Reducing energy intensity and emissions

Despite significant efforts from companies, governments, nonprofits and individuals around the world, our planet's temperature continues to rise, with increased greenhouse gas emissions (GHGs) as a leading contributor. This year, the world reached an important consensus at the United Nations Climate Conference in Paris: that we all must do our part to limit the increase in global temperature to no more than 1.5 degrees Celsius.

At Walmart, we are working hard to be part of the solution and aggressively pursuing our energy and emissions reduction goals. With 153 other companies, we have signed the White House's American Business Act on Climate pledge. As part of this initiative, each company expressed support for a strong outcome in Paris at the U.N. Climate Change Conference, and many announced or reiterated pledges to reduce emissions, increase low-carbon investments, and deploy more clean energy projects. These companies also pledged to pursue further actions to build more sustainable businesses and tackle climate change. As part of this commitment, Walmart is continuing our quest to be powered by 100 percent renewable energy. We're committed to ongoing improvements in the energy efficiency of our operations. With the reported achievement of a 20 million metric ton GHG supply chain reduction commitment, we're also exploring ways we might further engage our suppliers to set and meet their own goals and join us in reducing our collective footprint.

As we pursue these goals, their value to both our business and to society is clear. Finding more renewable and low-carbon energy alternatives and reducing energy intensity lowers operating costs and can enhance operational flexibility. Many of our initiatives to reduce emissions in supply chains, such as optimizing fertilizer inputs and developing energy-efficient consumer products, help to lower production costs and drive sales. And importantly, our customers and other stakeholders appreciate our efforts to reduce emissions.

Walmart focuses on two strategies for reducing our energy intensity and emissions:

- **Reducing energy intensity and emissions in our own operations**
- **Supporting the reduction of emissions in product supply chains**

Operations

Supply chain

Reducing energy intensity and emissions: Progress against commitments

As of Fiscal Year End 2016

Initiative	Commitment	Progress
Reducing energy intensity and emissions in our own operations	To be supplied by 100 percent renewable energy.	Supplied by 25 percent.
	Drive the production or procurement of 7 billion kWh of renewable energy by the end of 2020.	Installed or contracted for more than 2.billion kWh from more than 470 projects worldwide.
	By end of 2020, reduce kWh-per-square-foot energy intensity of Walmart facilities by 20 percent versus 2010 baseline.	Reduced kWh-per-square-foot energy intensity by 10 percent, which represents a 1 percent absolute reduction since the end of 2014.
	Begin phasing out HFC refrigerants as of 2015 in favor of non-HFC where these are legally allowed and available for new purchases of point of-sale units and large refrigeration installations.	Continued incorporating refrigeration and store designs that enable the transition to less HFC-reliant systems, while also testing HFC-free systems in several markets.
	Double U.S. fleet efficiency by the end of 2015.	Achieved in October 2015, saving nearly $1 billion in FY16 and avoiding CO2 emissions of nearly 650,000 metric tons of CO2.
Supporting emissions reductions in supply chains	Engage 70 percent of our China-sourced business in a factory energy efficiency program by 2017.	Trained more than 500 factories in China on RedE tool.
	Eliminate 20 million metric tons (MMT) of GHG emissions from Walmart's global supply chain by the end of 2015.	Surpassed; reported reduction of 35.6 million metric tons.
	Increase transparency into our supplier ability to track and report Climate Smart Agriculture impacts through the Sustainability Index.	Received Index responses covering 77 percent of Walmart food business, with suppliers reporting GHG emissions for 46 percent of their supply.

Reducing energy intensity and emissions in our own operations

The burning of fossil fuels – mainly coal, petroleum and natural gas – accounts for more than 80 percent of the world's energy use and ranks as the primary source of carbon dioxide emitted into the atmosphere. Renewable energy sources – hydropower, wind, solar, geothermal and biomass – offer cleaner, more sustainable alternatives, but often at higher prices and with varying availability.

