Smithfield

Good food. Responsibly.®

Smithfield Foods Sustainability 2018

Welcome

Our Sustainability Pillars

Comprehensive Sustainability Management

Welcome to Our 2018 Sustainability Report

This report provides comprehensive information on Smithfield Foods'[1] sustainability progress and performance. It has been prepared in accordance with the Global Reporting Initiative Standards: Core option.

Our sustainability strategy is organized by pillars that represent our key areas of sustainability focus: animal care, environment, food safety and quality, helping communities, and people. The concept of value creation is an overarching focus of our sustainability strategy, underpinning these pillars.

Unless otherwise indicated, this report pertains to our U.S. and European operations and to investments in which we have a majority (51 percent or more) interest. We do not provide performance data for contract farms because they are independent businesses. We primarily use American measurement metrics and American numbering when reporting the performance of our U.S. and international operations.

We note changes in the scope of reporting or reclassifications of data previously reported, as well as other assumptions and bases for calculations in the relevant data sections. The content in this report primarily covers 2018.

Forward-Looking Information

This report contains "forward-looking" statements within the meaning of the federal securities laws. The forward-looking statements include statements concerning our outlook for the future, as well as other statements of beliefs, future plans and strategies or anticipated events, and similar expressions concerning matters that are not historical facts. Our forward-looking information and statements are subject to risks and uncertainties that could cause actual results to differ materially from those expressed in, or implied by, the forward-looking statements.

These risks and uncertainties include, but are not limited to, the availability and prices of live hogs, feed ingredients (including corn), raw materials, fuel and supplies, food safety, livestock disease, live hog production costs, product pricing, the competitive environment and related market conditions, risks associated with our indebtedness, including cost increases due to rising interest rates or changes in debt ratings or outlook, hedging risk, adverse weather conditions, operating efficiencies, changes in foreign currency exchange rates, access to capital, the cost of compliance with and changes to regulations and laws, including changes in accounting standards, tax laws, environmental laws, agricultural laws and occupational, health and safety laws, adverse results from litigation, actions of domestic and foreign governments, labor relations issues, credit exposure to large customers, the ability to realize the anticipated strategic benefits of the acquisition of Smithfield Foods, Inc., by WH Group, the ability to make effective acquisitions and successfully integrate newly acquired businesses into existing operations and other risks and uncertainties described under "Item 1A. Risk Factors." Readers are cautioned not to place undue reliance on forward-looking statements because actual results may differ materially from those expressed in, or implied by, the statements. Any forward-looking statement that we make speaks only as of the date of such statement, and we undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise. Comparisons of results for current and any prior periods are not intended to express any future trends or indications of future performance, unless expressed as such, and should only be viewed as historical data.

[1] All references to "Smithfield," "we," "us," and "our" are terms of convenience used to refer collectively to Smithfield Foods and all of its subsidiaries.

A Quick Look at Our Global Food Company

Smithfield Foods, Inc., is a global consumer packaged goods and protein company. In 2018, our sales exceeded $15 billion.

We are the leader in numerous packaged meats categories with popular brands including Smithfield®, Eckrich®, Nathan's Famous®, Farmland®, Armour®, Farmer John®, Kretschmar®, John Morrell®, Cook's®, Gwaltney®, Carando®, Margherita®, Curly's®, Healthy Ones®, Morliny®, Krakus®, and Berlinki®.

Headquartered in the United States for more than 80 years, our business operations include the following:

- Packaged Meats;
- Fresh Pork;
- Hog Production; and
- International.

The International segment is comprised mainly of wholly owned and joint venture operations in Poland, Romania, Mexico, and the United Kingdom.

Our products are sold to more than 5,700 customers in 43 countries on every continent (except Antarctica), including supermarket and hotel chains, wholesale distributors, restaurants, hospitals, and other institutions. We also sell to companies that further process our meats into consumer food products.

Smithfield is a wholly owned subsidiary of Hong Kong-based WH Group Limited, a

publicly traded company with shareholders around the world. For more information on WH Group and its operations, visit www.wh-group.com.

Companywide Snapshot	2018	2017	2016
Employees	54,533	52,238[1]	50,702
Sales	$15.5 billion	$15.3 billion	$14.3 billion
Pounds of fresh pork and packaged meats sold	10.7 billion	10.8 billion[1]	8.6 billion
Market hogs produced	20.6 million	19.9 million	18.9 million

[1] Figure restated since the last report.

Dear Smithfield Foods Stakeholder,

We are excited to share the Smithfield Foods 2018 Sustainability Report. Our report charts improvements under each of Smithfield's sustainability pillars and highlights how we are enhancing care for our animals, improving the environment, ensuring the highest standards of food safety and quality, protecting and engaging our people, and strengthening the communities we call home.

For more than a decade, Smithfield has invested in sustainability by setting bold goals and hard targets. We have made great strides. Examples include significant reductions in water, waste, and energy use, successfully engaging 80 percent of our grain supply chain in more sustainable farming practices, improving employee safety, and implementing group housing for pregnant sows on our company-owned farms. But we recognize that more needs to be done.

There are significant challenges ahead for the food industry—among them are a world population that is projected to grow to 10 billion by 2050, higher prosperity across the globe that is increasing demand for protein, and natural resources that are becoming more constrained. As a global food company and the world's largest pork processor and hog producer, we are always searching for innovative ways to use our planet's resources more wisely. We believe that sustainably produced food is a right, not a privilege, and that by setting—and achieving—new audacious goals in the future, Smithfield can pioneer solutions to meet this global challenge.

At the heart of our efforts are the hard-working members of our Smithfield Family who produce healthy, high-quality food from farm to facility to fork. It is their dedication to our guiding principles of responsibility, operational excellence, and

innovation that drives us to achieve and exceed our ambitious sustainability goals. We are grateful for our strong partnerships with many different stakeholders, including our customers and other organizations who help make our work possible.

Our 2018 Sustainability Report helps demonstrate how sustainability is a part of our culture and our daily work, how we envision a better way to feed the world, and how we are making that future a reality.

With great regard,

Kenneth M. Sullivan
President and Chief Executive Officer

Stewart Leeth
Vice President of Regulatory Affairs and Chief Sustainability Officer

May 20, 2019

Innovation Is Embedded Throughout Our Culture

In today's world of rapid technological change, innovation is crucial to every company's success. Moreover, innovative ideas are needed to develop solutions to big-picture issues such as food insecurity and reducing greenhouse gas (GHG) emissions.

At Smithfield Foods, innovation is central to our promise to produce "Good food. Responsibly.®" Along with Responsibility and Operational Excellence, Innovation is one of our three guiding principles and is embedded throughout our company culture. We presented six awards in 2018 to employees who developed innovative solutions to business challenges.

Our employees drive the development of innovative solutions required to enhance our business, utilize resources efficiently, and be good stewards of the environment. Supporting their efforts, our executive leadership is committed to creating a culture where employees are empowered to constantly look for ways to transform our business for the better.

This innovation mindset applies across every aspect of our business. From our farms to our production facilities, research laboratories, and beyond, our employees are encouraged to offer new ideas and push the envelope on what is possible. Through their innovative efforts, we are pursuing a range of initiatives including developing new products, reducing our impact on the environment, improving animal care, and finding new ways to utilize operational byproducts.

As these ideas take hold, we are excited to see the momentum in our efforts and believe the changes we are making will benefit both our customers and consumers, as well as the world at large.

Case Study: Moving the Future of Healthcare Forward with Smithfield BioScience

For over a century, the pork industry has made vital contributions to the field of human health and wellness by providing the raw materials for numerous medical treatments. Now, through our innovative bioscience-focused platform, we are helping to advance the production of porcine-derived pharmaceutical ingredients and also to contribute to cutting-edge research on future biomedical applications.

Smithfield BioScience, launched in 2017, is our business venture aimed at leveraging valuable byproducts from our meat production process to improve human health, building on decades worth of established science. In the early 1900s, scientists developed a way to use inedible parts of the pig to make heparin, an anticoagulant, and insulin, which is used to treat diabetes. Since then, researchers have continued to develop new medical uses from pigs' organs and other tissues, including regenerative medicine and tissue engineering.

Smithfield BIOSCIENCE

In 2018, we continued to refine our Smithfield BioScience strategy and further develop our capabilities, focusing in the areas of pharmaceutical ingredients, medical devices, and regenerative medicine. Due to our unique strengths, we have attracted multiple new commercial and university research partners who are working to make new discoveries and develop new products in the field of bioscience.

For example, Smithfield Foods' commitment to product traceability and animal care—including our genetics program, transitions in animal housing, and judicious use of antibiotics—serves as a competitive advantage in the biomedical field. These programs are valued by pharmaceutical companies and medical research scientists, as well as the regulatory agencies that oversee them, because they contribute to our ability to provide a trusted and transparent source of porcine bioproducts. In addition, as the largest hog producer and pork processor in the world, Smithfield provides a production scale that has not previously existed to pharmaceutical and biomedical companies working in the growing areas of regenerative medicine and tissue engineering.

Smithfield's 2017 acquisition of a Cincinnati-based heparin manufacturer provided the foundation for our ability to produce Active Pharmaceutical Ingredients (APIs). An API is the ingredient in a medication that causes an effect. Pharmaceutical companies use one or more APIs, along with other inactive ingredients, to manufacture medications for consumers.

We have initially focused on adding capabilities to grow our heparin production and now have two of our fresh meat processing facilities supplying porcine byproducts to our Cincinnati facility, with plans to add six more facilities in 2019. We are actively working to diversify our production into additional APIs from porcine sources.

We also are exploring other biomedical applications of porcine tissues, including heart valve implantation in human patients, a long-established practice, as well as

how certain tissues in pigs could be used for advanced wound care.

Some of the more exciting new discoveries we are supporting are in the area of wound care, where we are partnering with researchers at the U.S. Army Institute of Surgical Research (USAIR). This research is aimed initially at developing better treatments for military personnel wounded in combat, but it could have much broader applications for healing patients who suffer from injuries, disorders, and diseases resulting in tissue loss and chronic wounds.

Medical researchers are also beginning to explore the ability to transplant entire porcine organs into humans. While pig-to-human organ transplants may be a distant goal, we are finding ways to support the future of transplantation now. In 2018, through the Smithfield Foundation (the Foundation), we offered a matching grant of $75,000 to the United Network for Organ Sharing (UNOS), a nonprofit organization that manages the national system to match donated organs with the more than 100,000 men, women, and children awaiting lifesaving organ transplants.

The Foundation's donation, which was fully matched by other donors, supports the UNOS Timely Donor Referral℠ project, which aims to change the inefficient manual processes utilized today and develop automated technology to more quickly, securely, and reliably exchange highly time-sensitive information.

"We're tremendously grateful to Smithfield and all of our Timely Donor Referral project donors for helping us to realize our goal of easing access to critical transplant information," said Brian Shepard, chief executive officer of UNOS. "Once developed, this technology will mean more organs recovered and transplanted, higher data quality and information security, and time and dollars saved. Ultimately, it will mean more lives saved."

Case Study: Harnessing the Power of Technology

As a global food company, technology plays a crucial role across all aspects of our business—from our farms to our processing facilities to our corporate headquarters. Ensuring that we remain on the "cutting edge" and that our operations are as efficient as possible requires that we continually evolve our information technology (IT) systems to push toward greater innovation.

One of our most significant efforts over the last few years has been to transform the technology supporting our day-to-day operations. In 2018, we completed our transition from on-site, physical data centers across our locations to a companywide, cloud-based platform. Cloud-based systems are more energy- and cost-efficient, while offering more computing power and stronger security. In addition, this change is foundational to adopt future technological innovations. For example, we are exploring how we can integrate Internet-connected devices, robotics, and artificial intelligence to increase efficiency in our processing, distribution, and hog production operations.

We completed our implementation of SAP business management software in 2018, a project we named "OneSAP." This transition further solidifies our company-wide alignment as "One Smithfield" and will generate efficiencies by simplifying processes, providing better data to manage our business, and making it easier for our suppliers and customers to do business with us.

In 2018, Smithfield joined the IBM Food Trust, a blockchain-driven food supply chain network of producers, suppliers, and retailers. The Food Trust tracks information about food origin, shipping information, food safety certifications, and more.

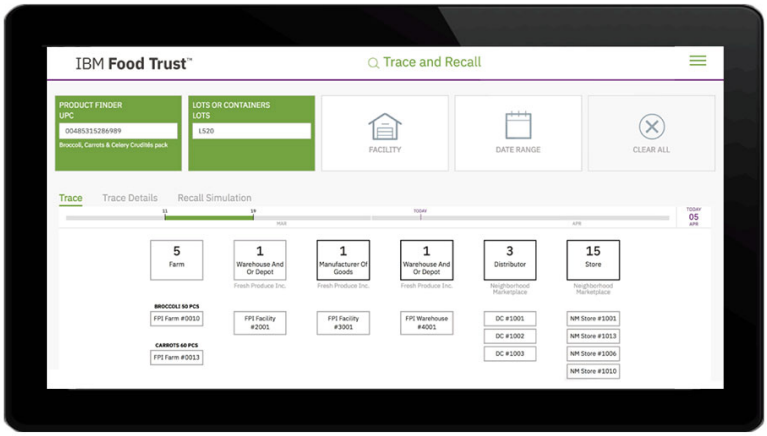
Smithfield Foods earned a 2019 Manufacturing Leadership Award from the National Association of Manufacturers (NAM) for our work to successfully integrate and streamline our business functions under one operating system.

"These changes will drive multiple benefits to our business, including improved IT performance, enhanced security, and approximately $3 million in cost savings over the next three years," said Julia Anderson, Global CIO, Smithfield Foods. "In addition,

the added efficiencies and agility we've gained allow our internal team to focus even more on advancing our implementation of new technology innovations."

As we look to the future, we constantly seek new ways to take advantage of the rapidly developing data technologies used around the world. For example, food manufacturers and retailers are testing ways to use blockchain technology—a secure platform that acts as a shared ledger—to reliably capture important information about how a food product was produced and transported. Blockchain could be used during food safety product recalls to more efficiently trace food products back to the farms where they were grown.

New tools for the food industry are swiftly being developed utilizing this technology. In 2018, Smithfield joined the IBM Food Trust, a blockchain-driven food supply chain network of producers, suppliers, and retailers. The Food Trust tracks information about food origin, shipping information, food safety certifications, and more.



At Smithfield, we are just beginning to explore practical applications of this emerging technology. Ultimately, blockchain could one day help us verify product claims, such as "organic" or "raised without antibiotics;" reduce logistics costs through global trade digitization; and even monitor swine health in real time.

Case Study: Expanding Our Efforts to Generate Renewable Energy

At Smithfield Foods, we have spent decades testing financially viable ways to turn manure into energy, creating value for our company and farmers while significantly reducing our carbon footprint.

These efforts are critical because methane emissions from hog manure account for approximately 40 to 45 percent of Smithfield's carbon footprint. Over the last several years, we launched various pilot programs to convert hog manure into renewable natural gas (RNG). In October 2018, we announced an expansion of these efforts that will help us achieve—and exceed—our goal of reducing the company's greenhouse gas (GHG) emissions 25 percent by 2025.

Under this initiative, we will implement manure-to-energy projects across 90 percent of Smithfield's hog finishing spaces in North Carolina, Utah, and Virginia and nearly all Smithfield's hog finishing spaces in Missouri over the next 10 years. We will convert existing anaerobic treatment lagoons to covered digesters or build new covered digesters to capture biogas.

To convert the waste methane on our farms to a form that can be used to heat homes and power local businesses, we formed a joint venture with Dominion Energy called Align Renewable Natural Gas to capture and transport biogas to central processing facilities. Smithfield and Dominion Energy are jointly investing at least $250 million in this initiative over the next decade with initial application on 90 percent of Smithfield's hog finishing spaces in North Carolina and Utah. In addition to these states, projects will be implemented in Virginia and have the potential for wider-scale application across the country. The new joint venture will immediately begin work at two large farm clusters in Duplin and Sampson Counties, North Carolina; Waverly, Virginia; and Milford, Utah. Construction of these facilities began in late 2018 with the first projects scheduled to be in-service in late 2019.

"Thanks to the dedication of our team members, technological advancements, and a viable market for renewable natural gas, 'manure-to-energy' projects are a sustainable endeavor for hog farms," said Stewart Leeth, vice president of regulatory affairs and chief sustainability officer of Smithfield Foods. "We are proud to expand our efforts across the country, shrinking our environmental footprint and investing in the protection of our planet's resources."

North Carolina Pilot Proves the Concept

In Duplin County, North Carolina, anaerobic waste digesters are now capturing biogas from approximately 60,000 hogs on five Smithfield contract farms as part of a project called Optima KV, which is depicted in the video below. Optima BioEnergy, LLC, a North Carolina-based company, is leading this project, which entails building new digesters and waste collection systems to reroute hog manure and liquids away from the properties' lagoons and into the digesters.

The digesters offer an environment free of oxygen, which enables anaerobic bacteria to feed on the hog waste, producing methane gas, as well as carbon dioxide (CO_2). After the manure is digested, the biogas is upgraded to pipeline-ready natural gas and injected into nearby pipelines. Duke Energy has signed a 15-year agreement to purchase the renewable natural gas (RNG), expected to be about 80,000 dekatherms (dth) per year. That's enough to power roughly 1,000 households in North Carolina.

We will expand these efforts across eastern North Carolina, including working with our contract farmers to convert existing anaerobic treatment lagoons to covered digesters or constructing new covered digesters to capture and sell biogas for conversion into RNG. In addition to producing RNG, the covered lagoon digesters will reduce the risks associated with severe rain events, such as hurricanes.

Our Tar Heel, North Carolina, facility is also working with Optima BioEnergy to leverage its wastewater treatment system to collect and clean biogas from an existing digester. The cleaned biogas will be injected into the natural gas pipeline to serve local consumers. Once completed, the project will power more than 2,000 homes in the surrounding area each year.

A Statewide Solution for Smithfield Locations in Missouri

In Missouri, Smithfield and Roeslein Alternative Energy (RAE) have expanded efforts to convert manure into energy at our hog farming operations throughout the state. Once completed, the project is expected to produce about 1.3 million dth of RNG annually, enough to provide electricity to about 15,400 homes and displace 130,000 gasoline vehicles, while eliminating 750,000 tons of CO_2 equivalent methane.

In addition to using manure to create RNG, this project will harvest replanted native prairie plants to supplement biogas generation, particularly during the cold winter

months. This work is part of a prairie restoration effort aimed at supporting monarch butterfly numbers that Smithfield has supported in northern Missouri.

"From their leadership in creating renewable energy to conservation, Smithfield is changing what it means to be a food company," said Rudi Roeslein, chief executive officer of RAE. "Smithfield's willingness to embrace the power of prairie proves the industry can play a meaningful role in seizing the economic benefits of conservation."

Creating Renewable Energy Opportunities for Utah Farmers

In Utah, we are building 26 hog farms equipped with covered lagoons capable of capturing RNG and piping it to the marketplace. This is the first time that Smithfield is building U.S. hog farms equipped with renewable energy technology.

The engineering includes in-ground digesters to collect biogas that will be refined and pumped into the natural gas pipeline. Once completed, the project will create enough RNG to power 4,000 homes each year. The farms, which will ultimately be owned and operated by contract growers, will generate new economic opportunities for local Utah farmers.

Producing Renewable Energy at our International Locations

We also are working to generate renewable energy at our hog farming operations in Poland. We have manure supply agreements with biogas project developers who designed, financed, and constructed three biogas plants located in villages near our locations. These plants produce approximately 9.2 megawatts of electricity and heat energy annually.

Case Study: Supporting Sustainable Fertilizer Development

Since announcing our goal to reduce our greenhouse gas (GHG) emissions 25 percent by 2025, we have accelerated our efforts to find innovative ways to address our carbon footprint. Our new strategic partnership with Anuvia™ Plant Nutrients represents another innovative approach to support these efforts.

"Through Smithfield Renewables, we are aggressively pursuing opportunities to reduce our environmental footprint while creating value," said Kraig Westerbeek, senior director of Smithfield Renewables and Hog Production Environmental Affairs. "Along with projects that transform biogas into renewable natural gas, this is another example of how we are tackling this goal on our hog farms."

Organic matter in hog manure collected at Smithfield Foods' company-owned and contract farms in North Carolina will be used to create a commercial-grade fertilizer (SymTRX™) that achieves better crop yields compared to regular fertilizer.

"This is the beginning of a partnership based on a shared vision that will positively impact livestock and crop production," says Amy Yoder, Anuvia Plant Nutrients' CEO. "Our products reduce leaching and put organic matter back in the soil. Our process is a prototype for a circular economy as we reclaim organic waste, convert it, and reuse it on cropland."

Research conducted by Anuvia shows that SymTRX improves yields for corn, cotton, rice, and sugar beets when compared with ammonium sulfate fertilizers. Smithfield is partnering with the North Carolina Department of Agriculture to conduct independent trials, funded by Anuvia, aimed at verifying that similar results can be achieved with wheat crops.

