward with an eye to the future.



New Belgium Brewing Company, makers of Fat Tire Amber Ale and a host of award-winning craft beers, is a 100 percent employee-owned brewery based in Fort Collins, Colorado. Since its founding in 1991, New Belgium has demonstrated its commitment to efficiency and sustainability, from the early days of foregoing profit sharing in order to expand wind power in its hometown of Fort Collins, to a present-day innovative Internal Energy Tax through which the company taxes itself on energy consumption in order to fund future efficiency and onsite generation projects.

New Belgium produces energy onsite through a 300kW solar photovoltaic array as well as methane-rich biogas collected at its onsite process water treatment plant. New Belgium also dedicates a great deal of resources to water efficiency and advocacy, capturing and reusing water in the packaging hall as they strive toward one of the lowest water use ratios in the industry, with a goal of 3.5 barrels of water for each barrel of beer produced. The company is currently constructing its second brewery on a brownfield urban site along the French Broad River in Asheville's River Arts District in North Carolina, and is pursuing LEED certification on all three buildings that will comprise its East Coast operation.



Nucor, a U.S. manufacturer, makes carbon- and alloy-steel products and claims to be America's largest recycler, as its products contain over 80 percent recycled steel. Last year alone, Nucor recycled more than 20 million tons of scrap steel.

These recycled products contribute to LEED credits and help buildings reduce their impact throughout their life cycle. Green has become a part of Nucor's business as green buildings continue to increase market share. Nucor has taken a public stand to defend the green building industry from regressive lobbying campaigns. In North Carolina in 2013, Nucor issued public statements and testified on behalf of green building when a bill threatened to ban the use of LEED for state projects, citing the importance of the program and its advancement of practices like waste management and recycling.

Beyond being a clear link in the green building input chain, Nucor has made a deep commitment to its 11,000+ employees to be an environmentally conscious company, citing the slogan "Nucor – It's our Nature." The company is invested in not only meeting, but exceeding, environmental regulations in its facilities. In 2013 Nucor approved approximately \$65 million dollars to enhance these initiatives. Nucor's emissions and energy consumption per ton of steel are much lower than in integrated steel mills, and it is seeking new ways to recycle water.



Sloan Valve Company is the world's leading manufacturer of commercial plumbing systems and has been in operation since 1906. The company is not only committed to green building, it credits its continued success to it. After the recession in 2008, new construction took a big hit, as did many manufacturers that produce building materials. However, Sloan led the charge to make water-efficient products, and as green building construction grew, the company profited and expanded. Water efficiency is more important than it ever has been, and Sloan's product designs will help mitigate this global issue.

As an established leader in the sustainability movement, Sloan not only makes products for green buildings, it is also working to make its own business practices more sustainable. 80% of the metal used in its flushometers is an alloy made of 99% recycled materials. Since 2007, Sloan has purchased more than 20,000 megawatt-hours of Renewable Energy Credits, which is the equivalent in carbon dioxide pollution to taking more than 2,400 cars off the road.

Sloan continues to advocate for environmental stewardship, and has plans to support the development of renewable energy technologies, and to continue greening its internal processes as it makes some of the world most water-efficient products.



South Mountain Company, a fully-integrated architecture, engineering, building and solar energy company, specializes in zero-energy building, deep energy retrofits and high-performance affordable housing. Located on Martha's Vineyard, Massachusetts, the 40-year-old company is a registered B-Corp and is owned by its employees. South Mountain has developed a methodology to track and reduce the overall carbon footprint of its company operations, and to track how its buildings perform. Currently, more than half of the energy they use comes from renewables, offsetting approximately 22,000 lbs. of carbon dioxide a year.

The company focuses heavily on the environmental impact of the buildings it develops, including incorporating renewable energy production where feasible, sourcing materials from local suppliers and using recycled and sustainable materials.

South Mountain has designed and built a number of small affordable housing neighborhoods, including Jenney Way in 2008, the nation's first LEED Platinum affordable housing project featuring high insulation levels and air-sealing measures, as well as five-kilowatt solar arrays. In another LEED Platinum affordable housing development, Eliakim's Way, the company tracked which of the eight homes met the goal of using no more energy than what was created on their rooftop solar arrays; two households were successful and others were close.

About American Sustainable Business Council

The American Sustainable Business Council (ASBC) is a growing coalition of business organizations and businesses advancing policies that support a sustainable economy. ASBC informs and engages business leaders, while educating decision-makers and the media about opportunities and policies that can lead to a more sustainable economy. Founded in 2009, ASBC, through its organizational partners, now represents more than 250,000 businesses, executives and investors. These diverse business organizations include trade associations, local and state chambers of commerce, microenterprise, social enterprise, minority, cooperatives, green and sustainable business groups, local and community-rooted business, women business leaders, economic development organizations and investor and business incubators. www.asbcouncil.org