Fossil fuel-based energy continues to be a significant driver of GHG emissions in Walmart's operations. We are committed to changing this trend through our aspiration to be supplied by 100 percent renewable energy. To reduce our emissions, we're focused on:

- Investing in scalable, renewable energy sources
- Reducing our energy demand through energy efficiency
- Improving refrigeration systems in our stores
- Maximizing the efficiency of our fleet

Renewable energy

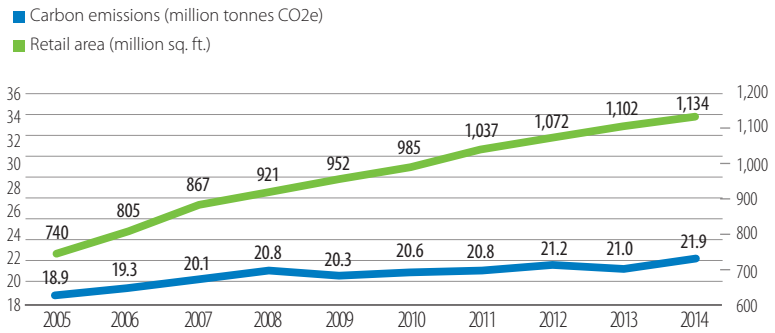
Walmart is committed to expanding the development of on-site and off-site solar power, wind power, fuel cells and other technologies to meet our goal of producing or procuring 7 billion kilowatt hours (kWh) of renewable energy by the end of 2020. At the end of 2015, we had more than 470 on-site and off-site projects in operation or under development in seven international countries and 17 U.S. states. Together with renewable electricity from the grid, 25 percent of our electricity needs globally are supplied by renewable sources.

As of the end of 2015, we had over 2 billion kWh of renewable energy contracted on an annualized basis. While this is more than double our total in 2012, it is less than what we reported last year. The reasons for the decline are tied to changes in policy and certification of sources, particularly in the U.K., timing of projects coming online and varying production from a few large wind projects. In the U.S., we discontinued a renewable contract knowing we would be replacing it with a larger wind project, but this new contract didn't come online until late in 2015, resulting in a dip in the actual renewable energy we acquired this year. Additionally, a few wind farms in Mexico produced less than we expected and contracted, due in part to maintenance outages and variations in wind profiles.

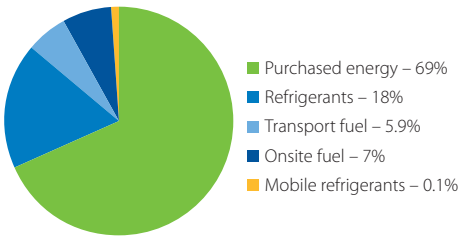
We will continue to focus on accelerating our renewable energy program and that of the industry in a number of ways. This year we completed over 80 new on-site solar and fuel cell renewable energy projects at our facilities in multiple countries and brought a large wind farm online in Texas (see sidebar). We are also working with developers and utilities on new project opportunities in regulated and deregulated markets, and we are engaging with trade and advocacy groups, such as the Corporate Renewable Energy Partnership and RE100. These groups are striving to remove barriers to renewable energy at the state, federal and international levels.

Over the period from 2005-2014, Walmart has limited our emissions growth to less than one third of our business growth rate during the same period.

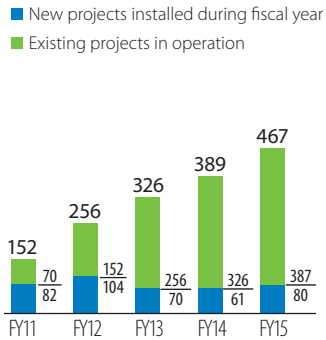
Carbon Emissions (Scope 1 and 2) vs. Retail Area