Three Smithfield farms are participating in the trials, and one of our agronomists is assisting in the program. The farms were chosen to represent distinct geographic areas across North Carolina, as well as production of both milling wheat (for bread) and feed wheat (for hogs). Once harvested, in June 2019, the crops will be evaluated for overall yield, weight, and soil quality. Based on our own review of research, we expect the wheat grown with SymTRX will generate five to seven more bushels-per-acre than the state average.

The partnership also provides an opportunity to share best practices about efficient application of nitrogen fertilizer with farmers that supply wheat to us. Farmers participating in Smithfield's wheat program also receive a rebate from Anuvia on purchases of SymTRX, helping to boost the farms' operating profits.

Case Study: Leading the Industry Through Collaboration

Our responsibility to produce safe, high-quality food for our customers drives the work we do every day at Smithfield Foods. Our staff of food safety and quality scientists work exclusively on making our products—and the industry as a whole—safer.

One way we do this is by collaborating with other industry participants and research partners—an approach that allows us to stay on the cutting-edge of food safety and add our knowledge and experience to industry-wide improvements.

The meat industry has long been a major contributor to improvement in food safety science and establishment of best practices. However, the risk of pathogens or other contamination is ever-present in food production and we must continually evaluate the food safety implications from changes to our products, processing technologies, packaging options and consumer preferences, as well as the globalization of our supply chain. Because food safety is so vitally important, we openly share our knowledge with competitors to make all consumers safer. In fact, our scientists frequently publish scientific papers to share new information that may benefit the industry by enhancing food safety practices or creating efficiencies.

We routinely work with academic institutions, equipment manufacturers and others to facilitate advances in food safety science. For example, we work with vendors to provide feedback as they develop new equipment or services to enhance food safety. We may test their innovations in our facilities, provide products for testing or offer input from our team.

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We are currently working with Corvium, a food risk intelligence company developing software, analytics, and data solutions to automate our environmental monitoring program. This new technology—now in place at 30 of our packaged foods facilities—improves communication between our plants and testing labs, streamlines work, reduces data entry errors, and allows us to respond to food safety issues more quickly. Our participation allows the vendor to gain real-time feedback on their technology while we—and ultimately the industry—gain a new tool to enhance our food safety practices.

"Smithfield is an ideal partner due to their desire to constantly seek innovation in their food safety practices," says David Hatch, chief strategy officer at Corvium. "Their collaboration has helped us further refine our technology, leveraging the power of data to drive benefits to Smithfield including mitigating financial, regulatory and food safety risk; reducing food waste; and increasing operating efficiency."

We also collaborate with academic institutions that specialize in food science innovations. For example, we have partnered with researchers from Iowa State University (ISU) who are investigating natural ingredients in our nitrite curing process, in response to consumer demand for cleaner labels. Nitrites are necessary in meat production to control pathogen growth. As part of Smithfield's research with ISU, we are exploring how natural ingredients, such as celery juice powder, can impact pathogen growth in products under different production scenarios. This research is being led by Dr. Shannon Cruzen, a food scientist at Smithfield, and is supported by the Foundation for Meat and Poultry Research and Education.

Our participation in industry organizations, such as the North American Meat Institute (NAMI), helps connect our food safety and quality team with new opportunities for collaboration. For example, Dr. Hayriye Cetin-Karaca, a food scientist at Smithfield, established a research partnership with one of the leaders in high pressure processing (HPP), a technique that holds promise in increasing the shelf life of our products, and providing food safety without heat and preservatives. Because HPP does not utilize heat, it does not alter food taste, texture, color or quality as thermal treatments can. In addition, HPP is applied to products in their final consumer package, eliminating the risk of cross-contamination. We are primarily using HPP for lunch meat products, as requested by specific customers.

In addition, NAMI's training program regarding the control of *Listeria*, one of the most common and serious foodborne pathogens, is offered annually with the participation of our scientists, including Dr. Hayriye Cetin-Karaca, as experts and instructors. This program helps train new generations of food industry specialists and offers expertise to companies with more limited resources.

Smithfield takes food safety and quality very seriously, utilizing a 360-degree approach to maintaining and constantly improving our food safety and quality program. An important part of this approach—our efforts to collaborate and share knowledge with other industry stakeholders—contributes to the protection and satisfaction of our customers and consumers and, ultimately, to the industry's efforts to strengthen food safety and quality.

Case Study: Combating Pathogens Through Science

Keeping our food products safe is a complex process requiring constant vigilance across our farms and facilities. One of the important elements of this process is our network of in-house food safety and research laboratories that help us ensure the products that leave our facilities are safe and high quality.

Nearly all our processing facilities in the United States include an in-house lab. Most are microbiology labs that allow us to monitor our equipment and other surfaces—as well as the air—at the plants where they are based. These labs help us quickly identify the presence of microorganisms before they can become a problem.

Five of our labs are accredited by the American Association for Laboratory Accreditation (A2LA), which verifies their technical competence to perform specific types of testing and provides an unbiased and objective evaluation of their quality management system. Having this accreditation allows for more advanced capabilities. For example, these locations conduct pathogen product sampling and *Listeria* species environmental monitoring for all of our processing facilities. We are working toward accreditation at two additional labs over the next two years.

Above all, our food safety labs infuse robust science, facts, and empirical data into our food safety decisions. Our scientific approach and insight allow us to truly say we are producing "Good food. Responsibly.®"

Our A2LA-accredited labs are located in Cincinnati, Ohio; Arnold, Pennsylvania; Kinston, North Carolina; Denison, Indiana; and at our Innovation Center in Smithfield, Virginia. Each location includes a staff of dedicated microbiologists that support our processing facilities in a myriad of ways. Our Cincinnati and Denison locations are the most advanced, dictating the procedures and methods that our other labs follow and providing technical guidance when needed.

We also have the capability to do more in-depth research at these locations. For example, our scientists conduct special shelf-life studies and specialized pathogen investigative work. In the labs, they intentionally inject product samples with microorganisms—such as *Salmonella, Listeria, and E. coli*—to see how the pathogens will react over time to cooking, chilling, or refrigerated storage.

Among their responsibilities is oversight of the expiration dates stamped on our packaged meats products. Many categories of foods, such as cereals, crackers, or canned goods, are considered "best" if consumed by a certain date. Meat, on the other hand, will eventually spoil, so the shelf-life dates are based on scientific risk assessments of *Listeria* growth, as well as quality parameters.

In recent years, our laboratories have been especially focused on helping Smithfield Foods transition to "clean labels" in response to consumer requests for products made with more understandable ingredients. Currently, our scientists are partnering with researchers from Iowa State University to determine how curing with nitrites from natural ingredients, such as celery juice powder, can impact pathogen growth in products, particularly when there are deviations to the cooking process (e.g., a power outage at the manufacturing facility). The research is being supported by the Foundation for Meat and Poultry Research and Education.

We already know a significant amount about how common preservatives such as lactate, nitrite, and benzoate work in our foods, but there isn't much published science about the natural ingredients, such as vinegar-based antimicrobials, that are replacing them. We conduct ongoing research, to meet consumer demand for cleaner labels while ensuring we create safe, high-quality products.

In addition to this work, we also periodically test product samples to ensure we are keeping product free from pathogens or other harmful organisms. Having both smaller in-house labs and more complex A2LA-accredited facilities allows us to more quickly and efficiently obtain test results so that we can deliver safe, high quality products to our consumers.

Above all, our food safety labs infuse robust science, facts, and empirical data into our food safety decisions. Our scientific approach and insight allow us to truly say we are producing "Good food. Responsibly.®"

Our Goals and Sustainability Targets

Smithfield Foods' goals and targets are designed to hold ourselves accountable to our peers, suppliers, customers, and other key stakeholders. We believe it's important to share our progress, including those areas where we need improvement.

We consider a facilities-based target "achieved" for 2018 if 100 percent of locations have met the standard. Targets are noted as "on track" if they are less than 100 percent achieved but making appropriate progress.

KEY: **Achieved** | **On Track** | **Needs Improvement**

Animal Care
GOAL: Keep animals safe, comfortable, and healthy.

Targets	U.S. Results	International Results
Each farm region globally to continue to maintain and implement updates to the company's Animal Care Management System and achieve an annual audit score of excellent (97%–100%).	100% of farm regions follow Smithfield's Animal Care Management System. Four regions achieved an average annual audit score of excellent (97%–100%). Three regions ranked "commendable" (94%–96%). One region ranked "good" (91%–93%).	100% of farm regions follow an animal care policy and standard procedures relevant to their company operations. Farms in Poland and Romania achieved an average annual audit score of excellent (97%–100%).
Maintain a written program for animal welfare at processing facilities globally.	100% of facilities maintained a written program for animal welfare.	100% of facilities maintained a written program for animal welfare.
Report antibiotic usage in hog production on an annual basis.	Reported antibiotics use since 2007.	Reported antibiotics use since 2007.

Maintain group housing for all pregnant sows on company-owned farms and encourage U.S. contract growers to convert to group housing systems for pregnant sows by 2022; and in our international operations, provide pigs and poultry, including laying hens, with housing, floor, and surface area required by the European Union (EU).	100% of pregnant sows in group housing on company-owned farms. We are supporting contract growers by providing guidance and expertise about the conversion to group housing systems when requested; we have seen an increase in the number of farms that have converted or that have expressed interest in converting.	100% of pregnant sows in group housing on company-owned farms. 100% of international operations provide floor and surface area required by the EU.
Each applicable facility in the United States to maintain a systematic program for animal care based on the North American Meat Institute's (NAMI) Recommended Animal Handling Guidelines and Audit Guide.	100% of facilities maintained systematic programs. Average audit score for 2018 was 99.0%.	Not applicable.
Maintain U.S. Department of Agriculture (USDA) Process Verified Program (PVP) certification in the United States.	100% of plants maintained PVP certification.	Not applicable.
All live animal suppliers[1] in the United States to be certified to National Pork Board's (NPB) Pork Quality Assurance® Plus (PQA® Plus).	98% of live animals were delivered by PQA Plus certified suppliers. 95% of supplier locations were site assessed.	Not applicable.
All live animal transporters in the United States to be certified to Transport Quality Assurance® (TQA®).[2]	100% of drivers delivering animals to processing plants were TQA certified.	Not applicable.

Environment

GOAL: Reduce natural resource demand; 100% compliance, 100% of the time.

Targets[3]	**U.S. Results Since 2014 (normalized[4]):**	**International Results Since 2014 (normalized):**
Greenhouse gas (GHG) emissions: 25% reduction by 2025 in the United States.	GHG emissions[5] down 6.6%.	GHG emissions down 13.8%.
Energy: 5% reduction by 2020 globally.	Energy use up 5.5%.	Energy use down 15.7%.
Water: 10% reduction by 2020 globally.	Water use up 2.7%.	Water use down 14.3%.
Solid Waste: 75% reduction and zero-waste-to-landfill certification at 75% of our U.S. facilities by 2025; 10% reduction by 2020 in Poland and Romania.	Solid waste[6] down 8.7%. 25% of facilities certified.	Solid waste down 49.5%.
Reduce notices of violation (NOVs) to zero.	**2018 Results** Received 18 NOVs and nearly $170,000 in fines.	**2018 Results** Received 5 NOVs and nearly $2,500 in fines.
By 2018, 75% of grain purchased in the United States by Smithfield to be grown with efficient fertilizer and soil health practices.	**2018 Results** 80% of grain sourced from fertilizer optimization program participants.	**2018 Results** Not applicable.

Food Safety & Quality

GOAL: Deliver safe, high-quality meat products.

Targets	U.S. Results	International Results
No incident requiring recalls.	One recall.	Three recalls in Poland and one in Romania.
Maintain Global Food Safety Initiative (GFSI) certification at all applicable facilities.	100% of applicable facilities were GFSI-certified.	100% of applicable facilities were GFSI-certified.
Maintain a robust food safety employee training program.	100% of facilities maintained a robust food safety employee training program.	100% of facilities maintained a robust food safety employee training program.
Assure a variety of products for different diets and needs, and in our international operations include products designed to address health and wellness in accordance with EU nutrition and labeling standards.	More than 250 products offer health and wellness benefits, such as lower sodium, reduced fat, no added sugar, gluten-free, no artificial ingredients, and no nitrites or nitrates, and dozens meet American Heart Association certification criteria.	We offer dozens of products that provide health and wellness benefits and satisfy a wide assortment of consumer needs and tastes while meeting all EU nutrition and labeling standards.

Helping Communities

GOAL: Support our communities through targeted philanthropy, employee volunteerism and engagement opportunities.

Targets	U.S. Results	International Results
Each facility/farm region to participate in annual community events (four events in the United States and two events internationally). At least one event per year must include a stakeholder presentation.	100% of facilities/farm regions met or exceeded target.	100% of facilities/farm regions met or exceeded target.
Maintain hunger-relief programs to help those in need.	Donated 23.9 million servings of protein through our Helping Hungry Homes® program.[7]	Donated nearly 250,000 servings of protein to local communities.
Interact with schools and students by providing school supplies, scholarship assistance, and facility support.	Educational and scholarship program donations totaled $3.3 million.	Educational and scholarship program donations totaled nearly $400,000.

People

GOAL: Reduce employee injury rates.

Targets	U.S. Results	International Results
Continue to reduce Total Incident Frequency Rate (TIFR) and maintain levels below the relevant industry average in the United States.	TIFR improved by over 7% and was lower than 2017 averages for animal slaughtering and processing industry.	Not applicable.
Achieve annual Days Away, Restricted, or Transferred (DART) results better than relevant industry averages in the United States.	DART was lower than 2017 averages for animal slaughtering and processing industry.	Not applicable.
Achieve annual Days Away from Work Injury and Illness (DAFWII) results better than relevant industry average.	DAFWII was lower than 2017 averages for animal slaughtering and processing industry.	Not applicable.
Meet or exceed safety engagement level of 35% in the United States and	Achieved safety engagement level of 45%.	Achieved safety engagement level of 31.3% in Poland.

30% internationally.[8]		Achieved safety engagement level of 37.5% in Romania.
Each operating segment to score at least an average of 86% to 93% on monthly safety scorecard globally.	100% of U.S. operating segments exceed this target.	The international segment exceeded this target.
All safety leadership complete at least 10 hours of health- and safety-focused training globally.	100% of safety leadership achieved this target.	100% of safety leadership achieved this target.
Meet or beat location-specific injury rate targets[9] in Poland and Romania.	Not applicable.	All locations except two, or 85%, met or exceeded location-specific injury rate targets; both Poland and Romania achieved double-digit reductions in average injury rates.

[1] This term includes Smithfield operations and independent suppliers.

[2] Drivers must be able to prove current certification. Drivers who are not TQA certified or whose certification has expired, will be given a one-time allowance to unload under the direct supervision of trained company personnel. Training may be offered at the facility for that driver by a certified TQA Advisor.

[3] The energy and water targets are normalized by production levels and measured against a 2014 baseline. The absolute GHG emissions goal and normalized solid waste reduction target are measured from a 2010 baseline. The solid waste target does not include hog production operations.

[4] Normalized performance metrics are expressed as a rate (e.g., gallons per 100 pounds of product). This allows us to track how efficiently we are using resources to produce our products.

[5] GHG emissions totals do not include hog production operations.

[6] Solid waste totals do not include hog production operations. At our hog production operations, solid waste is typically hauled away for a fixed fee; as a result, reliable weights are not available.

[7] Servings of protein donated through our Helping Hungry Homes® initiative to support food banks and hunger relief organizations nationwide.

[8] Our target for 2019 is to achieve a safety engagement level of 40 percent globally.

[9] Safety policies at our international facilities are aligned with national regulations and European Union directives, including those of the European Agency for Safety and Health at Work. To better align our companywide practices, we developed our own methodology to track safety performance in Poland and Romania, and also set annual performance targets aimed at achieving continuous improvement.

Measuring Our Performance

Smithfield Foods believes transparency is central to ensuring accountability. Reporting helps stakeholders understand our performance over time and our performance relative to others in our industry.

Below are some key indicators for our operations we feel are particularly important to internal and external stakeholders, as well as to Smithfield as a company. Data is reported by calendar year. You will find additional data in the relevant sections of this site.

KEY: United States | International

Animal Care	2018	2017	2016	2015	2014
Sows in Company-Owned Group Housing (%)	100 100	100 100	87.0 100	81.8 100	71.4 100
Antibiotics Used (milligrams per pound of live weight produced)[1]	97 124	78 144	118 129	152 175	142 222
Company-Owned Market Hog Transportation Accidents[2]	8 4	16 5	18 6	6 0	4 6

Environment[3]	2018	2017	2016	2015	2014
Normalized[4] Greenhouse Gas (GHG) Emissions[5] (metric tons CO_2e per cwt[6])	0.0099 0.0137	0.0098 0.0136	0.0100 0.0143	0.0098 0.0152	0.0106 0.0159

Normalized Energy Use[7] (gigaojoules per cwt)	0.116 0.102	0.116 0.106	0.094 0.111	0.091 0.116	0.110 0.121
Normalized Water Use (gallons per cwt)	65.6 68.8	62.2 70.5	61.7 74.5	61.4 83.8	63.8 80.3
Normalized Solid Waste to Landfill[8] (pounds per cwt)	1.19 0.51	1.20 0.58	1.27 0.77	1.27 0.83	1.30 1.01
Notices of Violation	18 5	13 7	18 7	11 6	18 5
Significant Fines	$169,962 $2,454	$17,545 $803	$6,500 $120	$400 $750	$400 $6,155

Food Safety & Quality	2018	2017	2016	2015	2014
Food Safety Expenditures	$115 million $13 million	$52.5 million $9.5 million	$42.2 million N/A	$5.5 million N/A	$32 million N/A
Recalls	1 4	3 3	0 7	0 5	0 7

Helping Communities	2018	2017	2016	2015	2014
Educational Scholarships	$792,249 $342,348	$657,765 $284,664	$395,699 $245,346	$298,137 $216,431	$320,000 $168,414
Food Donations (servings[9])	23.9 million 252,812	21.1 million 306,231	17.6 million 146,878	10.2 million 404,523	13.7 million 97,434

People[10]	2018	2017	2016	2015	2014
OSHA Total Incident Frequency Rate (TIFR)	3.21	3.46	3.75	4.08	3.45
OSHA Days Away, Restricted, Transferred (DART) Rate	2.30	2.50	2.57	2.90	2.48
OSHA Days Away From Work Illness and Injury (DAFWII) Rate	0.53	0.62	0.77	0.79	0.64
OSHA Citations[11]	15	12	29	11	45
OSHA Penalties	$67,644	$30,158	$82,594	$49,095	$243,840

[1] Annual milligrams per pound represents the total amount of antibiotics administered to the animals divided by the total weight of live hogs produced.

[2] Eight accidents occurred in 2018 out of 101,862 U.S. truckloads. Nearly all of the U.S. accidents between 2016 and 2018 involved third-party contract haulers, whom Smithfield has supported in providing training to decrease the number of incidents.

[3] Data for 2017 does not include acquisitions made in 2017.

[4] Normalized performance metrics are expressed as a rate (e.g., gallons per 100 pounds of product). This allows us to track how efficiently we are using resources to produce our products.

[5] GHG totals do not include hog production operations.

[6] CWT equals 100 pounds of product.

[7] The 2017 figure was previously reported as 0.112 and has since been restated.

[8] Solid waste totals do not include hog production operations. At our hog production operations, solid waste is typically hauled away for a fixed fee; as a result, reliable weights are not available.

[9] U.S. data represents servings of protein donated through our Helping Hungry Homes® initiative to support food banks and hunger relief organizations nationwide.

[10] Safety rates are calculated per 100 employees at our processing facilities. Data for 2017 and 2018 includes locations acquired as part of our purchase of Farmer John. Comparable data is not available for international operations.

[11] Some inspections began in 2018 and did not conclude before the end of the calendar year. As a result, the number of citations and penalties may be adjusted after all inspections have concluded.

Our Commitment to Animal Care

As the world's largest pork producer, we[1] have a responsibility to be the leader in animal care. We believe our actions keep animals safe, comfortable, and healthy; strengthen our business; and support continuous innovation in the industry.

We have taken a number of bold steps that have placed us at the forefront of the hog production industry in the United States, as well as the hog and poultry production industries in Europe. For example, we were the first large-scale producer in our industry to convert to group housing for pregnant sows on our U.S. company-owned farms. In addition, we lead our industry in the transparent disclosure about our use of antibiotics.

Neglect or abuse of animals in any form is not tolerated at Smithfield Foods and is grounds for employee or contract grower termination. Offenders in international countries may also be subject to criminal prosecution under applicable European Union (EU) laws.

Our Animal Care Goal

- Keep animals safe, comfortable, and healthy

Our Animal Care Targets

- Each farm region globally to continue to maintain and implement updates to the company's Animal Care Management System and achieve annual audit score of excellent (97%–100%)
- Maintain a written program for animal welfare at facilities globally
- Report antibiotic usage on a global basis
- Maintain group housing for all pregnant sows on company-owned farms and encourage U.S. contract growers to convert to group housing systems for pregnant sows by 2022, and in our international operations, provide pigs and poultry, including laying hens, with housing, floor, and surface area required by the European Union (EU)
- Each applicable facility in the United States to maintain a systematic program for animal care based on the North American Meat Institute's (NAMI) Recommended Animal Handling Guidelines and Audit Guide
- Maintain U.S. Department of Agriculture (USDA) Process Verified Program (PVP) certification for locations in the United States
- All live animal suppliers in the United States to be certified to National Pork Board's (NPB) Pork Quality Assurance® Plus (PQA® Plus)
- All live animal transporters in the United States to be certified to NPB Transport Quality Assurance® (TQA®)

We routinely make adjustments to our farms to improve the quality of life for our animals while making our business more competitive. Our robust Animal Care Management System, which guides the care of our hogs at every stage of their lives—from gestation to transportation to processing—promotes their safety and overall well-being. All company-owned farm employees, contract hog producers, and plant employees who work with live animals must follow Smithfield's Animal Care Management System, and we take steps to verify their compliance.

All hogs that arrive at our plants, whether company-owned or not, are traceable to farms of origin.

Hog Production: 2018 at a Glance

- World's largest hog producer
- Market hogs produced: Approximately 16.5 million in the United States and 4 million in Poland and Romania
- Sows: Approximately 900,000 in the United States and 140,000 in Poland and Romania
- Primary breeds raised: Durocs (sires); Large White, crossbred with Landrace (females)

[1] All references to "Smithfield," "we," "us," and "our" are terms of convenience used to refer collectively to Smithfield Foods and all of its subsidiaries.

Value Creation

Treating animals with care isn't just the right thing to do; it's also the right thing to do for our business. The healthier our animals, the healthier our company.

Our animal care management systems, policies, and procedures are designed to ensure the proper treatment of our hogs. Our animal care performance can influence our reputation and the relationships we have with customers and consumers. It can also influence production levels: Healthy animals are more resistant to disease and gain weight faster, and healthy sows have larger and stronger litters.

Contract growing relationships provide opportunities for thousands of farmers to diversify their family farms, make investments for the future, and stabilize their incomes. In 2018, we paid contract growers more than $600 million globally for hogs and sows. We also have agreements valued at $279 million annually to supply our poultry processing operations in Poland.

We operate three poultry-growing farms and four hatcheries in Poland that provide chicks to approximately 300 independent growers; these growers, in turn, supply our poultry processing plants with more than 34 million chickens (50 percent of total chickens processed), and approximately 700,000 geese annually (55 percent of total geese processed).

We also create opportunities by purchasing corn, wheat, soybeans, sorghum, and other feed from thousands of grain farmers across the United States and internationally. We are one of the single largest consumers of U.S. feed ingredients in the world. We also purchase a wide array of non-traditional feed ingredients, such as bakery byproducts, distillers' grains, and wheat bran. Learn more in the Environment section.

By the Numbers	2018
U.S. feed purchases	$1.8 billion
International feed purchases	$317 million

Includes grain purchases from local farmers in the United States, Poland, and Romania.

In 2018, our international operations rented two large grain storage facilities, which enabled us to diversify our grain purchases, adding hundreds of small local farms in

new markets. Buying local gives us access to high-quality grains at peak freshness. It also reduces transportation demand, leading to fewer miles driven, less fuel consumed, lower emissions, and a smaller carbon footprint.

Contract Growers and Suppliers

One of the keys to our success is the business relationships we form with independent farmers, whether they contract with us to grow our animals or supply animals directly to our slaughter plants. These relationships provide a level of financial stability for the contract growers and suppliers, offsetting potentially volatile commodity markets.

Contract growers, who are private landowners and independent farmers, are paid under agreements that typically run for multiple years. Smithfield Foods assumes the market risks and owns the hogs. The growers are protected from market fluctuations and receive a predictable income stream.

The contract grower provides the following:

- A farm site that meets all the relevant local, state, and federal legal, regulatory, and permitting requirements;
- Animal production facilities that meet Smithfield's contract and animal care requirements;
- Day-to-day management of the farm, including animal care and environmental management; and
- Construction of the farm.

We provide the following:

- All the animals and feed;
- Transportation of all animals to and from the grower's farm;
- Veterinary support services;
- Ongoing advice to ensure the animals are properly cared for; and
- A predictable and stable payment based on agreed-upon contract terms.

Independent hog suppliers, who sell their animals directly to our processing plants in the United States, are also a significant source of hogs for us and are important to our business. These contract suppliers also are required to adhere to the following expectations:

- **Traceability.** All pigs must be traceable to farm of origin.
- **National Pork Board's (NPB) Transport Quality Assurance® (TQA®) certification.** All truck drivers must be TQA certified. This is verified on each load.
- **NPB's Pork Quality Assurance® Plus (PQA® Plus) certification.** All key management personnel must have PQA Plus certification. All premises, including nursery units and finishing sites, must have site status through the PQA Plus program.
- **Common Swine Industry Audit (CSIA).** Procedures should follow the elements that are described in the recently adopted industry audit standards, including, but not limited to, training programs and documentation of employees who have received training; setting up standard operating procedures as listed in the audit standards; documentation that the program is being monitored; and documentation of corrective action from findings.

Hog Ownership

Type of Farm	We Own Pigs	We Own and Operate Farm	Number of U.S. Farms	Number of International Farms
Company-owned	Yes	Yes	531	66
Contract grower	Yes	No	2,062	1,430
Contract supplier	No	No	1,160	544
Total			**3,753**	**2,040**

Animal Care Management

Smithfield Foods' Animal Care Management System provides a comprehensive approach to animal care on all our farms. It includes employee training and audits to make certain that our animal care policies are followed at all times and that any issues of noncompliance are swiftly corrected.

Our Animal Care Policy applies to company-owned farms, contract growers, and processing facilities and underscores our commitment to the highest level of care for our animals. It states our intentions regarding the provision of shelter, water, nutrition, care of sick animals, and humane methods of euthanasia. The policy also guides our actions regarding internal and external audits to verify, enhance, and update current company practices.

In addition, our industry-leading Antibiotics Policy guides the careful use of antibiotics in the care of our animals.

Smithfield Foods established a corporate-level Animal Care Committee in 2002 to ensure our animal policies are properly implemented. The committee, which consists of Smithfield employees with animal care responsibilities at our farms and processing facilities, reviews our policies at least once annually and communicates the importance of our program throughout the organization.

Adherence to the Animal Care Policy is a condition of employment at Smithfield and a condition of agreements with contract producers. Contract growers found to be in violation of these agreements must take immediate corrective actions. Those growers who fail to take corrective action or who are found to condone willful abuse or neglect of animals are subject to immediate termination. In the past 15 years, a few—less than 1 percent—of contract grower relationships in the United States have been terminated for failing to manage their farms in accordance with their contract commitments.

Contract Terminations Related to Animal Care Policy Violations	2014	2015	2016	2017	2018
United States	0	0	0	1	1
International	0	0	0	0	0

We encourage any Smithfield employee who observes neglectful or abusive behavior to anonymously contact our toll-free reporting hotline.

The Animal Care Chain

All hog farms must adhere to the guidelines of the National Pork Board (NPB) Pork Quality Assurance® Plus (PQA® Plus) program. PQA® Plus provides guidelines for proper care of animals to ensure optimal health and well-being. It includes on-farm assessments and third-party verification that proper care if being implemented. In addition, the Common Swine Industry audit verifies that we are following industry standards and that our farms are compliant with our Animal Care Policy.

All drivers who transport our animals, including contract and supplier drivers, must be trained and certified under the National Pork Board's Transport Quality Assurance® (TQA®) program. TQA® provides education and guidelines for transporters, producers, and animal handlers on all aspects of hog handling and transportation.

Animals are treated with respect at processing plants, just as they are when growing at farms. Each plant uses a systemic approach to animal care that includes the Smithfield Animal Handling & Welfare Quality Management Plan, a comprehensive training program, and internal third-party audits.

Animal Care Management Requirements

To implement our Animal Care Policy and make sure that animals are properly cared for, we rely on a comprehensive system of policies and procedures, as well as internal and third-party auditing platforms. Some of the requirements are specific to our hog farms; others are expressly for processing plants. We constantly assess these tools to be sure we are following the latest science that promotes the most humane treatment of animals.

On U.S. Farms

All our farms in the United States are 100 percent compliant with the National Pork Board's (NPB) Pork Quality Assurance® (PQA® Plus) program, which serves as the basis for the Common Swine Industry Audit (CSIA). (See our Animal Care Management Glossary.)

Each farm's compliance with the PQA Plus standard is reviewed every three years. To ensure we remain compliant between reviews, our trained internal auditors conduct annual animal care audits, aligned with CSIA, on company-owned farms.

Our annual target is for all eight of our farm regions, including our genetics research facilities, to achieve audit scores of "excellent" (97 percent or above). In 2018, four farm regions met that goal, while three regions ranked as "commendable" (94–96 percent) and one region ranked as "good" (91–93 percent). In total, 293 farms received an excellent ranking, 107 received a commendable ranking, 41 received a good ranking and 34 facilities scored less than 91 percent. Farms with the lowest scores are required to address audit nonconformances within 30 days. Critical nonconformance instances are resolved on-site during the audit process, and any corrective action must be completed within 10 days.

Internal Audits of Company-Owned Farms in the United States	2016	2017	2018
Average audit score	95.0%	97.0%	96.0%
Number of audits	399	464	475

All farms are audited annually; in some cases, farms may be audited as groups, resulting in a lower number. A small number of farms were not audited in 2016 because there were no pigs present due to sow housing conversion, cleanups, or other factors.

External auditors, who are retained by Smithfield Foods, conduct random, unannounced visits at company-owned farms to perform the CSIA. In 2018, 59 company-owned and contract grower farms were audited by these third parties. External auditors evaluate "big picture" issues, including whether our internal auditors assess performance consistently across locations. Any audit findings are reviewed by management. Sites that fail an external audit are re-audited within 30 days, must show that any nonconformance has been corrected, and will also undergo an audit in the subsequent year.

Common Swine Industry Audit—External Audits by Type of Farm	2016 Average Score	2017 Average Score	2018 Average Score
Company-owned	96.4%	96.3%	94.3%
Contract grower	95.2%	92.6%	98.5%
Contract supplier	94.4%	92.4%	95.5%

At U.S. Plants

Our plant management system follows the standards set in the U.S. Department of Agriculture's (USDA) Process Verified Program (PVP) and monitors several key aspects of production, including traceability to farm of origin, PQA Plus program adherence on farms, and Transport Quality Assurance® (TQA) status of livestock haulers.

Our programs help ensure the animals that come to the plants were raised where management systems address health, animal well-being, and proper use of antibiotics.

A third-party company performs annual audits at all our fresh meat processing plants based on North American Meat Institute (NAMI) guidelines. In 2018, each of these plants scored better than 90 percent on its audit.

External Audits of Company Processing Plants	2016 Score	2017 Score	2018 Score
Average for all plants	99.5%	99.0%	99.0%

In addition to regulatory oversight and enforcement by the USDA Food Safety Inspection Services, which has representatives stationed inside each of our locations every day of operations, all plants are audited on a pass-fail basis by Smithfield employees at least once during each shift.

Our International Operations

Animal handling protocols at our locations in Poland and Romania include comprehensive document controls to ensure traceability, rigorous biosecurity protocols that meet all national and European Union (EU) regulations, proper hygiene measures, and humane euthanasia.

Our international operations are regularly audited to ensure compliance with local and EU regulations. Government veterinarians work with local animal care and food safety authorities to regularly inspect our farms and plants in both Poland and Romania. These external audits verify compliance with national animal care laws and biosecurity measures to reduce the risk of diseases. Additional random inspections take place throughout the year.

Trained internal auditors conduct twice-yearly audits of farming operations to verify compliance with animal care procedures, biosecurity and traceability, employee training programs, and transportation systems. Nonconformance is addressed with swift corrective action, and we provide support and technical assistance to help each facility remain compliant.

In 2018, there were no penalties for animal welfare noncompliance at Smithfield's international farms or processing plants.

Animal Care Management Glossary

Smithfield Foods Animal Care Policy

Our Animal Care Policy applies to company-owned farms, contract growers, and processing plants across Smithfield, underscoring our commitments to shelter, food/water, humane treatment, healthcare, euthanasia, and auditing.

Smithfield Animal Care Management System

Smithfield created this system for our U.S. company-owned farms nearly two decades ago in consultation with two of the world's foremost experts in animal behavior and handling. Our on-farm management system includes employee training and audits to make certain that our Animal Care Policy is adhered to and that any issues are swiftly corrected.

Smithfield Animal Handling & Welfare Quality Management Plan

Used at all Smithfield processing plants in the United States, this plan reinforces our Animal Care Policy, includes our animal handling program and supplier expectations, and identifies required personnel, training, auditing, and adherence to regulations.

Common Swine Industry Audit (CSIA)

CSIA was created in 2014 as a common audit platform for pork producers, packers, and processors in the United States. Audit tools build on the existing Pork Quality Assurance® Plus (PQA® Plus) program.

National Pork Board's (NPB) Pork Quality Assurance Plus (PQA Plus) Program

PQA Plus is an educational program representing the U.S. industry's commitment to continuous improvement of production practices. It addresses food safety, animal well-being, environmental stewardship, worker safety, public health, and community. Farms are assessed every three years to ensure they meet PQA Plus Site Status criteria.

North American Meat Institute's (NAMI) Recommended Animal Handling Guidelines and Audit Guide

The Guidelines, which were revised in early 2017, were first developed by Colorado State University's Dr. Temple Grandin, who has provided Smithfield with her animal welfare expertise for many years. All slaughter facilities are audited, at minimum, once per shift using these guidelines by auditors who have been trained according to the standards of the Professional Animal Auditor Certification Association (PAACO).

Professional Animal Auditor Certification Organization (PAACO)

PAACO's mission is to promote animal welfare in the United States through auditor training and audit certification.

Traceability

Traceability is the ability to trace our hogs back to farm of origin.

NPB's Transport Quality Assurance® (TQA®) Program

TQA is a framework that helps transporters, producers, and handlers in the United States understand how to handle, move, and transport pigs and the potential impacts of those actions on pig well-being and pork quality.

U.S. Department of Agriculture's (USDA) Process Verified Program (PVP)

PVP is a third-party verification service designed to provide agricultural suppliers with labeling and marketing tools that assure customers of the consistent quality of the products they purchase.

Training

All employees who work with livestock undergo extensive animal care training. On farms, for example, new employees in the United States undergo training during an initial 90-day probationary period. These new workers must demonstrate competence in animal handling techniques and a thorough understanding of our Animal Care Policy before the probationary period ends. We provide written manuals and videotaped training programs in English and Spanish, along with on-the-job training and mentoring with experienced animal handlers. Regular training programs continue throughout an employee's career at Smithfield Foods.

All employees who work with livestock on our international farms receive animal care training upon hire and are certified to European Union (EU) and other relevant standards by local agencies and/or third-party specialists. All processing plant employees who work with livestock are trained and supervised by government

veterinarians. In addition, each fresh pork plant has at least one designated animal welfare specialist responsible for animal care. These individuals undergo specialized training and report directly to the facility's managing director. Government veterinary authorities provide ongoing training and support.

Our animal production department in Romania maintains an internal certification program for its animal caretakers, veterinarians, and technicians. This career development program provides advanced training to employees, which can lead to improved farm performance, as well as potential advancement opportunities within the company. It also helps us identify employees for potential supervisory and leadership positions. The curriculum consists of several three-month classes covering theoretical and practical elements for each area of hog production, from gestation through finishing. Employees must pass one certification level to advance to the next and must complete all elements to be certified. In 2018, 63 percent of eligible animal care professionals had completed our internal certification program.

In Poland, we employ roughly 90 veterinarians and animal care technicians, and provide professional development guidance and financial support to high-performing individuals to pursue post-graduate specialist studies. We also send up to 150 animal care professionals to conferences or training sessions each year so they can remain current in pig and poultry production best practices.

In addition, we offer training sessions on animal care and handling guidelines for customers, universities, industry groups, and trade associations.

Case Study: Preventing Animal Disease Outbreaks

Pork is the most widely consumed protein source across the globe, according to the Food and Agriculture Organization of the United Nations. As one of the world's largest pork producers, biosecurity, or procedures to prevent the spread of disease to our farms, is a critical element of our program to safeguard the health of our animals.

Strong biosecurity on our farms, and throughout the industry, is not only vital to our business, it also supports our efforts to help feed a growing world population, provide jobs in our communities, and help sustain other businesses in our supply chain, such as corn and soybean farming.

Smithfield Foods' biosecurity policy covers the animal production process at individual farms, as well as the movement of vehicles, animals, personnel, and equipment between farms. This policy is strictly enforced at all our company-owned and contract grower farms. To stay up to date and ensure our program remains best-in-class and informed by the latest science, we monitor emerging and ongoing animal disease threats around the world and collaborate with relevant regulatory agencies and other industry experts.

Our biosecurity procedures focus on preventing contaminants from being brought onto farms; for example, employees and visitors must "shower-in" and change into clean clothing before entering all sow farms and must also "shower-out" prior to leaving. In addition, equipment and supplies delivered to sow farms, as well as vehicles, must be disinfected prior to being allowed inside the farm complex.

ASF does not affect humans and does not represent a food safety or public health threat.

One of the most serious global viral threats to our industry is the spread of African Swine Fever (ASF), a highly contagious virus impacting pigs and wild boar. It is nearly always fatal, and there is currently no treatment or approved vaccine. As a result, pigs with the ASF virus, as well as all other pigs on an affected farm, must be quickly euthanized to help stop the spread of the disease. The ASF virus is spread in multiple ways, including contact with infected animals, some insects, and contaminated food products or animal feed. It is a hardy virus that also can be transferred by people, vehicles, equipment, or unaffected animals that travel between farms.

ASF does not affect humans and does not represent a food safety or public health threat.

ASF has been present in Africa and Europe for decades but, in 2018, the virus spread significantly. According to the World Organisation for Animal Health (OIE), more than 370,000 cases were reported in 14 countries, including China, where half of the global swine population is found. Swift action by the global community to contain the virus appears to be helping; the number of cases has fallen dramatically since the summer of 2018.

The virus has never been reported in North America and it has not been found on any company-owned Smithfield farms globally; however, it has been reported in Poland and Romania where we own operations.

In response to the 2018 surge in outbreaks, several governments, including Romania and Poland, have imposed mandatory biosecurity controls, such as restrictions in swine movements. In addition to our strong biosecurity practices referenced above, we also implemented enhanced measures at our international operations to mitigate the increased risk of ASF, including investing in specialized disinfection equipment and executing more frequent pest controls to eradicate insects and birds that may transmit the virus. Our international farm employees also receive a weekly newsletter with updates on the evolution of ASF in the region, as well as preventive measures. These practices exceed local government mandates and, we believe, have contributed to our ability to avoid an outbreak on our international farms.

Many countries, including the United States and China, have banned the importation of pigs and pork products from affected countries or from affected zones within a

country. For information about the disease status of other countries, visit the Swine Health Information Center.

Fortunately, the United States, where the vast majority of our business is located, has a robust system of regulatory agencies, state veterinarians, and industry organizations that are leading a coordinated effort to help protect the country from foreign animal disease outbreaks like ASF. At Smithfield, we have been working closely with the U.S. Department of Agriculture (USDA) and other industry colleagues to monitor the spread of the virus and share information.

The USDA, along with the National Pork Board (NPB) and several industry partners, established a website that provides information about how to protect hog farms from disease outbreaks. It also has implemented other measures including restricting the importation of certain products from ASF-positive countries or zones and requesting U.S. Customs and Border Protection (USCBP) to increase inspections of passengers, luggage and cargo from ASF-positive countries. The National Animal Health Laboratory Network (NAHLN), which was formed as part of a nationwide strategy to coordinate animal disease surveillance and testing services, is also preparing for a potential increase in lab testing to help keep the food supply safe.

Antibiotics Use

We believe "Good food. Responsibly.®" means providing people with safe food they are confident serving to their families. One way we honor that promise is through strictly controlled use of antibiotics to care for our animals and to provide consumers with the safest food possible.

We understand that antibiotic resistance is a public health concern. That's one of the reasons why we led the U.S. industry by voluntarily aligning our antibiotics policy with U.S. Food and Drug Administration (FDA) guidelines in 2015—about 18 months before the federal requirement to cease using medically important antibiotics for growth promotion took effect.

To strengthen stewardship of antibiotic use in domestic food animals, Smithfield Foods participated in a two-year dialogue with other industry stakeholders, moderated by The Pew Charitable Trusts and Farm Foundation. In 2018, we and other major food companies, retailers, livestock producers, and trade and professional associations developed the Framework for Antibiotic Stewardship in Food Animal Production (the Framework) to ensure that antibiotics are used judiciously to protect animal and public health.