GHG Emission Contribution by Source

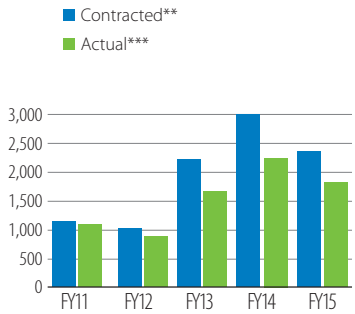


Onsite Renewable Projects

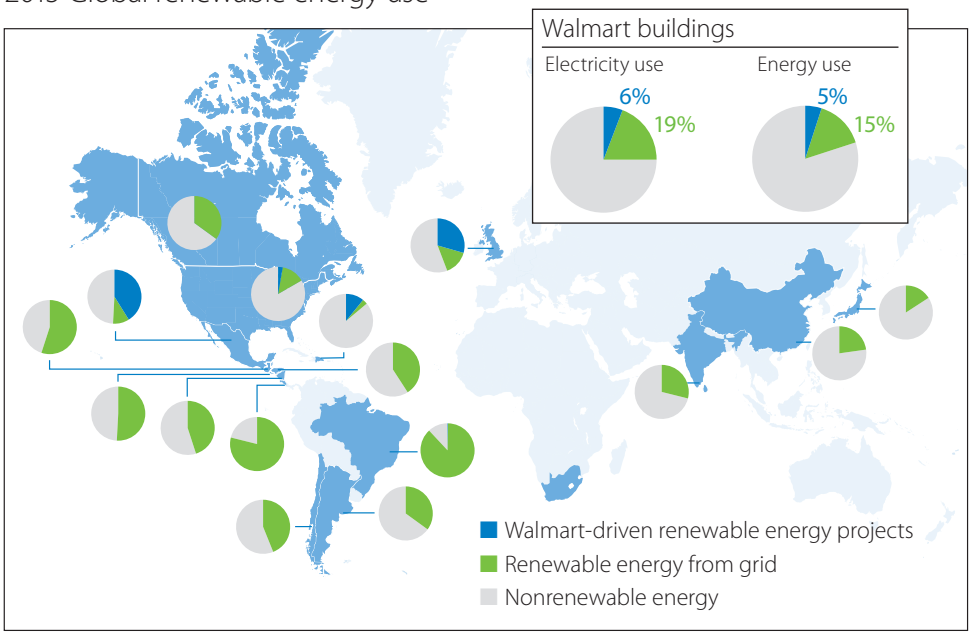


Total Renewable Energy*

(GWh)



2015 Global renewable energy use



*Totals represent the renewable energy from all Walmart-driven projects (i.e. off-site and on-site) only. This does not include the renewable energy received from local utility grids.

**Contracted - This represents the annualized amount of renewable energy that was under contract as of the end of the calendar year. This is projected amount for a 12 month period and can vary from actual amount received.

***Actual – This represents that actual amount of renewable energy received during the calendar year indicated. The actual amount can be different than the contracted/projected amount for a number of reasons including; the timing of project start and end dates, production interruptions due to maintenance, and variability in production due to meteorological phenomenon (e.g. wind speeds, solar intensity). Actuals are used to estimate the percentage of our electricity supplied by renewable sources and Scope 2 greenhouse gas emissions.

Measuring and managing emissions: Walmart's CDP climate disclosure

Walmart tracks our Scope 1 (direct), Scope 2 (indirect) and some Scope 3 (other indirect) GHG emissions according to the World Resource Institute's GHG Protocol. Since 2006, we've publicly reported this information annually to CDP, formerly known as the Carbon Disclosure Project.

In 2015, Walmart received a Disclosure Score of 96 and Performance Band "B." The Disclosure Score ranges from 0-100 and measures the level of transparency a company has shared through its response. The Performance Band issues letter grades from A to E (A being the best) and measures how effectively a company is addressing climate risk.

According to FirstCarbon Solutions, an independent analyst, Walmart ranked well above our industry group's average, and well above the CDP program average on all aspects of Disclosure and even more so on Performance. Our latest response, along with all previous responses to the Climate Investor Questionnaire, can be found at the CDP website: **https://www.cdp.net/en-US/Pages/HomePage.aspx**

The road through Paris: Walmart and climate change

In 2005, Walmart's then-CEO Lee Scott said: "Every company has a responsibility to reduce greenhouse gas emissions as quickly as possible." Since then, Walmart has set aggressive targets related to renewable energy and energy efficiency within our operations as well as GHG targets within our supply chain. We have also joined the We Mean Business coalition and – along with 115 other companies – have committed to set science-based emissions reduction targets for Scope 1, 2 and 3 emissions.