The 15 core components of the Framework recognize the importance of veterinary guidance and partnership, disease prevention strategies, optimal treatment approaches, effective record keeping, and a culture of continuous improvement and commitment to antibiotic stewardship. The components address education, implementation, and steps for phasing in stewardship programs. The framework's guiding principles are intended to help ensure that stewardship programs have a clear scientific basis, are transparent, minimize the risk of unintended consequences, encourage alternatives to antibiotics, and focus on long-term sustainability.

Antibiotic use is an extremely complicated issue, and we want to help our stakeholders understand the nuances without oversimplifying the facts. Read more in our Antibiotics Q&A.

Let's Start with the Basics

In the context of our industry, there are two kinds of antibiotics: those used both in human and animal health (medically important antibiotics), such as penicillin, for example; and those that are only used in animal health (non-medically important

antibiotics). We use both types of antibiotics, as authorized or prescribed by company veterinarians, to control, treat, and prevent disease. We do not, however, use medically important antibiotics to promote growth or for feed efficiency on farms.

In the United States, we use antibiotics to do the following:

- **Control disease.** We administer antibiotics to our animals for a limited period of time to reduce the chance of spreading a specific disease following exposure.
- **Treat disease.** We administer antibiotics to treat sick animals.
- **Prevent disease.** We administer antibiotics to healthy animals when they may be exposed to a particular disease that exists on our premises or is likely to occur.
- **Promote growth.** While we do not use medically important antibiotics to promote growth, we do use animal-only antibiotics for growth promotion and feed efficiency.

In our international operations, we only use water-based and injected antibiotics when animals are sick, injured, vulnerable, or exposed to illnesses, and we do not use antibiotics for growth promotion, consistent with European Union regulations. Authorized veterinarians supervise antibiotics usage on company-owned and contract farms, monitoring them weekly.

Our Commitment

Our robust animal health management program, overseen by staff veterinarians, unifies our commitment systemwide. It maintains judicious use of antibiotics to produce healthy animals and make our food supply safe. The independent animal suppliers we work with are encouraged to judiciously administer all medications as well. Our veterinarians ensure sound animal care practices and good nutrition, perform preventive health examinations, authorize or prescribe vaccines and antibiotics, and are proactive in assessing potential health threats.

Smithfield's Antibiotics Task Force, a cross-functional group composed of employees from hog production, corporate affairs, food safety and quality, sales, and marketing, discusses antibiotics issues from a U.S. perspective to find ways to maintain Smithfield's responsible leadership position on antibiotics.

Preventive Management

All antibiotics used on our farms are preapproved by a licensed veterinarian, and a written authorization or prescription is also required before they are administered to any animal. Antibiotics are administered under veterinary supervision after careful

evaluation of groups of pigs, herd history, and diagnostic testing to determine the amount and type of medication necessary for the protection of pig health and welfare. Read more about prevention.

Supporting Antibiotics Research

Researchers at Virginia Tech College of Agriculture and Life Sciences and the Virginia-Maryland College of Veterinary Medicine have been using a $1.4 million Smithfield grant to investigate alternatives to antibiotics that enhance animal well-being and production efficiency in swine-rearing operations.

The contribution is supporting three projects that aim to improve animal health, reduce the use of antibiotics, and find alternative production methods for hog farming.

Smithfield veterinarians and other members of our animal science and technology team meet regularly with the university researchers to discuss the ongoing studies and collaborate on real-world examples and implementation.

Employees who are responsible for administering antibiotics are thoroughly trained to follow all applicable laws including regulations related to antibiotic usage policies and antibiotic withdrawal timelines, which specify the number of days that must pass after the last antibiotic treatment before the animal can enter the food supply.

Verifying the implementation of our policies on farms is paramount. We keep records to track use of antibiotics on farms and began voluntarily publicly reporting antibiotics usage in 2007. Today, we're the only U.S. hog producer to provide this information. And to ensure we're always improving animal care and providing high-quality, safe food, we conduct research to identify new technologies and procedures that improve animal health while minimizing antibiotic use.

Hogs Raised Without Antibiotics

We raise a limited number of hogs without antibiotics at our farms in Poland in response to increased consumer demand. We conduct regular audits to certify our supply chain (feed mills, sow farms, nursery farms, finishing farms, and production plants) is operating without the use of antibiotics.

Antibiotics Q&A

There is a lot of discussion surrounding the use of antibiotics in animal agriculture. Here are the answers to a few of the most frequently asked questions on this topic.

Is the use of antibiotics in animal agriculture regulated?

Yes. The use of antibiotics in animal agriculture actually helps keep our food supply safe, since safe food comes from healthy animals. Also, by law, any person who administers antibiotics to animals used for food must adhere to the specific antibiotic's withdrawal time. Withdrawal periods, which are established by the U.S. Food and Drug Administration (FDA) and Polish and Romanian law, specify the number of days that must pass after the last antibiotic treatment before the animal can enter the food supply. Moreover, FDA, European Union, and the U.S. Department of Agriculture (USDA) have a coordinated surveillance program to help ensure compliance.

What are the main uses of antibiotics in animal agriculture?

Antibiotics are used in animal agriculture for four main reasons: to treat sick animals, to control disease, to prevent animals from becoming sick, and to promote growth. There are also two main kinds of antibiotics: those used both in human and animal health (which some have termed "shared-use" or "medically important"

antibiotics), and those only used in animal health. It is important to note that many of the antibiotics used in both human and animal health also happen to be the most effective in treating sick animals, which is why the ability to continue the use of these "shared-use" medicines in animal agriculture is so important.

Without these medicines, veterinarians would be unable to effectively prevent or control animal diseases. This increases the risk that the animal could enter our food supply while it is not completely healthy, which may increase the risk to public health. It also would undermine our veterinarians' ability to protect animal health and prevent animals from suffering from preventable diseases.

Many chicken producers are going to stop using antibiotics altogether in poultry production. Why can't you do the same in pork?

There are biological differences between birds and pigs with regard to the immune system and production process. For example, chickens have a very short production cycle (up to nine weeks) compared with pigs (five-and-a-half months), so they don't have as long a time to be exposed to various disease agents. Even with this difference, it should be noted that only a part of the poultry supply is produced without antibiotics because it is more expensive, and when a flock requires antibiotic treatment, the chickens will be treated and sold as a conventionally raised product.

How are antibiotics used on farms?

We use several different categories of antibiotics, as authorized or prescribed by veterinarians, to control, treat, and prevent disease. We do not, however, use medically important antibiotics, as defined in the United States, to promote growth or for feed efficiency with our animals. We have also voluntarily aligned our animal health policies with the FDA's Guidance for Industry in our U.S. operations and with local laws in Poland and Romania for our international operations.

All use of antibiotics is preapproved by a licensed veterinarian, and a written authorization or prescription also is required before antibiotics are administered to any animal. Our production management team is thoroughly trained to follow all applicable laws including antibiotic usage policies and antibiotic withdrawal timelines.

Verifying diligence on farms is paramount. We keep records to track use of antibiotics and began voluntarily reporting antibiotics usage in 2007. Today we're the only U.S. hog producer to report this information.

Antibiotics Reporting

We report domestic antibiotics use data based on the total active ingredient given to our pigs through feed, as well as via water and injections. In 2018, the total amount was 97 milligrams per pound.

In recent years, we have been challenging ourselves to improve our systems and processes around antibiotics. Our ultimate aim: reduce our use of antibiotics while maintaining the health and safety of the animals and food that we produce.

The amount of antibiotics we use varies from year to year based on a variety of factors, including weather conditions, inventory decisions, type of antibiotic used (feed, water, or injected), the prevalence of diseases, and active ingredient concentration. Notwithstanding these annual variations, our antibiotics usage has shown a downward trend over the last several years, which has been accomplished through innovative efforts on our farms, including improvements to our production processes and our use of vaccines. Our veterinarians and dedicated team of animal care experts also partner with university researchers to study opportunities for continual improvement.

We report international antibiotics use based on the total active ingredient given to our pigs via water-soluble and injected products. In 2018, the international total was 124 milligrams per pound, a 14 percent reduction from 2017. This reduction was driven by our efforts to certify hogs as raised without antibiotics in Poland and the successful expansion of our preventative vaccination programs in Romania.

Antibiotics Used (milligrams per pound of live weight used)	2014	2015	2016	2017	2018
United States	142	152	118	78	97
International	222	175	129	144	124

Annual milligrams per pound represents the total amount of active ingredients of antibiotics administered to the animals divided by the total weight of live hogs produced.

In addition, we have been working with others in the industry, as well as other stakeholders, to come up with a standardized approach to antibiotics reporting in the United States. What is the best unit of measurement? What data would be most meaningful and understandable to the general public? These are the types of questions that we are working to answer.

Antibiotics Regulations

Every antibiotic we use in the United States is regulated by the U.S. Food and Drug Administration (FDA). We comply strictly with all antibiotic withdrawal timelines, as established by the U.S. Department of Agriculture (USDA) and the Food Animal Residue Avoidance Databank.

Some countries, such as Japan, Russia, and several nations in the European Union (EU), require farms and suppliers to make specific adjustments to those requirements. We always adhere to the guidelines of those countries with which we do business.

Domestically, the USDA monitors to ensure meat and poultry contain no antibiotic residues that exceed the safety levels established by federal agencies. The National Residue Program (NRP) tests animal tissues to monitor antibiotic residue. Research from the National Antimicrobial Resistance Monitoring System—a collaboration among the Centers for Disease Control and Prevention (CDC), the FDA, and the USDA—shows that antibiotic resistance in animal products and food-borne diseases has been steady or declining in recent years.

The EU banned feeding antibiotics and related drugs to livestock for growth promotion purposes more than 10 years ago. All our company-owned and contract farms in Poland and Romania follow these strict guidelines and comply with all antibiotic withdrawal timelines. The antibiotics administration process is overseen and controlled by each country's respective regulatory agencies.

Using Antibiotics for Prevention

Antibiotics are used on hog farms in the United States for four main purposes: to control disease, treat disease, prevent disease, and promote growth. Recently, many groups have criticized our industry, claiming that we are administering antibiotics for disease prevention as a masquerade for growth promotion. At Smithfield Foods, this is not the case. To assure stakeholders of this, we have developed the definition below of preventative use of antibiotics to clarify in greater detail what we mean when we use this term.

What does prevention mean?

The U.S. Food and Drug Administration (FDA) defines disease "prevention" as the "administration of an antimicrobial drug to animals, none of which are exhibiting

clinical signs of disease, in a situation where disease is likely to occur if the drug is not administered." The FDA regards "prevention" as a therapeutic and judicious application of antibiotics. We follow all regulations regarding the use of antibiotics to prevent disease in our international operations.

Why is prevention important?

Swine medicine is population and herd based, meaning veterinarians focus on diagnosing and addressing illnesses that threaten a herd rather than treatment of solitary animals. Treatment, control, and prevention of disease operate on a range of therapies rather than distinct types of therapeutic use.

Many common bacteria are present in all swine herds. These can emerge to sicken animals when they are more vulnerable—such as when pigs are relocated to new barns and when viral infections such as Porcine Reproductive & Respiratory Syndrome (PRRS) and influenza, are present in a herd. At these vulnerable points, bacterial infections can quickly emerge and spread to other animals.

Preventing disease in pigs and in swine herds, rather than relying solely on disease treatment, stops unnecessary illness, suffering, and mortality in pigs on farms. Forcing veterinarians to allow animals to become ill prior to instituting effective treatments will lead to poorer health outcomes and increase the total antibiotic use. This also increases the risk that the animal could enter the food supply while it is not completely healthy, which may increase the risk to public health.

What prevention is and is not at Smithfield

Smithfield adheres to the FDA definition of prevention for our operations in the United States, and to relevant regulations in Poland and Romania for our international operations. Our aim is to reduce disease carriers in our herd and to prevent our animals from contracting a disease, which would then require additional treatment and potentially more use of antibiotics. Prevention is not a "catch-all" term disguising sub-therapeutic uses of medically important antibiotics for production purposes.

Examples of preventative antibiotic use within Smithfield

Antibiotic use is just one of the many illness-prevention strategies we employ to protect our herds. Vaccinations, strict biosecurity protocols, and animal husbandry

practices are among the first lines of defense in our herd health management plans. When antibiotics are used, we continually evaluate such usage based on diagnostics and testing. Examples of preventative use include the following:

- Administering antibiotics to most newborn pigs to reduce the incidence of umbilical abscesses and hernia development.
- Administering antibiotics to pigs when they enter a site already diagnosed with a disease challenge such as swine dysentery.

Animal Housing

Smithfield Foods[1] is committed to being the industry leader in animal care practices that ensure respectful and humane treatment of animals.

Housing systems for all animals are designed, maintained, and operated to provide a physical environment that meets the animals' needs and complies with all applicable legal and regulatory requirements.

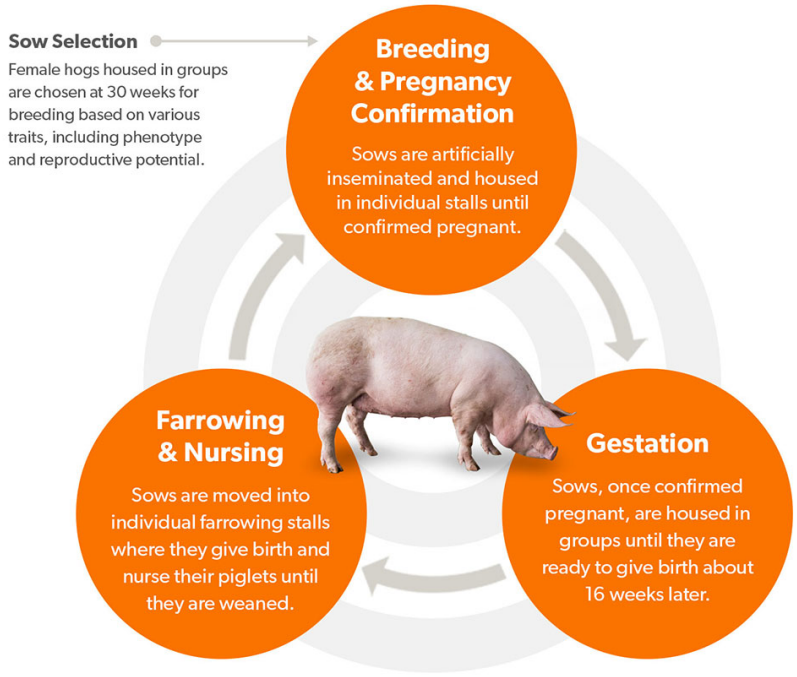
Housing of Pregnant Sows

Our leadership in animal care is reflected in our successful transition of all pregnant sows on company-owned farms to group housing systems globally.

All pregnant sows on company-owned farms, including those in Poland, Romania, and our joint ventures in Mexico, are housed in groups. Individual stalls are used for breeding to help ensure a sow's successful conception, a practice supported by multiple scientific studies. We also use individual stalls during farrowing to protect a sow's growing litter.

All our company-owned and contract farms in Poland and Romania follow strict European Union (EU) guidelines that prohibit individual stalls except for a short period of the gestation period. Our international processing facilities only source pigs from farms that meet these sow housing requirements. We communicate this to suppliers and regularly monitor their performance.

Group Housing System for Pregnant Sows



In addition to the efforts at company-owned farms, we recommend that all of our contract sow growers in the United States complete a transition to group housing by the end of 2022. While the conversion of contract sow growers' facilities to group housing systems is being encouraged, it is not mandatory. If growers choose not to participate, their current contracts will remain unchanged, although extensions are less likely. We are supporting contract growers through the conversion process by providing guidance and expertise when requested and have seen an increase in the number of farms that have converted or that have expressed interest in converting. We believe a collaborative approach with contract growers provides the best likelihood of a successful transition to group housing for pregnant sows in these locations.

Recent sow farm acquisitions will be converted to group housing systems in a timely manner.

Housing Systems

Generally speaking, Smithfield Foods' U.S. operations use three types of housing arrangements for pregnant sows: individual stall, free access group, and small group. We have converted to free access and small group housing at all company-owned farms. In doing so, we implemented more small group housing than free access.

Individual sow housing. Historically used by most of the pork industry, this system puts pregnant sows in individual stalls for the duration of their pregnancies. This system allows for individual medical care and attention, minimizes fighting between sows, and allows personnel to monitor a sow's pregnancy more accurately.

Free access group housing. In this system, a large group of sows (between 30 and 40) has access to a common area for lounging and exercise, as well as access to individual stalls for feeding. Sows can come and go as they please and can close a gate behind them in the stalls if they choose. On company-owned farms, we have observed that about 90 percent of sows choose to spend a majority of their time in the individual stalls rather than in the common area.

Small group housing. This form of housing allows small numbers of sows to be in a common open area once they are confirmed to be pregnant. These systems typically include individual feeding stations, which help to minimize fighting among sows for feed.

Poultry Housing

We operate three poultry-growing farms and four hatcheries in Poland that provide chicks to approximately 300 independent growers. These poultry-growing farms use cage-free housing according to EU animal welfare and Polish animal welfare requirements.

[1] All references to "Smithfield," "we," "us," and "our" are terms of convenience used to refer collectively to Smithfield Foods and all of its subsidiaries.

Improving Animal Care

As part of our efforts to maintain operational excellence, Smithfield Foods' team of animal scientists is always looking for ways to improve the welfare of the animals in our care, and across the industry, using science to determine what is best for our pigs.

We believe the procedures we follow make the pigs more comfortable during their lives and improve meat quality. The procedures, which include castration and tail docking, are consistent with our Animal Care Policy.

The standards we follow are all approved by the American Association of Swine Veterinarians (AASV) and the American Veterinary Medical Association (AVMA). However, there is always room for improvement, and our animal scientists spend considerable time examining alternatives that could enhance animal well-being.

Pain Mitigation

We recognize that minimizing pain and stress as much as possible improves our animals' well-being and enhances product quality. In fact, we continually strive to enhance our animal care program to reduce or eliminate our animals' fear and distress.

One area our animal scientists are currently examining is pain mitigation for routine procedures, such as tail docking and castration for very young male pigs.

We strive to perform these procedures in ways that minimize pain and distress to the animal; however, there are currently no government-approved products for pain mitigation in animals or any products that are proven effective at mitigating pain. We care about our animals and wanted to understand if there were scientifically supported options to improve pain management. As a result, we began to study whether potential pain mitigation options do, in fact, reduce pain and improve welfare for the pig.

During our preliminary research, we found that before we could evaluate the effectiveness of pain mitigation options, we first needed a reliable, scientific method for evaluating pain responses in young pigs. Even assessing pain in humans, particularly children, can be a challenge, and many practitioners today use a "smiley face" chart for patients to describe the level of pain they are feeling. Pigs, unfortunately, cannot communicate in the same way, so we knew we needed a

scientific assessment of pain using behavioral and vocal cues, hormonal or immune responses, or other biometric measurements.

Due to the importance and wide-ranging impact of such research, we designed a collaborative, science-based approach to studying this topic. As a result, in 2018, Smithfield engaged a committee of scientists and industry experts to develop a protocol to determine pain levels in piglets using biometric measurements. The committee includes representatives from the American Association of Swine Veterinarians (AASV), National Pork Board (NPB), National Pork Producers' Council (NPPC), U.S. Food and Drug Administration (FDA), university experts from around the world and some members of the pharmaceutical industry. Once an accepted industry protocol for measuring pain has been established, expected by mid-2019, we will begin scientifically evaluating the effectiveness of existing or new pain mitigation treatments.

On some of our farms, we are utilizing an FDA-approved veterinary prescription product as an alternative to physical castration. Similar to a vaccine, this product uses a pig's own immune system to temporarily protect against off-odors in pork. A similar product has been used successfully by farmers in other countries, including the European Union, for more than a decade. We are encouraged by the benefits experienced so far and will continue to evaluate this option.

Case Study: Smithfield Foods' Vaccine Research Lab

Influenza and other viral diseases pose significant challenges in animal husbandry. In the spring of 2013, for example, millions of piglets across the country were killed by a particularly virulent strain of Porcine Epidemic Diarrhea Virus (PEDV) that poses no risk to humans but is nearly always fatal in very young pigs.

Viruses like these move quickly on hog farms. Unfortunately, the commercial vaccines available for viral diseases typically fail to stop their spread.

Our research laboratory on the Raleigh campus of North Carolina State University College of Veterinary Medicine was established to discover and apply better strategies for disease prevention. The lab, staffed by two virologists, will allow us to advance vaccine technologies that are not commercially available, including novel approaches that could better control viral diseases.

"This facility gives us a way to try out new vaccine technologies to see if they work," says Joseph Fent, a veterinarian in our hog production group. "We want to see if we can improve animal health by looking beyond what is currently commercially available."