In December 2015, Walmart representatives, including board member Rob Walton, traveled to Paris for COP21, the United Nations Climate Change Conference.

The conference helped affirm the opportunities for businesses in addressing the challenge of climate change:

- By taking action now to reduce GHG emissions, companies can see a positive impact to their bottom lines, while mitigating risks
- Businesses must leverage their considerable assets in conjunction with key stakeholders
- Companies must also drive for technological innovation, improved processes and scientific advances that produce faster results as we move closer to GHG emissions levels that may cause irreversible change
- Retailers specifically have a significant opportunity to use their broad reach to affect change across our supply chain and to educate customers

Walmart regards the coming together of world leaders to take action combating climate change as a positive development that we support. While the Paris Agreement largely speaks to the actions of nations, the sections relating to non-state actors affirm what we have already been doing, and will continue to do.

And we do believe that an international agreement has the potential to provide businesses with greater certainty when it comes to this issue. Given the risk that climate change poses in general, a unified international response gives businesses more confidence in making plans, and it gives financial institutions greater confidence to make loans.

Walmart is striving to lead by example on this issue and send the right signals to all our stakeholders. In many cases, leading through intentional action is a powerful proof of concept for the business community.

Doubling on-site solar
In 2015, Walmart ranked as the leading commercial solar energy user and the largest on-site renewable energy user in the U.S., with more than 340 solar installations throughout the country. In support of a 2014 initiative by the White House to increase the country's generation of clean energy, we've committed to doubling the number of on-site solar energy projects at our U.S. stores, Sam's Clubs and distribution centers by 2020 compared with our 2013 baseline. When completed, we will have more than 480 solar installations across the U.S. Walmart's investment in solar energy has led to an estimated 9,000 construction jobs, as well as 5,000 permanent jobs, for American solar companies since 2010. The commitment of Walmart and other companies to source energy from solar projects creates more certainty in the marketplace and encourages others to invest, helping to lower the cost for everyone.

Scaling renewables globally
Wal-Mart de México is more than halfway to their goal of being powered by 100 percent renewable energy. With nearly 51 percent of their electricity needs supplied by more than 1,100 million kWh from five renewable projects, they're powering more than 1,100 stores with cleaner energy. When combined with the renewable energy they receive from the national grid, Wal-Mart de México is meeting 60 percent of their electricity needs today through renewable energy sources. Wal-Mart de México's goal is to procure 3,000 million kilowatt-hours by 2020.

Scaling renewable energy also requires innovation, so we frequently pilot new technologies to test their performance and suitability for adoption. For example, this year in South Africa, we fulfilled a 2013 commitment we made to identify and pilot a commercially viable renewable energy project at one of our stand-alone stores. We successfully identified two potential solar photovoltaic (PV) pilot opportunities. These include a 150 kilo volt amp (kva) PV plant that will be installed in our most efficient Builders Warehouse store, and three 700kva plants earmarked for our Makro Woodmead and Carnival Mall stores. We expect these projects to come online in the second quarter of 2016 fulfilling a commitment we set in 2013.

Efficiency improvements in South Africa and Argentina

In our South African business, we are continuing to prioritize efforts to make our operations more energy efficient. Throughout our stores, we've been introducing a range of energy efficient technologies, such as LED lights, building management systems and high performance refrigeration plants.

In a similar effort to improve energy efficiency, Walmart Argentina's Home Office conducted a study in 2015 to determine the extent to which associates in Supercenters were using energy-saving strategies in daily operations. The results of the study have formed the basis for an energy-efficiency initiative launching in 2016 that will seek to understand each associate's energy-use habits and to reduce total kWh used throughout the stores.

Farm-grown renewable energy

In 2015, Walmart contracted with a wind farm that will offer a clean source of power to more than 380 Walmart stores, Sam's Clubs and distribution centers in Texas. Through a 10-year purchase agreement, Walmart will gain 58 percent of our expected energy from Logan's Gap, an 87-turbine wind farm in Comanche County, Texas. Our facilities in central Texas will receive more than 25 percent of their energy needs from this renewable alternative. The power from Logan's Gap represents nearly 18 percent of the U.S. portion of our goal to produce or procure 7 billion kWh of renewable energy by 2020.

Imagining a more efficient business

Walmart and GE are teaming up to advance our shared goals of promoting renewable energy sources and enhancing resource productivity across the commercial sector. In our Ecomagination 2020 collaboration, GE and Walmart are working together to innovate novel energy and water solutions to enhance business performance and environmental outcomes. The collaboration will begin by testing new solutions within our own operations and then scale promising solutions across our networks in order to magnify the impact.

Energy efficiency and demand

Walmart owns or leases more than 12,000 buildings around the world. As of year-end 2015, we were well on our way toward reducing the energy intensity of our global facilities by 20 percent compared with our 2010 baseline. Thus far, we are operating with 10 percent less energy per square foot, which represents a 1 percent improvement since the end of 2014.

Walmart continues to leverage our global size and scale to invest in and implement technologies that reduce energy consumption and transform the retail industry. We accelerate our efficiency worldwide by:

- *Scaling technologies:* Continuing to scale market-ready efficiency technologies, leveraging our global demand to provide scale and certainty to our suppliers.
- *Transferring technologies globally:* Piloting proven technologies in new geographies, store formats and customer demographics.
- *Accelerating tomorrow's technologies*: Maintaining our focus on testing and experimenting with next-generation technologies to accelerate the future of energy efficiency.

Taking efficiency through the roof

In 2015, Walmart received an award for installing the highest number of high-efficiency rooftop heating and cooling units (RTUs) in the previous year. Walmart had replaced more than 10,000 RTUs in 2014, with an estimated energy savings of 89 million kWh/year, which led to an estimated $8.9 million in cost savings and 135.4 million pounds of CO2e of emissions avoided annually. The award was given by the Advanced RTU Campaign, a collaboration between industry groups and the U.S. Department of Energy.

Improving refrigeration systems in our operations

The refrigeration systems that store the food we sell account for as much as 30 to 50 percent of the energy consumption of our buildings. As our business grows globally, especially with our expansions in fresh and frozen food, our need for efficient refrigeration equipment is growing as well. We look at refrigeration through a holistic lens and make decisions based on both the total cost of ownership and total energy savings throughout the life of the equipment. In addition to striving to reduce our energy use and prevent energy from being wasted, we're transitioning away from high Global Warming Potential refrigerants (GWP) to using new refrigerant gases with lower overall environmental impacts.

Transitioning away from HFCs

In 2010, the Consumer Goods Forum (CGF) made a commitment to tackle the growing climate impact of the refrigeration systems used by its members. The refrigerant gases used in the majority of systems – known as hydrofluorocarbons (HFCs) – are powerful greenhouse gases. Since 2011, Walmart, along with our CGF peers, has been incorporating refrigeration needs into store designs that will facilitate the transition to less HFC-reliant systems. Through 2014, we had completed over 200 stores that implemented these technologies.

This work has taught the industry valuable lessons about the equipment options, costs, energy demands, performance capabilities and maintenance needs of these new low-carbon technologies. These learnings have been captured in the all-new Refrigeration Booklet, which highlights over a dozen real-life examples from the CGF's retailer and manufacturer members, who, like Walmart, are phasing out HFCs and successfully piloting and implementing natural refrigeration alternatives.

Efficiency in our U.S. fleet

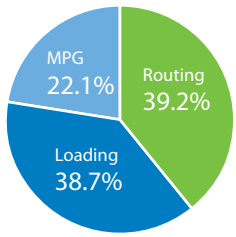
In 2005, Walmart committed to a momentous goal: doubling the efficiency of our fleet by the end of 2015. By working with our associates to establish more efficient techniques for loading, routing and driving, as well as through collaboration with tractor trailer manufacturers on new technologies, we have achieved this goal on schedule. With these new efficiencies, our year-end results were a 102.2 percent improvement over our 2005 baseline, with associated savings of nearly $1 billion annually, and avoided emissions of almost 650,000 metric tons of CO_2. Moving ahead, we are folding our fleet goals into our broader goal of using 100 percent renewable energy, and we will continue to look for innovative ways to improve our fleet efficiency.