Our research laboratory on the Raleigh campus of North Carolina State University College of Veterinary Medicine was established to discover and apply better strategies for disease prevention.

Fent explains that the influenza vaccine is one area of particular focus. Just like the influenza viruses that affect humans, porcine influenza mutates from year to year, and manufacturers update the vaccine annually. Some years, the commercial vaccine works well; other years, it misses the mark. Fent hopes that the research lab will be able to target emerging influenza strains to develop more effective vaccines specifically for Smithfield's herds.

We believe that the work in our vaccine research lab also holds promise in reducing the need for antibiotics to keep our animals healthy. Many viral diseases like influenza, PEDV, and Porcine Reproductive and Respiratory Syndrome—while not treated with antibiotics—cause animals to become more susceptible to bacterial illnesses, like pneumonia, which do require antibiotics. Since the majority of antibiotics are used to treat sick animals, it stands to reason that an additional benefit of better vaccine technologies could be healthier animals that require fewer antibiotics.

Genetics

Smithfield Foods' genetics research center has one primary aim: making a better pig. That may sound like the stuff of science fiction. But what our team does every day is the genetics equivalent of matchmaking.

Researchers select animals from generation to generation, pairing them up to create the ideal descendants for that perfect rack of ribs or the tastiest ham. We figure out which animals will make the best parents to produce the best offspring that will result in the best meat. The meat we produce today isn't something that happened by accident. It's the result of years of genetics research and effort.

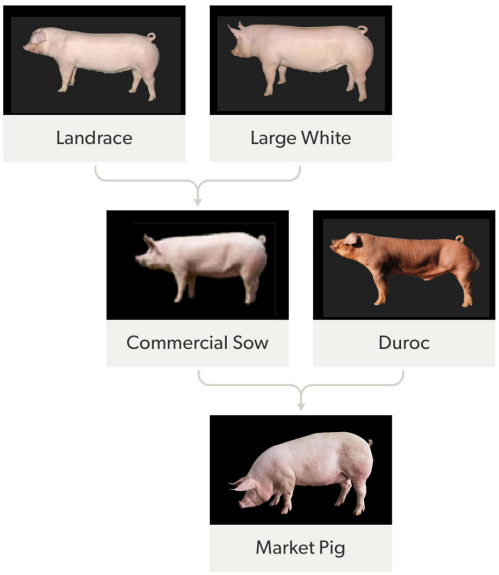
In facilities in North Carolina and Texas, more than 200 technicians, genetics researchers, and veterinarians look for new ways to improve the genetic traits of the animals, focusing on everything from a sow's nursing skills to a piglet's feeding abilities to the characteristics that result in the greatest flavor with the perfect amount of fat and marbling. We also select for specific genetic traits that will keep our animals comfortable and healthy. Our teams collaborate with other researchers across the United States and internationally, focusing on a host of features including a pig's ability to efficiently gain weight.

Using a variety of statistical tools, we collect hundreds of animal traits and analyze them to determine which are the best ones for the next generation going forward. We manage a range of objectives, from growth performance to tenderness to yield. And, of course, flavor. This type of work takes time—once genetic improvements are identified, it can take as much as five years for those changes to be represented in our food products.

One specific challenge our scientists are working to manage is heat stress. Swine growth naturally tends to decline during the warmer summer months, and, as a result, efficiency declines. By identifying pigs with genetic traits that are less susceptible to heat stress, we could increase the market weight of pigs during the summer months. These changes would have environmental and financial benefits because the animals would require less feed.

We firmly believe that Smithfield hogs offer superior taste and eating experience. Our hogs raised today are a combination of three heritage breeds: 100 percent Durocs on the male side and a 50–50 cross between Landrace and Large White hogs on the female side. Although the three lines are common worldwide, the hogs we have bred are unique within our industry. Our genetics program itself is also unique. Other meat companies in the United States use third parties to develop their breeding programs. Thanks to our vertically integrated research, we can literally trace the

genetic lines across our entire pork chain, from breeding to farms to the final product.



In addition, our hogs today require fewer resources to raise, thanks to a targeted effort by our geneticists to identify characteristics that enable us to raise animals more efficiently. For example, some humans gain weight more easily than others, the result of the genes they inherited. We want to produce hogs that gain weight more easily. That's because hogs that convert calories more efficiently require fewer resources (and fewer days) to grow from infancy to market weight.

Feed efficiency is especially important as we look ahead to a growing world population that could put pressure on food supplies. We're researching how to produce high-quality, high-protein products that require fewer resources and, thus, have a smaller environmental footprint.

The swine genome became available in 2009 and is the primary tool we use in our work today. From that data, we were able to refine our abilities to capture DNA information and use it to screen animals that will parent the next generation. It typically takes three to four years before we see the selections we have made show up in the animals on our farms.

We also keep in mind biodiversity, so we can ensure a diverse population of hogs. In other words, we breed across familial lines.

Outside of their labs, our geneticists spend quite a bit of time educating Smithfield employees about what they do. The program that describes their work, "The

Smithfield Experience," has trained thousands of Smithfield employees over the years, giving them insight into our breeding program and why it is so successful.

Gene Editing

It's important to note that Smithfield's robust genetic program does not currently include gene editing. We do not add or manipulate genes. Rather, we employ the science of genomics, which includes calculating thousands of genetic data points to accurately predict characteristics for the next generations of hogs. The science involved in gene editing is still evolving. The company's focus remains on the development and improvement of its products through careful selective breeding and genetic research. Smithfield will continue to monitor and study scientific research on gene-editing technology for potential future opportunities.

Genetically Modified Organisms

Meat and poultry livestock are not genetically modified organisms (GMOs). However, most of our animals are fed grains (including corn and soybeans) that may have used GMO technologies.

All GMO crops have been evaluated by a host of regulatory agencies, including the U.S. Food and Drug Administration (FDA) and the U.S. Environmental Protection Agency (EPA), as well as many scientific organizations, and have been found to be safe for people and animals to eat. There is no evidence that animals are affected by eating grain from plants with genetically modified characteristics.

At Smithfield, we monitor the dialogue about GMOs and stay current with the latest scientific research. We do not require any of our suppliers to be non-GMO.

Cloning

We do not produce meat products from cloned animals and have no plans to do so in the future. Although the FDA has concluded that meat products from cloned animals are safe for human consumption, the science involved in cloning animals is evolving. We will continue to monitor further scientific research on this technology.

We maintain our focus on the development and improvement of our meat products through careful selective breeding and genetic research, as detailed in this report.

Humane Euthanasia and Slaughter

There are times on farms when employees must humanely euthanize pigs following injuries or illnesses. Employees are trained by our veterinarians in accordance with the recommendations of experts, including the American Association of Swine Veterinarians (AASV) and the National Pork Board (NPB).

In recent years, we have been reviewing our operating procedures around euthanasia to ensure that we are using the most appropriate methods, based on the size and weight of the animals involved.

We have invested in research to understand which techniques cause the least pain and stress to the animals and to their handlers. For pigs weighing less than 65 pounds, we use either carbon dioxide (CO_2), which causes painless loss of consciousness and death, or a device called a non-penetrating captive bolt gun, which administers a controlled blow to the head without breaking the skin, instantaneously rendering the animal insensible and causing a quick death. For pigs larger than 65 pounds, we use a penetrating captive bolt gun that fires a retractable metal bolt into the brain, resulting in insensibility and death.

According to the AASV, humane methods will achieve the following:

- Minimize pain and distress to the pig during administration;
- Cause rapid loss of consciousness; and
- Result in death quickly and consistently.

Slaughter Methods

Smithfield Foods has led the U.S. pork industry in installing equipment to anesthetize pigs using carbon dioxide (CO_2). Our facilities use the Butina® CO_2 Backloader anesthetizer system,[1] which allows pigs to move slowly, in small groups, minimizing stress for the animals and their handlers. CO_2 anesthetizing is very effective and produces higher-quality meat than the older, single-file, electrical stunning systems.

Our international pork operations also utilize CO_2 anesthetizing, while poultry operations use both CO_2 and electrical water-stunning methods.

[1] While we primarily use CO_2 anesthetizing, we do use electrical stunning at one recently acquired sow harvest facility in Iowa. This method is recommended and published by NAMI as an effective method to comply with federal humane slaughter regulations, as well as promoting animal welfare and meat quality.

Safe Transportation

Transportation of animals from farms to processing plants is an important element of our animal care program.

All drivers who transport animals in the United States must be trained and certified under the National Pork Board's (NPB) Transport Quality Assurance® (TQA®) program, which provides education and guidelines for transporters, producers, and animal handlers on all aspects of hog handling and transportation. It should be noted that TQA certification does not ensure or audit compliance with the provided guidelines. Each processing facility does audit transporters to evaluate key criteria for the safe and humane hauling of livestock.

Each year, we transport over 130,000 truckloads globally of company-owned hogs from farms to processing plants.

We comply strictly with animal transport time guidelines in the United States and have systems in place to maximize the comfort and safety of the animals. For example, strategically placed fans and water misters help maintain animal comfort in hot weather.

In 2018, the number of truckloads of company-owned hogs transported in the United States from farms to processing plants increased due to an acquisition, while the number of accidents in the United States declined by half. About 55 percent of the more than 100,000 loads were hauled by our trucks and drivers.

Transportation Accidents Involving Market Hogs

Each year, millions of pigs are transported over many miles between farms and from farms to processing plants. The vast majority of those trips occur safely and without incident. Nevertheless, accidents do occasionally happen.

Our live-haul accident-response procedures are consistently applied across Smithfield Foods and widely regarded by animal care experts as the best in our industry. We have five equipment trailers in the United States and 20 in Poland, known as "rescue units," pre-positioned in key areas where our business activity is concentrated. These trailers are stocked with a variety of equipment, such as lights, penning equipment, saws, generators, and other devices that are needed when a truck carrying animals is involved in an accident.

When an accident occurs, designated company employees are dispatched to pick up a rescue unit and bring it to the accident site. Our aim is to have a rescue crew arrive at an accident site within the first hour of the incident. We carefully monitor all of the rescued animals that are brought to a plant to make sure they have not been injured. Injured animals that are humanely euthanized do not go into the food supply.

In our international operations, the required training program for all drivers includes basic instruction (e.g., operating specific equipment, loading, unloading procedures, etc.) and specialized training on live animal transportation according to European Union regulations.

U.S. Company-Owned Market Hog Transportation Accidents	2014	2015	2016	2017	2018
Total number of loads hauled	80,894	82,031	85,513	89,953	101,862
Number of accidents	4	6	18	16	8
Market hogs involved	710	1,030	3,366	2,779	1,360
Market hog transportation fatalities	234	190	555	348	249

Nearly all of the accidents resulting in hog fatalities in 2016 through 2018 involved third-party contract haulers, which Smithfield hires to transport our animals between farms and processing plants. We worked with these trucking companies and their employees to provide training to decrease the number of incidents. Data for 2017 and 2018 include additional volume resulting from our Farmer John acquisition.

International Company-Owned Market Hog Transportation Accidents	2014	2015	2016	2017	2018
Total number of loads hauled	26,278	27,577	30,143	29,822	31,303
Number of accidents	6	0	6	5	4
Market hogs involved	874	0	1,072	846	673
Market hog transportation fatalities	76	0	160	214	78

Our Commitment to Environmental Stewardship

At Smithfield Foods[1], we believe that protecting the environment is the right thing to do. Developing environmentally sustainable practices strengthens all aspects of our business, protects our people and the communities where we live and work, and satisfies customers' and consumers' desire to do business with companies with strong leadership in this area.

For more than a decade, we have focused on finding innovative solutions to optimize our supply chain, reduce waste, and improve our energy and water efficiency. Today, we are building on our guiding principles of Responsibility, Operational Excellence, and Innovation (ROI) to find additional ways to transform our business. We are leveraging new and existing partnerships to find sustainable solutions for using manure generated on our farms, significantly expanding our efforts to create renewable energy and supporting development of new fertilizer products. These changes help the environment while providing operating efficiencies and generating new streams of income. We continue to pursue challenging targets that call for even greater improvements while meeting increased global demand for protein.

Our environmental stewardship efforts include an industry-leading greenhouse gas (GHG) reduction goal that spans our entire supply chain, from the grain used to feed our animals to hog production to processing. We have pledged to reduce our absolute GHG emissions 25 percent by 2025, which will cut emissions by more than 4 million metric tons (or the equivalent of removing 900,000 cars from the road). This goal is applicable to our operations in the United States, where the vast majority of our business is located, and our efforts are centralized under our Smithfield Renewables platform. Our international operations reduced GHG emissions nearly

14 percent in 2018 compared to the 2014 baseline, exceeding their goal to reduce emissions five percent by 2020.

Our Environment Goals

- Reduce natural resource demand
- 100% compliance, 100% of the time

Our Environment Targets

- GHG emissions: 25% reduction by 2025 in the United States
- Energy: 5% reduction by 2020 globally
- Water: 10% reduction by 2020 globally
- Solid Waste: 75% reduction and zero-waste-to-landfill certification at 75% of our U.S. processing facilities by 2025; 10% reduction by 2020 in Poland and Romania
- Compliance: Reduce notices of violation (NOVs) to zero

The energy and water targets are normalized by production levels and measured against a 2014 baseline. The absolute GHG emissions goal and normalized solid waste reduction target are measured from a 2010 baseline. The solid waste target does not include hog production operations.

[1] All references to "Smithfield," "we," "us," and "our" are terms of convenience used to refer collectively to Smithfield Foods and all of its subsidiaries.

Value Creation

At Smithfield Foods, our culture of innovation and sustainability empowers and encourages employees to find new opportunities to improve efficiency and reduce waste. We aim for operational excellence, sharing innovative approaches across our operations so that employees can apply best practices.

We also find ways to benefit from operational byproducts and underutilized resources. For example, in 2018, we announced a new initiative that will significantly expand our efforts over the next 10 years to capture and generate value from biogas generated on our farms in the United States. Below are some examples of the value these efforts created for our company and our stakeholders in 2018.

2018 by the Numbers	Value	Volume
Materials composted	$0	21,594 tons
Recyclable cardboard sales	$1.4 million	28,702 tons
Biogas captured	$669,000	175,978 gigajoules
Wind energy leasing	$274,000	137 megawatts
Solar energy leasing	$9,000	3 megawatts

Cardboard sales are estimated based on average per-ton income. Biogas value represents savings from natural gas not purchased and is based on actual cost. Wind power contribution is estimated based on the percentage of the project located on our property. Solar value represents lease income for land utilized to generate solar power.

We also track the costs and savings of sustainability projects as part of our Environmental & Sustainability Awards program. Over the past five years, we have saved an estimated $95 million in operating costs through environmental awards projects.

Awards Program Impacts	2018
Projects submitted	171
Awards granted	13
Capital expenditures	$18.3 million
Cost reductions	$10.9 million
Water saved	1.2 billion gallons
Natural gas saved	74,200 dekatherms
Electricity saved	8.8 million kilowatt hours
Material diverted from landfill	21.2 million pounds

Estimated impacts are conservative because they only account for the first year of the project.

As a vertically integrated company, we are uniquely positioned to make strategic investments that create economic opportunities for hundreds of local farmers that supply the grains we use to feed our animals. We also partner with farmers to support identification and implementation of enhanced agronomic practices and have established programs in the United States where farmers can buy seed from Smithfield at reduced prices. These practices help to reduce farmers' environmental impact while also improving their profits.

We also make investments to produce operational efficiencies for our business, as well as to support the farmers that supply our grain. For example, feed mill upgrades have allowed us to purchase and store higher volumes of grain closer to our hog production operations. In addition, we bought several grain elevators, including three in North Carolina in 2018, so we can purchase grain directly from farmers, which also helps us buy more grain locally. We now buy roughly 63 percent of our animal feed directly from farmers, compared to about 7 percent in 2008.

These investments drive value for our own operations and provide opportunities for several hundred farmers to increase the sustainability and profitability of family farms.

Our Management Approach

Effective environmental management is critical to the success of our business and to the achievement of our long-term sustainability goals. Our Environmental Policy and Water Policy serve as the foundation for our efforts to minimize our impact on natural resources throughout our value chain.

Our environmental management system (EMS) helps us manage our environmental actions in a comprehensive, systematic, planned, and documented manner. Our Environmental Policy is aligned with the ISO 14001 Standard. Smithfield Foods was the first in our industry to have all farms and facilities certified to ISO 14001. This includes our hog farms, feed mills, and processing facilities in Europe—excluding two recently acquired facilities in Kutno, Poland. ISO 14001 is considered the international gold standard for environmental management. To obtain certification, an organization must meet a rigorous and comprehensive set of requirements and criteria developed by more than 2,000 experts from around the world. It also requires independent audits by third parties.

In 2017, we realigned our environmental affairs team to better match resources with needs and to build on our sustainability leadership. We created three new positions: director of Smithfield Renewables and Hog Production environmental affairs; assistant vice president of sustainability; and senior director of environmental affairs. All three report directly to our chief sustainability officer.

We also assigned new roles and responsibilities to several other key environmental positions, creating environmental subject matter experts that also oversee specific geographic regions to leverage our strengths, experiences, and expertise. As we aim to go beyond 100% compliance, 100% of the time in our environmental programs, the creation of these key roles will elevate our efforts and further embed environmental sustainability into our operations and our company culture.

Performance Summary

We continue to make progress toward our 2020 environmental targets and commitments. As our company has grown, we have increased both food production and the number of facilities we operate.

As a result, our absolute use of certain resources has increased, along with some emissions. However, we make our products much more efficiently, resulting in lower use of resources for every pound of product we generate.

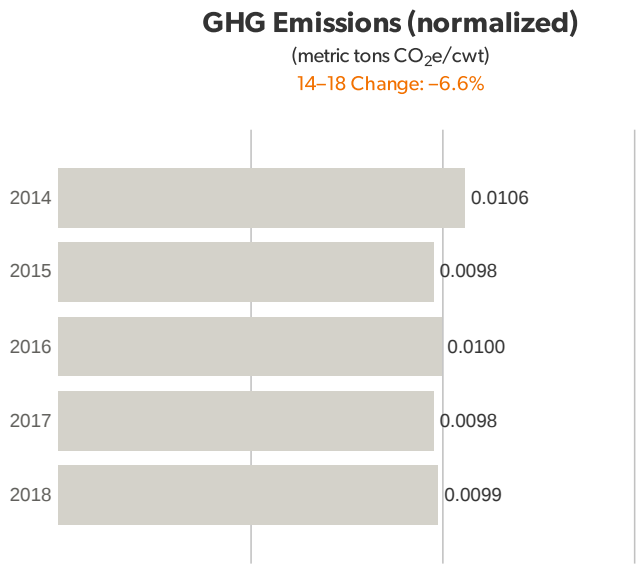
U.S. Performance

Normalized[1] greenhouse gas (GHG) emissions and solid waste generation declined from 2014 to 2018. Our normalized energy use has increased, which is partly attributable to our production of more ready-to-eat foods that require greater energy use for us to make but less for customers and consumers to prepare and enjoy. Our normalized water use increased slightly. This is partially due to some of our recently acquired hog production operations that have not fully implemented our water conservation programs. Implementation is underway, and future results are expected to improve. Our existing processing operations saw continued decreases in 2018.

Performance Since 2014 (normalized)

- GHG emissions down 6.6%
- Energy use up 5.5%
- Water use up 2.7%
- Solid waste down 8.7%

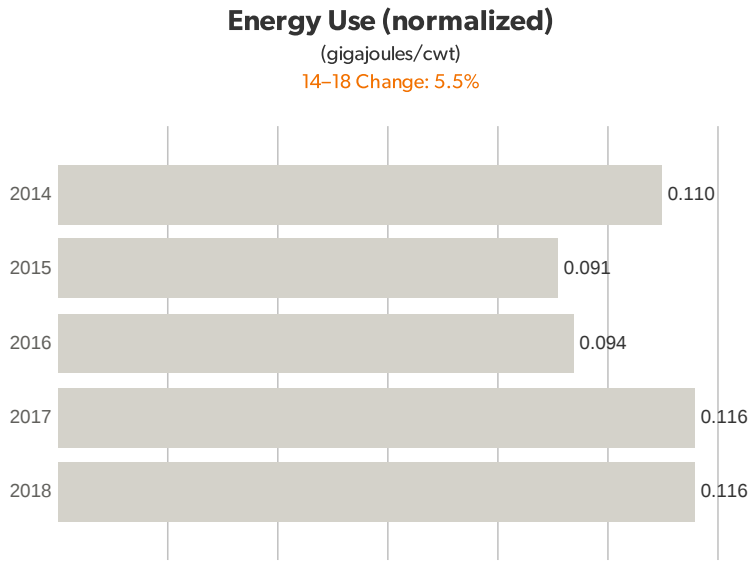
We expect our processing facilities to achieve 5 percent reductions in normalized energy use and GHG emissions by 2020 in support of our overarching goal to reduce our overall GHG emissions by 25 percent by 2025.



CO_2e stands for carbon dioxide equivalent. CWT equals 100 pounds of product.