Improving our fleet's efficiency

Over the past 10 years, we have tracked our U.S. efficiency based on the number of cases of products shipped per gallon of fuel burned, and we've employed a number of complementary strategies to improve our fleet's performance. These have included increasing our trailer fills, decreasing the number of miles per route and investing in more efficient equipment.

Several factors account for a truck's fuel efficiency. While changing terrain and weather can play a role, there is no greater controllable impact on a truck's efficiency performance than the driver of that truck. Through weekly reporting, we are able to monitor a driver's performance in a variety of driving categories. Their techniques – from how they idle, to how they accelerate – have a direct impact on the performance of the truck. Tracking them allows us to have well-informed conversations with our drivers to better manage the things they can control while delivering a load of freight.

Fleet efficiency contributors



Supporting the reduction of emissions in product supply chains

Walmart recognizes that addressing emissions across the global supply chain is as significant an issue as addressing them in our own operations. In fact, 90 percent of our environmental impact exists beyond the footprint of our stores and facilities. That's why we're engaging directly with suppliers and investing in efficiency worldwide to create more impact than would be possible on our own. Through our work with Environmental Defense Fund (EDF), we've successfully met our goal of eliminating 20 million metric tons (MMT) of GHG emissions from our supply chain. In fact, we far exceeded the goal – eliminating a reported 35.6 MMT since we began the initiative. Together with our suppliers and stakeholders, we're helping to enhance efficiency both upstream and downstream by:

- Promoting reduced emissions in agriculture
- Promoting reduced emissions in manufacturing
- Supporting design of smart, efficient home products

Reducing emissions in agriculture

As part of our 20 MMT emissions reduction goal, we are pursuing projects within our agricultural supply chain that improve efficiency and productivity. Through our Climate Smart Agriculture Platform (CSA), we've asked the suppliers and growers in our food business to measure and report farm impact through our Sustainability Index. With the participation of suppliers who provide 70 percent of our food sales volume, we've now established baseline measures of GHG emissions, water use and farm yields. By encouraging measurement, disseminating best practices and reporting aggregate progress through CSA, Walmart hopes to accelerate the adoption of better practices in our food supply chain and the broader food system. We believe this effort will improve environmental outcomes as well as the well-being of farmers and consumers. (For more on reducing emissions in agriculture, see pg. 98 for our efforts in improving agricultural productivity.)

Optimizing row crop production

Through joint support with our suppliers, we expect by 2020 to see the elimination of an estimated 9 MMT of GHG emissions in our agriculture supply chain through efficiency improvements on 23 million acres of land that use row crops. We're working with Field to Market: The Alliance

for Sustainable Agriculture to support efforts to encourage adoption of best practices by farmers and track and measure continuous improvement in environmental outcomes. Our goal is to continue to support farmers and their communities improving productivity and farmer livelihoods.

Optimizing fertilizer use

In response to Walmart's focus on promoting fertilizer optimization in its supply chain, Smithfield Foods, a major U.S. supplier of pork, set an ambitious goal to engage 75 percent of their grain sourcing acres – half a million acres – by 2018. Smithfield collaborated with EDF to build a new program, MB Grain Agronomics (MBGro), which provides free agronomic advice to grain growers in Smithfield's grain-sourcing regions. The program also connects growers with technology trials at a reduced price and assists them in purchasing cover crop seed at wholesale prices. In 2015, the first full year of MBGro implementation, more than 200 farmers, who farm more than 90,000 acres, improved their fertilizer application practices.