Direct and Indirect GHG Emissions	2014	2015	2016	2017	2018	14-18 Change
Carbon dioxide (CO_2) emissions (metric tons)	1,057,299	1,089,596	1,120,687	1,113,098	1,236,369	16.9%
Methane (CH_4) emissions (metric tons CO_2e)	2,290	2,330	2,397	1,839	2,554	11.5%
Nitrous oxide (N_2O) emissions (metric tons CO_2e)	3,207	3,233	3,200	2,985	4,212	31.3%
GHG Emissions (metric tons CO_2e)	**1,062,796**	**1,095,159**	**1,126,284**	**1,117,922**	**1,243,135**	**17.0%**

CO_2e stands for carbon dioxide equivalent. Data does not include hog production operations. Smithfield Foods reports GHG emissions using The Greenhouse Gas Protocol Initiative developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). Publicly available emissions figures are used where no reliable data is available from energy providers. We report on scope 1 emissions (direct) and scope 2 emissions, which include indirect emissions associated with the use of purchased electricity and steam.



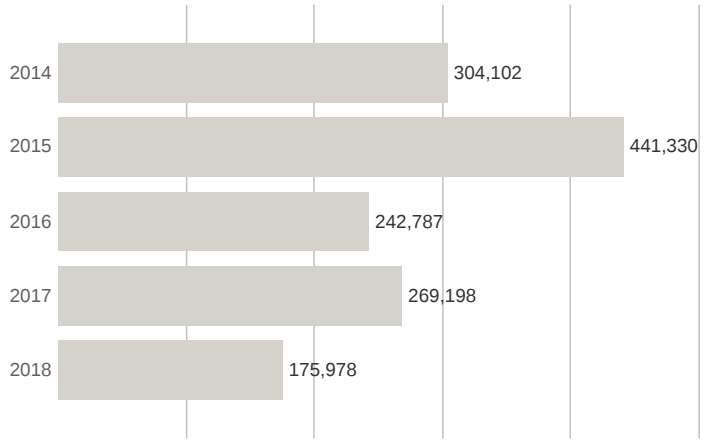
CWT equals 100 pounds of product. The 2017 figure was previously reported as 0.112. It has been restated.

Direct and Indirect Energy Use by Fuel Type (gigajoules in millions)	2014	2015	2016	2017	2018	14–18 Change
Natural gas	8.27	8.85	6.99	9.40	10.54	27.4%
Propane	1.40	1.31	1.55	1.35	1.66	18.6%
No. 2 oil (includes transportation diesel)	0.74	0.75	0.90	0.86	0.96	29.7%
No. 6 oil	0.13	0.00	0.00	0.00	0.00	100.0%
Biogas	0.30	0.44	0.24	0.27	0.18	–40.0%
Total Direct Energy Use	**10.84**	**11.35**	**9.68**	**11.88**	**13.34**	**23.1%**
Electricity	5.78	5.96	6.06	5.94	6.56	13.5%
Total Indirect Energy Use	**5.78**	**5.96**	**6.06**	**5.94**	**6.56**	**13.5%**
Total Energy Use	**16.62**	**17.31**	**15.74**	**17.82**	**19.90**	**19.7%**

Biogas Captured

(gigajoules)

14–18 Change: –42.1%

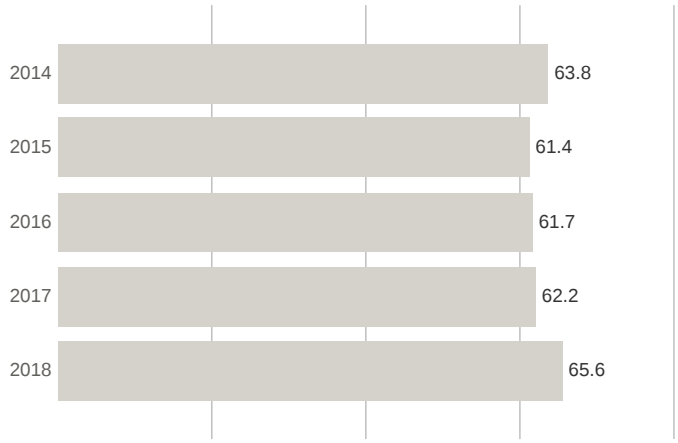


Data does not include biogas captured at our farms under recently established renewable energy projects. Farm biogas data will be included beginning in 2019. Biogas in 2018 was lower than 2017 due to additional temporary flaring of biogas, which is not included in our totals. Adjustments are underway and results should return to historic levels in the fall of 2019.

Water Use (normalized)

(gallons/cwt)

14–18 Change: 2.7%



CWT equals 100 pounds of product.

Water Use (billions of gallons)	2014	2015	2016	2017	2018	14–18 Change
Water use	9.21	9.80	9.78	9.90	11.24	22.0%

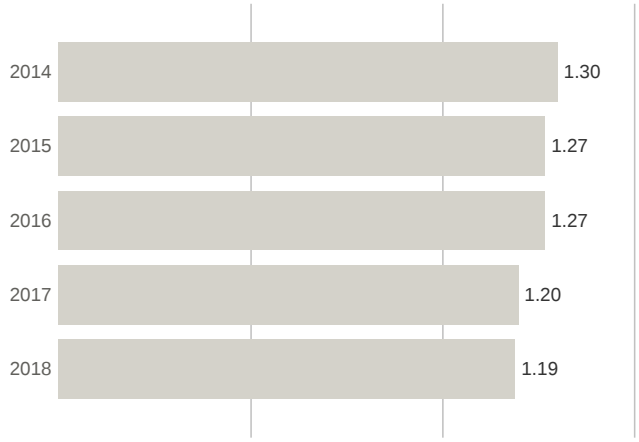
Water Sources (billions of gallons)	2014	2015	2016	2017	2018	14–18 Change
Groundwater	4.55	4.69	4.67	4.58	5.40	18.6%
Municipal	3.84	4.17	4.18	4.34	4.82	25.4%
Surface water	0.79	0.94	0.94	0.97	1.02	28.5%
Reused and recycled	0.47	0.50	0.30	0.32	0.16	–65.7%

Water Discharge (billions of gallons)	2014	2015	2016	2017	2018
Public-owned wastewater treatment plant	3.042	3.23	3.406	3.26	3.61
Direct	2.444	2.771	2.625	2.79	2.73
Land irrigation	2.506	2.451	3.159	2.35	2.23

Solid Waste to Landfill (normalized)

(pounds/cwt)

14–18 Change: –8.7%



Data does not include manure. At our hog production operations, solid waste is typically hauled away for a fixed fee; as a result, reliable weights are not available. CWT equals 100 pounds of product.

Total Waste Disposition (tons)	2014	2015	2016	2017	2018	14–18 Change
Cardboard recycled	27,833	26,724	27,288	27,173	28,702	3.1%
Metals recycled	2,016	2,153	3,973	3,318	3,367	67.0%
Plastics recycled	884	1,259	2,395	1,655	1,579	78.6%
Wastewater sludge land applied	12,120	52,775	47,573	38,531	37,149	206.5%
Material composted	28,358	20,512	20,819	24,374	21,594	–23.9%
Material anaerobically digested	16,673	29,285	9,851	17,654	16,949	1.7%
Waste to energy	14,506	25,916	39,261	41,660	50,038	244.9%
Hazardous waste	13	9.3	9.4	7.5	37.1	185.4%
Universal waste	37	62.4	28.7	27.2	18.8	–49.2%
Solid waste to landfill	65,400	70,946	71,373	68,590	74,674	14.2%
TOTAL	**167,840**	**229,642**	**222,571**	**222,990**	**234,108**	**39.5%**

Data does not include manure. At our hog production operations, solid waste is typically hauled away for a fixed fee; as a result, reliable weights are not available. CWT equals 100 pounds of product.

Compliance	2014	2015	2016	2017	2018
Notices of violation (NOVs)	18	11	18	13	18
Fines	$400	$400	$6,500	$17,545	$169,962

Data includes all company-owned domestic farms (531) and plants (46). All three facilities that received fines in 2018 corrected their respective issues and are now in compliance.

Compliance at Contract Farms	2014	2015	2016	2017	2018
Notices of violation (NOVs)	14	34	41	48	30

Contract growers own their facilities and are responsible for permits and compliance with rules and regulations. We regularly consult with them on compliance issues such as nutrient management, environmental permitting, and new technology. We also monitor their environmental performance and offer assistance when requested. Data is based on reviews of state databases and production staff surveys.

International Performance Summary

Normalized greenhouse gas (GHG) emissions, energy use, water use, and solid waste generation all declined significantly between 2014 and 2018. In fact, we reduced emissions as well as water and energy use by at least 13 percent, and solid waste was reduced by half.

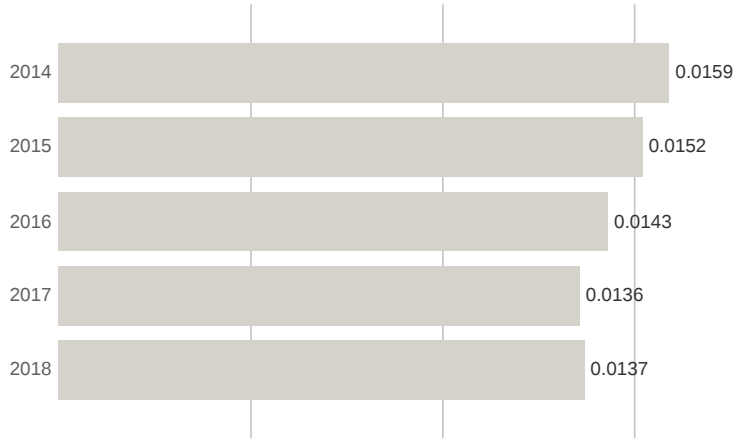
Performance Since 2014 (normalized)

- GHG emissions down 13.8%
- Energy use down 15.7%
- Water use down 14.3%
- Solid waste down 49.5%

Greenhouse Gas (GHG) Emissions (normalized)

(metric tons CO_2e/cwt)

14–18 Change: –13.8%



CO_2e stands for carbon dioxide equivalent. CWT equals 100 pounds of product.

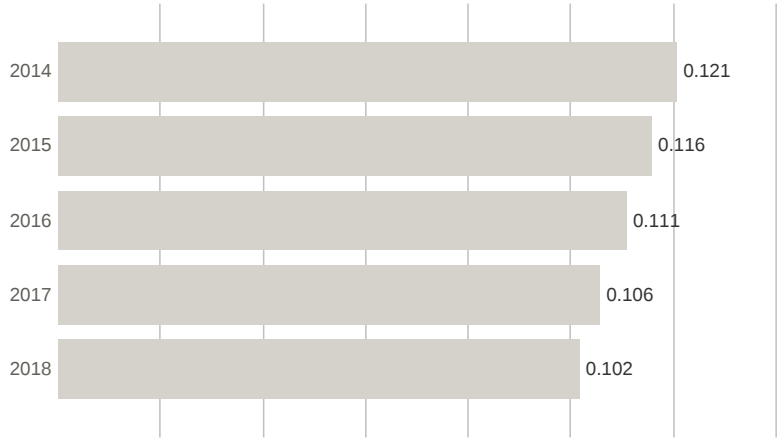
Direct and Indirect GHG Emissions	2014	2015	2016	2017	2018	14-18 Change
Carbon dioxide (CO_2) emissions (metric tons)	227,067	235,131	247,860	257,515	244,186	7.5%
Methane (CH_4) emissions (metric tons CO_2e)	196	211	212	213	194	–1.0%
Nitrous oxide (N_2O) emissions (metric tons CO_2e)	337	276	289	292	320	–5.0%
GHG Emissions (metric tons CO_2e)	**227,600**	**235,618**	**248,361**	**258,020**	**244,700**	**7.5%**

CO_2e stands for carbon dioxide equivalent. Smithfield Foods reports GHG emissions using The Greenhouse Gas Protocol Initiative developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). Publicly available emissions figures are used where no reliable data is available from energy providers. We report on scope 1 emissions (direct) and scope 2 emissions, which include indirect emissions associated with the use of purchased electricity and steam. Data does not include hog production operations.

Energy Use (normalized)

(gigajoules/cwt)

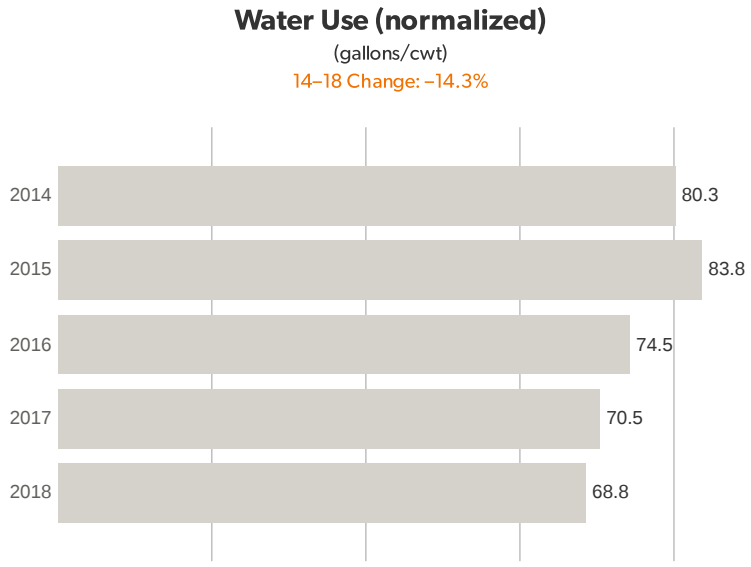
14–18 Change: –15.7%



CWT equals 100 pounds of product.

Direct and Indirect Energy Use by Fuel Type (gigajoules in millions)	2014	2015	2016	2017	2018	14-18 Change
Natural gas	0.87	0.91	0.99	1.07	1.09	25.3%
Propane	0.23	0.25	0.29	0.31	0.33	43.5%
No. 2 oil (includes transportation diesel)	0.09	0.10	0.11	0.10	0.08	–11.1%
Coal	0.58	0.55	0.55	0.56	0.57	–1.7%

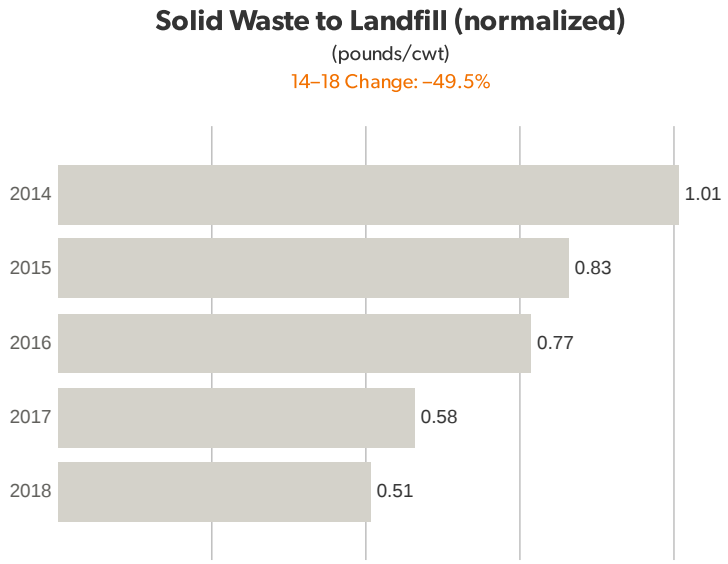
Total Direct Energy Use	**1.77**	**1.81**	**1.94**	**2.04**	**2.07**	**17.0%**
Electricity	0.85	0.90	0.98	1.02	1.03	21.2%
Steam	0.01	0.01	0.02	0.02	0.003	−70.0%
Total Indirect Energy Use	**0.86**	**0.91**	**0.99**	**1.04**	**1.03**	**20.1%**
Total Energy Use	**2.63**	**2.72**	**2.93**	**3.08**	**3.10**	**18.0%**



CWT equals 100 pounds of product.

Water Sources (billions of gallons)	2014	2015	2016	2017	2018	14–18 Change
Groundwater	1.09	1.26	1.27	1.37	1.41	29.4%
Municipal	0.60	0.65	0.65	0.65	0.64	6.7%

Reported volumes may have been affected by improved data recording at our hog production operations in Romania.



Data does not include hog production operations. CWT equals 100 pounds of product

Solid Waste to Landfill (pounds in millions)	2014	2015	2016	2017	2018	14–18 Change
Solid waste to landfill	14.4	12.8	13.4	11.0	9.9	–31.3%

Compliance	2014	2015	2016	2017	2018
Notices of violation (NOVs)	5	6	7	7	5
Fines	$6,155	$750	$120	$803	$2,454

The table above includes data about NOVs for all international company-owned farms and processing facilities. All NOVs in the table above that were received between 2015 and 2018 were related to record-keeping issues and did not impact the surrounding communities.

[1] We report some metrics in absolute terms (e.g., billions of gallons of water). Others, such as our environmental targets, are expressed as consumption rates (e.g., gallons per 100 pounds of product). We use these normalized figures to track trends in the efficiency with which we use resources year over year. The reported percentage changes are calculated based on non-rounded values and may vary from those calculated based on the rounded figures shown in this report.

Energy

Our processing facilities and farms use significant amounts of energy in the form of electricity, fossil fuels, and biogas. We strive to use less energy throughout our

operations and, where possible, generate renewable energy. Energy use at our processing facilities represent approximately 75 percent of our total consumption.

We have established a target to achieve a 5 percent reduction in normalized energy use at our U.S. farms and plants by 2020 compared to a 2014 baseline. At the end of 2018, our normalized energy use rose by 5.5 percent. This rise in energy consumption is primarily attributed to increased production of prepared foods such as precooked entrées, bacon, and sausage. These products require more energy for us to produce, but much less energy for consumers to prepare and enjoy.

In addition, we set a target to reduce greenhouse gas (GHG) emissions at our U.S. processing facilities by 2020 compared to a 2014 baseline. At the end of 2018, we had reduced our GHG emissions per 100 pounds of product by 6.6 percent.

Our international processing facilities reduced GHG emissions nearly 14 percent compared to the 2014 baseline, and energy use declined nearly 15 percent. These results were achieved through a variety projects. In Romania, one of our meat processing facilities began capturing and reusing steam from a rendering process onsite to heat water for meat processing that was previously heated by natural gas. Other projects in Poland and Romania included changing to heating fuels with lower emissions, upgrading equipment, and modernizing facilities, such as installing new roofing and LED lighting.

Our Performance Since 2014 (normalized)	United States	International
GHG emissions	−6.6%	−13.8%
Energy use	5.5%	−15.7%

Normalized GHG emissions and energy use are expressed as rates (e.g., gigajoules per 100 pounds of product). This way, we are able to track how efficiently we are using resources to produce our products.

Notwithstanding our 2020 GHG target discussed above, we also established a more comprehensive goal to reduce emissions across our entire supply chain 25 percent by 2025. We are working to establish a process to measure our progress compared to a 2010 baseline and we are confident that our recently announced expansion of renewable energy projects at our farms puts us on a solid path toward achieving our new goal.

See the Performance Summary for energy and GHG data.

Reducing Energy Use

In our quest to improve efficiency, reduce resource use, and meet our ambitious environmental goals, we routinely look for ways to reduce energy use across our business. For example, on our farms we have installed more efficient motors in our cooling fans and feed systems and, during our conversion to group housing systems, upgraded to a more efficient heat source for our piglets. Additional examples are below.

Better Buildings, Better Plants Program and Challenge

Our facilities in Sioux Center, Iowa; Elizabeth, New Jersey; and Cudahy, Wisconsin, participate in a U.S. Department of Energy (DOE) program that offers companies technical assistance as they work toward energy efficiency improvements.

Through the Better Buildings, Better Plants Program and Challenge, we set a goal to reduce overall energy intensity at those facilities by 25 percent over a 10-year period ending in 2020. Between 2010 and 2018, we also invested $87 million to improve our processing capacity and modernize our facilities. By replacing inefficient equipment, installing LED lighting, adding occupancy sensors, and installing low-flow water nozzles, among other efforts, we were able to drive up production without increasing energy use.

We surpassed our goal of reducing energy intensity at these facilities in 2017, three years ahead of schedule, and at the end of 2018, had reduced energy intensity 25 percent compared to 2010. We will continue reporting our energy use to DOE through 2020, exploring further opportunities to improve energy efficiency. We also plan to share what we've learned with other facilities throughout the company to push us toward our 25 percent by '25 greenhouse gas (GHG) reduction target.

Upgrading to LED Lighting

Metal-halide lamps date back to the 1960s. They produce ample light and can withstand a wide range of temperatures and humidity levels. But they are inefficient and are difficult to dispose of after they burn out.

We have developed a program to replace metal-halide light fixtures with LEDs, which use approximately 70 percent less electricity, in all our operating facilities. Compatible with occupancy sensors, these fixtures can be dimmed and/or programmed to operate at specific hours; they also take less time to turn on or off

than their metal-halide counterparts, all of which lead to even further energy savings.