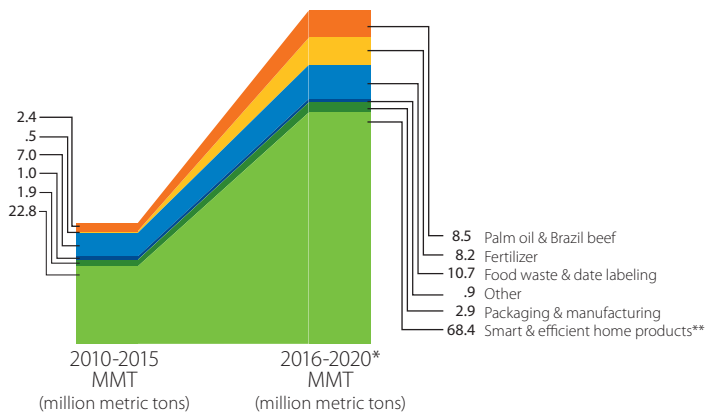
Reducing emissions in manufacturing

In addition to pursuing emissions reductions in agriculture, we've made significant progress with our manufacturing suppliers, especially through our supply chain work with CDP (formerly the Carbon Disclosure Project). The CDP Supply Chain program enables companies to engage with suppliers to understand climate change risks and formulate strategies to reduce emissions within their supply chain. Walmart has worked with CDP to encourage our network of suppliers to take the first step toward improvement and begin measuring their greenhouse gas impact. Through measurement and disclosure, suppliers can understand their own emissions profile, identify areas of high emissions within their operations and create strategies to reduce those emissions. In this effort, we've been successful in spurring a culture of sustainability and climate change awareness among our suppliers through their own CDP reports. Through this program more than 700 of our suppliers have reported. Many suppliers have reported reductions, collectively driving the elimination of 125 million tons of CO2 emissions in 2015. (For Walmart's own CDP disclosure, see pg. 62.

Collaboration with EDF

Walmart's association with EDF began 10 years ago with three sustainability goals: to be supplied by 100 percent renewable energy, create zero waste and sell products that sustain the world's resources and environment. At that time, EDF challenged Walmart to create more specific and measurable goals addressing the central issue of climate change, and in 2010 the Walmart team announced a goal to reduce global GHG emissions by 20 MMT by the end of 2015. Working with EDF experts to identify key project areas and implement science-based solutions, Walmart was able to meet and exceed this goal with a 35.6 MMT reduction in GHG emissions along the supply chain. EDF continues to work with Walmart to supply strategic advice and science to help Walmart set and reach sustainability goals.

Reduction in carbon emissions
in metric tons



*Represents cumulative effect of changes made to products between 2010 and 2015 and extrapolated to 2020; 2020 projections don't account for any future initiatives
**Includes items like refurbished electronics, LED Light Bulbs, coldwater wash detergent

Energy and emissions – supply chain

Sustainable manufacturing in Dongguan

In China, local relationships are important in promoting sustainability efforts. Through collaboration with EDF, Walmart is supporting the efforts of the city council in Dongguan, a major manufacturing hub in the Guangdong province of southern China, to launch a "Green Supply Chain" program. The goal of the program is to promote sustainable manufacturing practices that reduce energy, conserve water and reduce pollution in China. To support this effort, Walmart will be connecting our suppliers' factories in Dongguan with technical training and insight from EDF's energy experts and other government officials to improve the efficiency of their facilities and lower their environmental footprint.

We've also focused on promoting efficiency within the factories in our supply chain, with a particular emphasis on those in China. Since we announced our Chinese supplier initiative in August 2014, Walmart has trained more than 500 factories to use the Resource Efficiency Deployment Engine (RedE), a Web-based tool that guides the identification of energy-efficiency improvement initiatives. From program launch through 2015, RedE has facilitated the completion of 118 individual factory efficiency projects, with reported factory cost savings of more than $2.8 million, energy savings of more than 45 million kWh and GHG emission reductions of more than 33 thousand metric tons. To further accelerate this work, we've worked with the energy experts from EDF to train suppliers on the latest energy efficiency and renewable technologies to transform the energy use in those factories. Given the focus on training to use the RedE tool since program launch, we don't have all factories actively using RedE, and the full value of this initiative is yet to be realized. If we're able to achieve consistent adoption by target factories we've trained, this would result in a GHG emissions reduction of nearly 1 million metric tons (MMT). As we look forward to 2016 and beyond, our focus will shift from training the factories on the RedE tool, to tracking and encouraging improvement in our most strategic factories across the business.