We expect to complete the transition by 2025. Once finished, we anticipate annual energy savings of approximately $2 million. The lamps have additional benefits beyond just energy savings, including improved visibility for employees and less frequent maintenance.

Air

Federal, state, and local laws govern common types of air emissions in the food processing industry. These emissions may occur, for example, from boilers or steam generating units at our plants and from the smoking of products in our ovens. Where applicable, our facilities obtain operating permits for emissions, and utilize state-of-the-art control technologies to capture and treat those emissions. We also promote fuel efficiency and use cleaner burning fuels, such as natural gas, when possible. These efforts have reduced our normalized emissions over the last five years.

Our domestic facilities also report emissions of nitrogen oxides (NO_x) and sulfur oxides (SO_x) to the U.S. Environmental Protection Agency (EPA) and state regulatory agencies as required by their operating permits. The number of reporting facilities fluctuates over time due to changes in reporting requirements, varied reporting timeframes, and operational changes. The tables below show total and normalized emissions for our facilities that are required to report air emissions to the EPA, as well as our international operations.

NO_x Emissions	2014	2015	2016	2017	14–17 Change
NO_x (kilograms)	493,849	418,398	406,849	493,726	−0.02%
NO_x (kilograms/cwt)	0.0049	0.0041	0.0042	0.0045	−8.2

CWT equals 100 pounds of product. 2017 emissions include 22 facilities in the United States and eight facilities in Poland. Figures for 2018 were not available when this report was released.

SO_x Emissions	2014	2015	2016	2017	14–17 Change
SO_x (kilograms)	313,460	266,801	187,193	247,031	−21.2%
SO_x (kilograms/cwt)	0.0031	0.0026	0.0019	0.0022	−29.0%

CWT equals 100 pounds of product. 2017 emissions include 22 facilities in the United States and eight facilities in Poland. Figures for 2018 were not available when this report was released.

Most of our farms are subject to state and local regulations related to emissions, including odor. These regulations range from direct limits on emissions based on objective testing to indirect requirements such as setbacks, odor control plans, manure management plans, operating training, and other permit requirements. Improvements in the efficiency of raising our animals have reduced emissions from our farms over time, and we continue to comply with, or exceed, all applicable regulations related to emissions at our farms.

Ozone Depleting Substances (ODS)

Ozone depletion caused by gases associated with refrigeration is an issue facing the food processing and packaged goods industries. The Clean Air Act designates two types of ODS: Class I ODS, such as chlorofluorocarbons (CFCs), and Class II ODS, such as hydrochlorofluorocarbons (HCFCs).

We do not use Class I refrigerants. We limit use of HCFCs, and are in the process of eliminating all Class II refrigerants. All but three of our smaller facilities use anhydrous ammonia (NH_3) as their primary refrigerant. NH_3 is more energy efficient than HCFCs; it does not contain ODS and is not listed as a greenhouse gas (GHG). We document all non-ammonia refrigerants used at each of our operating facilities. We do not report ODS emissions in this report.

In order to ensure that all our facilities are compliant with new federal ODS regulations that became effective in January 2019, we developed a refrigerant management training program and standard operating procedures. We also implemented a new management tool that allows our facilities to inventory equipment and maintain records related to refrigerant use, disposal, leaks, and equipment repair. This ensures any leaks are properly repaired and minimizes risk of future leaks.

Water

Water is an essential natural resource for our business and our communities, and as a result, we regularly seek opportunities to manage our usage. At our processing facilities, which make up about two-thirds of our total consumption, we use water for cooking and sanitation. On our farms, we use water for our hogs to drink and for sanitation, cooling, and biosecurity. We regularly take steps to manage our impact to the quantity and quality of local water sources, particularly in areas where water is

scarce. Our Water Policy guides our water conservation efforts and helps us stay on track to meet our performance targets.

In 2018, our water use in the United States per 100 pounds of product was 2.7 percent higher than our 2014 baseline. This is at least partially due to some of our recently acquired hog production operations that have not fully implemented our water conservation programs. Implementation is underway and future results are expected to improve. These increases were partially offset by water efficiencies gained at our processing facilities. Our absolute water use at our farms and plants rose by 22 percent, which is commensurate with our increased production volume.

Water use in our international operations has declined 14 percent in 2018 compared to the baseline in 2014. These results were achieved through various projects including optimizing water used at our production facilities and identifying and repairing water leaks.

Our Performance Since 2014 (normalized)	United States	International
Water use	2.7%	−14.3%

Normalized water use is expressed as a rate (e.g., gallons per 100 pounds of product). This allows us to track how efficiently we are using resources to produce our products.

See the Performance Summary for water use data.

Industry Leader in Water Management

Ceres, a nonprofit advocate for sustainability leadership, routinely evaluates companies in four industries (packaged food, beverage, meat, and agricultural products) and examines how water risks might disrupt operations, limit growth, or increase agricultural input costs, and, therefore, affect the profitability and competitive positioning of food companies.

Ceres ranked Smithfield Foods first in water management among leading meat companies in its 2017 report "Feeding Ourselves Thirsty." Companies were evaluated on 20 core aspects of water risk management, including policy development and data gathering, business planning and goal-setting, and stakeholder engagement and disclosure. Smithfield received 33 (out of 100) points. This is a significant accomplishment given the water use challenges for agricultural businesses.

Collaborating to Reduce Water Use

In May 2018, staff at our processing facility in Smithfield, Virginia, hosted Smithfield engineering and environmental specialists, vendors, and equipment suppliers at an ideation session where we reviewed the facility's performance and discussed various innovations that could improve several performance metrics, including water use. Throughout 2018, we implemented several projects identified at this meeting, including locating and repairing dripping hoses, adjusting water flow to hot water tanks, installing new water meters, and rerouting pipes in select portions of the facility. Water use between August and December 2018 was nearly 20 percent lower than the same period in 2017. As a result of these innovative changes, we expect to use roughly 120 million fewer gallons of fresh water and to reduce wastewater discharge by the same amount, saving more than $800,000 each year in utility costs.

Milan Facility Supports Local City's Efforts to Reduce Water Use

The town of Milan, Missouri, the location of one of our processing facilities, sources its water from nearby Lake Elmwood Reservoir. After a recent drought, the reservoir fell well below normal levels, leading to concerns about future water availability for citizens and local businesses. Two of our employees were invited to join a committee tasked with developing plans to mitigate drought impacts on the local community. Motivated by this experience, we set about reducing our facility's water demand.

We first analyzed water use at the facility and identified several opportunities to optimize water use as well as reduce demand. In addition, we recycled treated water that had passed through the treatment facility to be used for various tasks that didn't require potable water. This was made possible by fabricating a filtered water tank with a high-volume pump that could support these activities without impacting productivity.

In three months, the facility improved water efficiency by nearly a third, which saves nearly 150 million gallons and $130,000 annually.

Slight Improvements Lead to Environmental & Sustainability Awards

Several of our facilities earned company recognition in 2018 for operational innovations that reduced water use.

A group of employees at our facility in Denison, Iowa, discovered they could collect water used to cool the rails that carry hog carcasses throughout the facility and reuse it three times before it needed to be treated and discharged. This optimization project reduced annual water use by more than five million gallons, saved $35,190 in water bills, and had no impact on production. The most notable aspect of this project may be that it cost $144 and only took two hours of labor to execute.

Similarly, at our processing facility in Tar Heel, North Carolina, we increased water recycling in 2018. Facility management found it could only operate five days a week without exceeding its water discharge permit limit. To remedy this, the facility made changes to its water system so that it could utilize treated wastewater to feed its evaporative condensers instead of purchasing potable water. As a result of these changes, the facility discharges 1.5 million fewer gallons of water each week and can now operate six days per week without exceeding its water permit or disrupting the current wastewater discharge process.

At our facility in Starachowice, Poland, we purchased ultrasonic equipment that allows staff to identify, locate, and fix underground water leaks in its water handling systems. As a result, the facility lowered water consumption by 20 percent and wastewater discharge by 10 percent. This $1,000 investment provides an annual savings of approximately $300,000 in utility bills and wastewater treatment costs.

In Opole, Poland, we expanded and modernized our steam condensate return system, which doubled hot water recovery efficiency. This $11,600 investment lowered annual hot water demand by 185,000 gallons, improved energy efficiency by 20 percent, decreased annual natural gas consumption by 75,600 cubic meters, and will result in $45,600 annual savings.

Read our Water Policy.

Solid Waste

Smithfield Foods seeks to be as efficient as possible when making and delivering our products. Reducing solid waste at our facilities, and sending less of it to landfills, is an important part of our commitment to environmental stewardship.

We do this by redesigning packaging, increasing recycling and composting at our facilities, and selling materials that have residual value—all steps toward supporting the creation of a more circular economy.

In 2018, our domestic operations sent roughly 14 percent more material to landfills than in 2014 due to increased production. However, production efficiency improved, lowering the amount sent to landfill per 100 pounds of product by 8.7 percent. Were it not for a fire at one of our animal feed facilities resulting in more than 15 million unexpected pounds of solid waste, we would have exceeded our target of reducing normalized waste to landfill by 10 percent by 2020 two years early.

Our New Target

- Reduce our solid waste to landfill by 75 percent and achieve zero-waste-to-landfill certification at 75 percent of our U.S. facilities by 2025

In addition, we are pleased with progress in our international operations to reduce solid waste going to landfill, which was nearly 50 percent lower compared to the baseline in 2014. In August 2018, our processing facilities in Romania were the first of our international locations to be certified as “zero-waste-to-landfill,” contributing significantly to this result.

To gain certification, the facilities in Romania met the same internal program specifications as our facilities in the United States, including not sending waste to landfill for a full year. This nearly two-year process required making changes to sourcing practices for raw ingredients, packaging materials, and other production inputs. A primary focus was source reduction and improved recycling practices for plastic, paper, batteries, and electronics. For example, we contracted with a supplier that replaced our wooden pallets and single-use industrial containers with durable, reusable alternatives. Hourly employees participated in training focused on our practices to collect, sort, and send waste materials for recycling.

Our Performance Since 2014 (normalized)	United States	International
Solid waste to landfill	−8.7%	−49.5%

Normalized solid waste to landfill is expressed as a rate (e.g., pounds per 100 pounds of product). This allows us to track how efficiently we are using resources to produce our products.

See the Performance Summary for solid waste data.

While we're proud of our progress, we know that we can accomplish more. Since establishing our 2020 target, we have learned a great deal about waste reduction opportunities in our business and have also established valuable partnerships that will help take our efforts to the next level.

As a result, we recently established a new waste reduction initiative to reduce our solid waste to landfill by 75 percent and achieve zero-waste-to-landfill certification at 75 percent of our facilities by 2025. This normalized solid waste reduction target is measured from a 2010 baseline and does not include hog production operations.

Waste Reduction Project Gains Recognition

The team at our Orange City, Iowa, facility began sending rendering material to a local biofuel producer, which now utilizes the material to make energy. By finding an alternative use for the waste product, the facility reduced the waste it sends to landfill by 250 tons each year while saving nearly $87,000 in disposal costs.

Case Study: Making Significant Progress Toward Achieving Zero Waste to Landfill

We pride ourselves on our ability to produce more food with fewer resources and less waste. Simply put, any materials sent to landfill represent lost opportunities for optimizing resources and reducing waste. Being more efficient saves money, gives us a competitive edge, and enables us to meet our commitment to responsible operations.

In 2018, we were well on our way to meeting our established target to reduce normalized solid waste to landfill. Through this process, we made tremendous strides in learning about waste reduction opportunities in our business and realized we could set a higher bar and accomplish more.

A significant part of our waste stream—more than 25 percent—is made up of cardboard, so it's one of the first places we look to make improvements. Our facilities look for ways to reduce the amount of cardboard coming into our facilities. In addition, establishing processes to collect and sort cardboard waste and investing in equipment to bundle it for transport are always part of the initial "easy wins" in reducing a facility's waste going to landfill.

Other sources of waste are tougher to manage. For example, plastic that has been in contact with meat ("protein-contaminated plastic") is one of the most challenging components of our waste stream, since it's not readily accepted into traditional recycling facilities. This is where establishing partnerships can advance our efforts forward more quickly. For example, our new recycling partner, Waste Connections,

introduced us to a company that's able to clean, sanitize, deodorize, and recycle protein-contaminated plastics. To date, four facilities in North Carolina have sent more than 295,000 pounds of plastic film for processing. This new partner plans to build a facility near the Waste Connections recycling plant in Clinton and will recycle the plastic film, barrels, and totes from our facilities in North Carolina.

To meet our new target, we are encouraging all domestic facilities to achieve zero-waste-to-landfill certification.

Actions Facilities Must Take to Achieve Zero-Waste-to-Landfill Certification

- Not send any waste to landfill for 12 consecutive months;
- Cut normalized waste by at least 10 percent from the facility baseline;
- Reuse or recycle at least 50 percent of generated waste;
- Limit incineration without energy recovery to hazardous and medical wastes;
- Reduce stabilized and landfilled hazardous waste to 0.1 percent of waste generated;
- Ensure waste management costs do not exceed 105 percent of baseline costs;
- Maintain records to be reviewed by staff and/or a third-party auditor.

Achieving this certification results in lower waste disposal costs, generates revenue from selling recyclables, curbs emissions, improves efficiency, and bolsters the company's reputation. Plus, we believe it's the right thing to do.

"This has been one of the more rewarding projects in my three decades in the protein industry," says John Meyer, senior director of environmental affairs for Smithfield Foods. "Since implementing our zero-waste-to-landfill initiative in 2010, we've reduced our waste going to landfill by half and certified 12 of our processing facilities and distribution centers to our zero-waste-to-landfill standard. These achievements required the collective effort of employees at all levels, and our success is thanks to the support and leadership of our executive team, as well as several meaningful new partnerships in the recycling industry."

At the end of 2018, nearly a quarter of all our processing facilities and distribution centers in the United States had achieved zero-waste-to-landfill certification. These efforts have helped reduce our normalized solid waste generation 50 percent since 2010 and saved more than $349,000 in disposal costs per year without significantly raising operational costs. In March 2019, we received a 2019 Manufacturing

Leadership Award from the National Association of Manufacturers for our zero-waste-to-landfill efforts to date.

Zero-Waste-to-Landfill Facility	Certification Date	Landfill Diversion (tons/year)	Annual Savings
Peru, Indiana	May 2013	440	$95,000
St. James, Minnesota	March 2014	1,306	$0
Springfield, Massachusetts	June 2014	242	$66,000
Bolingbrook, Illinois	June 2014	142	$50,000
Sioux Center, Iowa	February 2016	2,467	$20,000
St. Charles, Illinois	March 2016	1,466	$14,000
Mason City, Iowa	August 2016	889	$24,900
Omaha, Nebraska	October 2016	350	$2,900
Elizabeth, New Jersey	December 2017	52	$0
Orange City, Iowa	February 2018	262	$53,500
Greenfield, Indiana	March 2018	Not applicable	Not applicable
Romanian Fresh Pork Operations	August 2018	80	$0
Cudahy, Wisconsin	December 2018	1,803	$23,000

Landfill diversion describes several methods, including source reduction, recycling, reuse, energy recovery, and others. The Greenfield, Indiana, distribution center has not sent materials to landfill since it opened. There is no diversion data.

Our newest zero-waste-to-landfill facility in Cudahy, Wisconsin, is our most impressive project to date. With 1,140 employees, this facility is not only the largest in our system to achieve certification, it is also the oldest Smithfield facility, established in 1839. We expect this achievement will inspire other large facilities to achieve certification by showing that zero waste to landfill is possible, even at a large scale.

We are looking forward to our Vernon, California, location's certification in August 2019. When finished, it will surpass the Cudahy facility as the largest facility (1,240 employees) to complete our certification program. Other facilities on track to be certified in 2019 include Caroll, Iowa, and San Leandro, California.

Collaborating in Pursuit of Zero Waste

To encourage continuous improvement, our operations teams host "ideation" sessions at our processing facilities. At these meetings, we invite engineering, environmental, health and safety, and food safety specialists to offer their expertise, identify improvement opportunities, and share best practices. The group reviews the host facility's performance data and assesses its progress against goals related to energy use, water consumption, waste generation, and production volume. The team also tours the facility, discusses ongoing projects, and brainstorms how to improve performance. We have found these collaborative sessions to be a powerful way to identify innovative efficiency projects.

For example, in 2017, we invited the integrated waste services company Waste Connections (WC) to join an ideation session focused on finding operational efficiencies and waste reduction opportunities. During this and subsequent meetings, we discovered opportunities to work together to benefit both of our businesses. In 2018, we announced an agreement whereby WC constructed, and is now operating, a specialized recycling facility in Clinton, North Carolina, to sort and recycle processing waste materials from our nearby food production facilities in North Carolina. Smithfield will receive income from the sales of recyclable materials sent to the Waste Connections facility.

With this first-of-its-kind collaboration between a food company and a waste services provider, all of our North Carolina processing facilities will be in an excellent position to achieve zero-waste-to-landfill status as we pursue our most ambitious solid waste reduction target to date. This project will also support Smithfield's companywide sustainability initiative to reduce greenhouse gas (GHG) emissions 25 percent by 2025 throughout its supply chain.

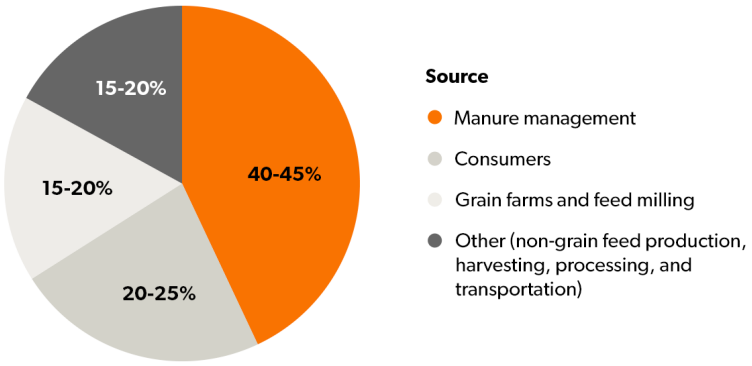
Smithfield Renewables

As the world's largest pork processor and hog producer, Smithfield Foods has long been committed to producing "Good food. Responsibly.®"

Our sustainability program sets the industry standard for keeping our animals safe and healthy, producing safe food, keeping our workers safe, and helping local communities, all while protecting the environment. Because agricultural emissions are estimated by some to account for 9 percent of greenhouse gas (GHG) emissions in the United States, we also recognize the need to do our part and address this issue across our own supply chain.

In order to better understand our carbon impact, we partnered with the University of Minnesota's NorthStar Initiative for Sustainable Enterprise (NorthStar). NorthStar provided the data, tools, and analytical expertise necessary to trace our agricultural supply chain, from grain farms to kitchens. Through this partnership, we were able to establish our baseline 2010 GHG emissions for our domestic operations and to begin focusing our efforts on areas where we can make the greatest impact.

GHG Emissions (U.S. Operations)



2010 baseline

Based on this work and with the help of Environmental Defense Fund (EDF), we established a goal for our domestic operations to reduce our absolute GHG emissions 25 percent by 2025—the first protein company to make such a commitment. To support achievement of this ambitious plan, we coordinate our

carbon impact reduction and renewable energy efforts under our Smithfield Renewables platform, which is led by a senior director reporting to our chief sustainability officer. An advisory committee of internal experts guides our efforts by evaluating current and potential projects and directing a companywide strategy for renewable energy projects.

Smithfield RENEWABLES

A wide range of projects are underway to help us meet our 25 by '25 commitment:

- Developing "manure-to-energy" projects at 90 percent of hog finishing spaces in North Carolina, Utah, and Virginia and nearly all hog finishing spaces in Missouri over the next decade.
- Partnering to create a fertilizer from hog manure that outperforms traditional commercial-grade fertilizer.
- Streamlining our logistics network and adopting new technologies to reduce truck miles driven.
- Launching an ambitious solid waste reduction plan at all our U.S. facilities to be achieved by 2025.
- Implementing ongoing operational efficiency projects that result in lower energy use, including refrigeration, lighting, and other equipment projects.

Supply Chain

When we talk about our supply chain at Smithfield Foods, we think about everything that goes into the production and distribution of our foods.

Our supply chain begins at the farms that grow grain for our animals. It incorporates our vertically integrated hog farming operations, our processing facilities, and the transportation network that brings packaged products to retail stores, restaurants, and other customers. Our supply chain also includes the materials used to package our foods and the ingredients we use to make everything from seasoned pork ribs to meatballs. We also work with our supply chain partners to ensure we are providing consumers with quality foods produced in a responsible manner.

Our ability to reduce our impact on the environment depends in large part on the degree of control we have over a particular area of our supply chain. For many food companies, the largest environmental impacts occur upstream, where a company may know little about the production practices or environmental footprint of its suppliers' suppliers. However, at Smithfield our vertically integrated structure has allowed us to make great strides in collaborating with our grain suppliers to encourage more sustainable practices on the farms that produce feed for our pigs. Similarly, we're working with our trucking contractors to encourage more efficient transportation.