Supporting design of smart, efficient home products

The Smart & Efficient (S&E) Home Products project represents a major contributor to Walmart's goal of reducing 20 MMT of greenhouse gas (GHG) emissions within the supply chain. This project focuses on increasing sales through strategic marketing of products designed to reduce energy consumption at home for consumers when compared with similar products in the market. The products range from light bulbs to laundry detergent. In support of the project, we conducted in-store marketing of home energy-saving products, lowered product price points and also conducted online marketing through various communication channels. Since we launched the project in 2012, it has eliminated more than a reported 22 MMT solely for this S&E project – the equivalent of taking 4.8 million cars off the road.

Making the switch to LEDs

This year, Walmart announced we are transitioning the assortment of compact fluorescent light bulbs (CFLs) to light-emitting diode bulbs (LEDs). Not only have LED prices come down dramatically over the past five years to be comparable with CFL bulbs, but also, testing shows they outperform CFL bulbs in features such as instant brightness, light quality and the ability to dim. For our customers, this means more affordable, energy-efficient and longer-lasting bulbs.

Notes from the field: Challenges to reducing emissions in our operations and supply chain

Weather

Weather conditions often work against our efforts to reduce carbon emissions in our operations and supply chain. With air temperature and humidity correlating directly to energy demand, maintaining a pleasant indoor shopping or working experience in stores or in manufacturing facilities can be challenging. A severe or prolonged winter will inevitably lead to increased usage of natural gas and electricity to heat buildings, while heat waves can drive demand for electricity to power air conditioning and refrigerated equipment above normal levels. Weather can also impact our ability to generate electricity from renewable sources such as wind and solar. Renewable energy systems depend on natural flows, which can change throughout the year and over time, resulting in variable rates of energy production from wind turbines and rooftop solar arrays.

Policy

Walmart believes that businesses must have the regulatory freedom to directly source electricity from project developers or independent power producers. In some countries and many states within the U.S., our ability to scale renewable energy projects is diminished because we're not able to sign direct power purchase agreements (PPAs). We advocate for policies that allow market-based solutions like PPAs, which can lead to greater price certainty and cost savings. Renewable energy installations on roofs, parking lots or land also require significant time to manage permitting rules and regulatory relationships. In the supply chain, producers of commodities look for a policy environment that enables them to invest in technologies that reduce or convert farm emissions. Policy also varies widely by country, as emission reductions strategies in some places are viable without government incentives; in others, incentives like feed-in tariffs, subsidies and crop insurance help make the projects viable. Conversely, in some markets, local laws or import tariffs on renewable and efficient technologies can slow down project viability.

Economics

The current and projected long-term price of fossil fuels is an important financial consideration in reducing emissions. When the price of fossil fuels falls, investing in emission reductions in our own operations or in the supply chain may appear less financially viable in the short term. While some U.S. states and some countries have implemented carbon markets or tariff schemes, which put a value on carbon emissions and incentivize lowering emissions, prices are often volatile, vary widely by market and are at risk by changes in legislation.

Offsetting growth

Walmart continually looks to expand our retail offerings worldwide, both in stores and online. This means more stores, clubs, data centers, distribution centers, suppliers, products and trucks to move products are added each year. In addition to building new facilities, we also continue to expand grocery offerings in many existing stores around the world to meet the demand for fresh and affordable food and produce. These remodels and expansions require more energy and use equipment such as refrigerated cases and freezers. The combination of new facilities, new equipment in existing facilities and increasing sales volumes creates an uphill battle on reducing absolute carbon emissions.

Technological and behavioral change

Reducing emissions in our operations and supply chain requires continuous changes in technology and behavior. We cannot move toward a low-carbon economy by falling back on the ways that things have always been done. This is often a challenge as we introduce new equipment or processes that require training, education or simply doing things differently. This can apply to anything from advanced refrigeration equipment in our stores requiring new maintenance procedures, as it does deep in the supply chain in training multi-generational farmers on climate-smart agricultural practices. Furthermore, we need technological innovations in the places that matter most. Much of our impact occurs in agriculture – from methane and fertilizer-related emissions to deforested land conversion for food production. Technological innovation is needed at scale to minimize these emissions, to convert them to uses such as anaerobic digestion and to increase production yields on existing farm land to prevent further deforestation.