We are partnering with experts along the way to inform our decisions. For several years, we have worked with Environmental Defense Fund (EDF) on a variety of supply chain initiatives aimed at producing our products more sustainably. EDF published a report summarizing our work together to highlight the benefits and progress achieved through our collaboration. The University of Minnesota's NorthStar Initiative for Sustainable Enterprise (NorthStar) developed our 2010 greenhouse gas emissions (GHG) baseline and helped us identify our greatest opportunities to reduce GHG emissions.

This portion of the Environment section covers the following stages of our supply chain: grain production, hog production, packaging, and transportation and logistics.

Year-over-year data demonstrating our progress in reducing our water, energy, and waste footprints can be found in the Performance Summary.

Learn more about consumer use.

Grain Production

Smithfield Foods buys substantial amounts of grain each year: in 2018, we fed our domestic hogs more than 10 billion pounds. With approximately 15 to 20 percent of our carbon footprint originating from the feed we purchase, helping farmers improve their crop yields while reducing emissions is critical to helping us reach our 2025 greenhouse gas (GHG) reduction goal.

Although we don't own the grain farms[1] that produce our animal feed, we have collaborated with Environmental Defense Fund (EDF) for several years to help farmers in our domestic supply chain optimize fertilizer use and minimize related runoff on their farms. With the support of EDF, we established our target to increase our purchases of sustainably sourced grains.

Project Target

- By 2018, 75% of grain purchased by Smithfield (farmed on roughly 450,000 acres) to be grown with efficient fertilizer and soil health practices.

Progress: Target Exceeded

- At the end of 2018, 80% of grain purchased by Smithfield came from approximately 560,000 acres where efficient fertilizer and soil health practices were implemented.

Smithfield's Grain Sourcing Program	Acres	Percentage of Suppliers Participating
2014	21,500	4%
2015	94,800	16%
2016	327,735	55%
2017	410,830	69%
2018	560,060	80%

Our sustainable grain programs include several projects established with EDF. To learn more, click on the links below.

Our Agronomics Program

While fertilizer is an essential tool for agriculture, it can be a driver of crop-related GHG emissions. A study conducted in 2017 by the University of Minnesota's NorthStar Initiative for Sustainable Enterprise (NorthStar), a Smithfield partner, estimated that grain accounted for 15–20 percent of the company's carbon footprint. To reduce the environmental impact of its grain supply, Smithfield teamed up with Environmental Defense Fund (EDF) to help farmers find ways to optimize fertilizer use and improve soil health through our Smithfield Agronomics program, also known as SmithfieldGro.

Our program provides free agronomy advice and tools to help farmers in our U.S. supply chain produce the same amount of grain using less fertilizer. By choosing the right crops, utilizing more efficient fertilizer application, and adopting best practices —such as cover crops—farmers can boost soil health, improve water quality, and reduce GHG emissions—all while increasing profits. Over the last several years, we have developed a variety of projects that boost the performance of our grain suppliers and minimize carbon impacts within our supply chain.

For example, Smithfield agronomists in the southeastern and midwestern United States host regular meetings with grain farmers to share advanced techniques to make their operations more efficient and sustainable. We recently connected our grain suppliers with companies that provide software to manage surface water runoff and with others that provide information about applying pesticides and herbicides more precisely ("precision agriculture"). Participating farmers also receive discounts from our preferred fertilizer suppliers.

Our agronomists also travel to grain farms, providing information and advice about strategies to improve fertilizer usage and crop production. For example, our agronomists suggest that farmers utilize cover crops when appropriate. They also formulate seed mixes based on soil needs and help farmers buy them at discounted rates. All of these efforts can help farmers' bottom line.

In Iowa, our agronomists help contract hog growers write enhanced nutrient management plans that allow them to replace commercial fertilizer with treated manure. They also share industry information about grain values to help farmers decide which crops would be most profitable in the coming seasons.

To date, we have helped hundreds of grain farmers implement cover crops, nitrogen sensors, and other conservation practices on about 560,000 acres, primarily in the Southeast and, more recently, in the Midwest.

Supporting Suppliers' Access to Financial Support

Our agricultural supply chain work also is benefitting from two U.S. Department of Agriculture (USDA) Regional Conservation Partnership Program (RCPP) grants: one for $500,000 in North Carolina and another for $1 million in North Carolina and Iowa. The RCPP helps grain farmers with the costs of adopting conservation practices such as establishing nutrient management systems, planting cover crops, and practicing conservation tillage. Smithfield and EDF partnered with other agriculture and conservation organizations to secure these financial opportunities.

Early Corn Harvest Program

In the southeastern United States, corn growers face significant risks during hurricane season. Over the years, numerous hurricanes and tropical storms have devastated many corn crops, often destroying much of a given year's harvest.

To help reduce the risk farmers face from these events, Smithfield has invested about $18 million over six years in mechanical grain dryers and launched an early harvest program. Farmers in areas that are at risk of storm damage can harvest corn early and take it to Smithfield's dryers, which are located nearby. We charge discounted drying fees and help them find buyers (including Smithfield, who pays a premium). Farmers participating in the program earn more money per bushel, don't have to transport their crops far, can dry their corn for less money, and get it to our feed mills several weeks early.

This program improves farmers' economic returns by getting more of their crop to market, limiting overhead costs, and reducing losses from storms or pests. It also helps our East Coast operations, providing us with high-quality corn from local fields and decreasing our reliance on corn purchased from distant sources.

Promoting Alternative Crops

We often encourage our grain suppliers to plant alternative crops, especially in the winter as cover crops, to reap big benefits. These crops generate a viable, sturdy harvest during the "off-season" that can be sold to Smithfield, creating extra income. This practice also enhances soil quality, which can improve crop production for their primary spring and summer grains.

To encourage farmers to plant winter wheat, we buy premium wheat seed and sell it to farmers on consignment (meaning they pay at harvest) for less than half of what they would pay on their own. In 2018, Smithfield sold 161,400 wheat seed bags in North Carolina, South Carolina, and Virginia, over 2.5 times the number sold at the program's inception in in 2016. In return for their participation, farmers sell at least 60 bushels per acre of their harvest back to Smithfield. This reduces the farmers' risk at harvest time and gives Smithfield access to locally grown, cost-effective wheat for making hog feed.

We also have expanded our storage capacity in the region, so we can buy grain earlier in the season when the quality is higher. This also benefits the farmer, who receives higher prices, and eliminates the risk of crop loss during hurricane season.

Overall, this program has built stronger relationships with farmers, improved nutrient management in our supply chain, and increased our supply of locally grown wheat.

For several years, we also have been encouraging farmers in the Carolinas and Virginia to grow grain sorghum as an alternative to more traditional feed. Sorghum, an excellent source of nutrition for pigs, can cost less to grow and produce better yields than corn, particularly in drought-prone regions.

In partnership with universities and state agronomists, we also urge farmers who do not achieve profitable corn yields (or who farm on less productive soils) to switch to sorghum as an alternative to more traditional grains.

Sorghum's low fertilizer demand reduces the risk of nutrient leaching and, thus, soil and water pollution. In addition, sorghum has a relatively short growing cycle, which also helps reduce demand for fertilizers and pesticides. All of these qualities make growing sorghum cheaper and more productive than corn for many farmers.

Because sorghum and wheat grains can be grown on the same fields in the same year, we also encourage farmers to "double-crop" the two grains, which is a

sustainable way to intensify grain production.

Helping Farmers Benefit from Growing Non-GMO Soybeans

To help our suppliers increase profitability, our agronomists created a reduced-cost seed program to grow non-GMO soybeans between major-crop seasons. Similar to our winter wheat program, farmers in our supply chain can purchase seeds for these crops from us at discounted prices. In exchange for the discounted seed and agronomic support, the farmers agree to market 40 bushels per acre to Smithfield, which utilizes its extensive grain elevator network to facilitate this program.

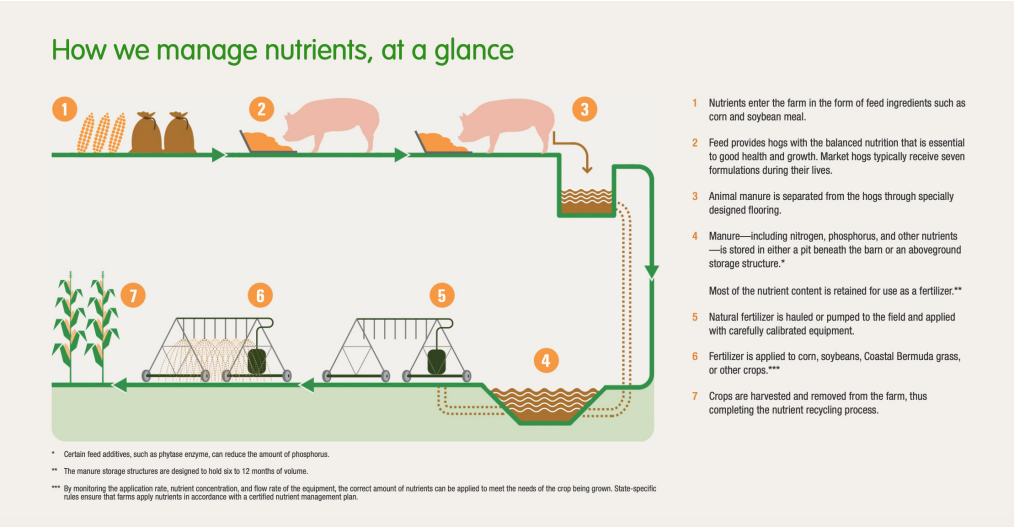
In 2018, the program resulted in 25,000 new acres of non-GMO soybeans. Participating farmers receive a premium price compared to their normal soybean production. This program helps sustain farmers' livelihoods and strengthens Smithfield's relationship with the grain suppliers that are critical to our business.

[1] While Smithfield does grow corn and other crops on land at our company-owned farms, the amount of grains produced represents only a small amount of the overall needs for our animals. We implement conservation practices at our own operations.

Hog Production

As a vertically integrated company, Smithfield Foods raises about half of the pigs needed to make our products in the United States. We are committed to protecting the environment on and around our hog farms through pollution prevention and the continuous improvement of our practices and policies.

We have long viewed manure and the nutrients it contains as valuable resources, not as a waste stream. On our farms, we recycle nutrients in manure by applying lagoon effluent as fertilizer on cropland. We have continued to explore ways to create value from manure through innovative technologies while reducing potential environmental impacts and maintaining our commitment to manage manure responsibly. (See Manure Management FAQs for information on how we treat and manage manure.)



For example, we are partnering with other companies to turn manure into energy and sustainable fertilizer. These projects are important parts of our plan to achieve our 25 percent greenhouse gas (GHG) reduction target.

Water and Solid Waste

We use water on our farms for our hogs to drink and for sanitation, cooling, and housekeeping. But our most significant water usage occurs at our processing facilities. Learn about water and solid waste (other than hog manure).

Generating Wind and Solar Energy on Farms

Several of our farming operations in the western United States have idle land that receive abundant sunshine and consistent wind. We have partnered with renewable energy companies to make better use of that open space while offsetting fossil fuel use.

These projects bolster the local power grid while generating lease income for Smithfield. In addition, we've been able to lock in electricity rates for decades, lowering costs in the short term and reducing our exposure to volatile fuel costs longer term.

In Milford, Utah, nearly 40 percent of a 305-megawatt (MW) wind power farm sits on our property, with turbines capable of producing 135 MW, enough to power 68,625

area homes. In addition, this site includes a 3-MW solar farm capable of providing electricity to roughly 500 households.

These projects contribute to our plan to reduce greenhouse gas (GHG) emissions 25 percent by 2025.

We are in contract negotiations with several leading manufacturers and suppliers of green energy products to install, operate, and maintain new renewable energy projects capable of generating more than 5 MW on our properties in Arizona, California, Colorado, and Utah. Smithfield will pay the developers a fixed energy rate over the next 20 years, saving millions of dollars in energy costs.

In addition to solar and wind, we are supporting research efforts near our Milford, Utah, location aimed at establishing commercially viable enhanced geothermal energy systems. The Frontier Observatory for Research in Geothermal Energy (FORGE) project is a collaboration funded by the U.S. Department of Energy (DOE) and led by the University of Utah's Energy & Geoscience Institute (EGI). If successful, the project could increase the country's geothermal energy production from 3,000 MW to almost 500,000 MW. In June 2018, the DOE announced it will fund the University of Utah's laboratory that will support cutting-edge research and development for the next five years. We are supporting these efforts that benefit our neighbors by providing access to our land and water resources and have invested $10 million in local infrastructure improvements which will be used to transport power and water to the research site.

A story about this project can be found on NPR's All Things Considered.

Improving Feed Efficiency

A few decades ago, a hog raised in the United States required four pounds of feed in order to yield one pound of pork. Today's hogs, by contrast, require less than 2.5 pounds of feed to generate one pound of pork—a dramatic improvement in a relatively short period of time. Such efficiencies, gained as our industry has modernized many processes, don't just save money. Less feed reduces the amount of grain production needed to feed our animals and results in less manure that must be managed, which already has positively benefited our carbon footprint.

A series of improvements in large-scale hog farming have led to more efficient operations. For example, Smithfield's hogs are raised indoors in climate-controlled barns, which reduces illness, medical interventions, and mortality. Advancements in genetics also have enabled us to breed animals that grow heavier at a faster rate, reducing the amount of feed required from birth to market weight.

Our animal care experts routinely study ways to improve the efficiency of our animal feed. Precise formulas of corn, soybean meal, wheat, and minerals and vitamins, when fed in the proper amount at the right time, allow our animals to grow and gain lean muscle while retaining more nutrients.

In late 2017, we opened a state-of-the-art nursery research facility in North Carolina with the objective of further refining our feed formulations. Throughout 2018, we conducted nearly 30 scientific trials to further analyze feed formulas for seven specific growth stages, particularly the early months of a pig's life. In addition, our scientists assessed how different manufacturing methods, such as the size of food pellets, impact a pig's metabolism, nutrient absorption and growth patterns. Data from these trials is helping us develop more sophisticated dietary guidelines and nutritional plans. Animals that are studied in these trials are subject to the same animal care guidelines as all of the other pigs we own, including internal audits to ensure all aspects of our policies are followed.

These efforts contribute to improved hog production and reduce the level of nutrients to be managed on our farms. We will continue to look for similar innovations that will help us raise animals more efficiently.

Manure Management FAQs

We get lots of questions about manure management. So, we answered the most common ones below.

Do pigs wallow in their own manure?

Modern barns are often designed with slatted floors and routine flushing systems to remove manure from animal pens. This helps keep the animals cleaner relative to outdoor systems.

Where does the hog manure go?

The manure goes into several types of treatment systems that vary depending on several factors, including the location and type of the farm. The majority of our hog production operations use anaerobic treatment lagoons, which have been designed and certified by qualified professionals to treat and store the manure. Although the surfaces of the lagoons are exposed to the air, they are predominately anaerobic below the liquid surface. Lagoon sizes vary depending on the animal production on the farm. These lagoons allow the solids and the associated nutrients in the manure to break down naturally over a period of six to 12 months. Think of the lagoons as a "stomach" for a farm, where naturally occurring anaerobic organisms digest the materials. This treatment system can achieve up to 95 percent reductions in volatile solids and 85 percent reductions in biochemical oxygen demand (a common measure of the amount of oxygen necessary for bacteria to break down organic material in water). What remains is an anaerobically digested, low-solids effluent product that is highly suitable for use as an organic fertilizer and is land-applied for that purpose.

How are these treatment facilities managed?

Our Environmental Management System (EMS) requires daily checks on the status of all lagoons, weekly inspections, and regular internal audits. The results of all these efforts are recorded and reported to relevant agencies. We make sure that each company-owned farm has enough land available to utilize the manure to grow a variety of crops. Technical specialist staff prepare detailed and comprehensive nutrient management plans that specify the land area needed and types of crops to be grown. Land application systems are designed to ensure proper and precise application of these nutrients and are calibrated at regular intervals to maintain performance.

Are the treatment systems regulated?

The Federal Clean Water Act prohibits hog farms and other livestock operations from discharging manure or any wastewater to "waters of the state" at any time. All treatment systems require sign-off from state regulators, based on compliance with federally established standards, when they are built. In addition, hog production operations are regulated by state and/or federal water quality permits. These permits not only make comprehensive nutrient management plans enforceable under law, but they also require that we keep extensive records demonstrating compliance. Government inspectors visit hog production operations regularly (up to four times per year) to ensure compliance. Our internal requirements go well beyond regulatory compliance and record keeping; our EMS is certified to ISO 14001 standards, which is considered the international gold standard for environmental management.

Are there other location-specific regulations?

Yes. Local, state, and federal setback requirements ensure that hog farms are located in areas that minimize impacts to neighbors, as well as risks to local water sources. Setbacks vary, but examples include requiring farms to locate lagoons 500 feet from any public water-supply well and no less than 2,500 feet from schools, hospitals, parks, and other public spaces.

Are the anaerobic lagoons the best system available?

We utilize a variety of manure management technologies, depending on regulatory requirements and regional climatic conditions. Anaerobic lagoons are the most prudent. We have invested millions of dollars over the past 15 years to evaluate different manure management technologies and will continue to monitor emerging technologies. In 2001, we sponsored research at North Carolina State University that analyzed 18 different treatment technologies; the researchers concluded that anaerobic lagoons are the best technology for existing North Carolina farms.

What other types of systems does Smithfield Foods use?

Lagoons aren't feasible in colder climates, so, in these locations, farms use specialized storage systems to maximize the nutrient content of the liquid manure, which is known as slurry. The manure is stored in tanks or in-ground concrete pits for eventual application to crops as slurry.

How does Smithfield ensure that manure applied to fields won't wash away with the rain?

Our farms apply the fertilizer at controlled application rates and only at times when ponding and/or runoff will not occur; detailed records of all applications are kept and inspected by state regulators. Employees must inspect the fields before, during, and after manure application to make sure that no runoff occurs. In North Carolina, for example, operators carry pagers that alert them to developing weather events and are required to shut down land application when developing weather systems are within 30 minutes of the farm. This precipitation alert system has been used in North Carolina for several years.

Is it better for the environment to raise hogs outdoors?

While some outdoor systems disperse manure across large areas, many outdoor animal producers have little or no containment to control manure runoff during rainstorms. In addition, untreated manure is deposited on the ground all year long. Modern production systems have storage systems so that manure does not need to be applied during rainstorms or in seasons when crops are not growing. Additionally, hogs grown outdoors generally do not grow as efficiently as animals raised in more controlled environments. Any reduction in feed efficiency can increase overall greenhouse gas (GHG) emissions.

How do you manage manure at your farms in Poland and Romania?

Our international farms follow manure management practices that are similar to those at our farms in the United states. Each farm uses a comprehensive nutrient management plan when applying manure as organic fertilizer to local farmland. These plans must identify available land, include agrochemical and pedological studies, inform regulators of the nutrient content of the fertilizer, and evaluate the potential impacts that land application may have on local water bodies.

In Poland, each plan is approved by local authorities. In Romania, the local authorities prepare detailed plans, which include crop descriptions and projected yields, soil and manure test information, and rates of application to balance with the crops' fertilization needs. In addition, local and European Union environmental regulations require our international hog production operations to maintain Integrated Pollution Prevention and Control permits, which require strict application practices, groundwater monitoring, and soil quality analyses throughout the year.

Packaging

Consumers may not think a lot about our products' packaging, but we believe the packaging that surrounds a product can be just as important to success as the product inside. Optimizing food quality and ensuring the safety of our products require a huge variety of packaging materials, including plastic film, corrugated cardboard boxes, foam trays, absorbent liners, folding cartons, zipper bags, plastic tubs and lids, and rigid plastic trays.

Our team of food scientists and packaging engineers look for ways to redesign packaging to reduce its impact on the environment. We take every opportunity to address packaging, from source reduction to optimizing our products' packaging to limiting the amount of waste consumers generate after enjoying our products. This can reduce the resources needed to produce the packaging, cut waste, or allow us to

ship more product per truckload. In turn, this reduces our carbon footprint and reduces food waste.

We encourage development of packaging reduction projects, often in partnership with our suppliers, and to subsequently report their outcomes through our annual internal awards program. The best practices chosen for awards are shared throughout the company to encourage continuous improvement at all of our locations. A selection of our efforts is below.

Source Reduction

Our Springdale, Ohio, facility previously received large volumes of cheese in cardboard boxes containing multiple 15-pound bags. This created significant waste and meant workers spent time opening all boxes, putting them at risk of repetitive motion injuries. The procurement team worked with our supplier to send 660-pound bulk containers instead. With fewer packages entering the facility, cardboard waste fell by 64,000 pounds per year. The shift to bulk packaging also drove annual savings of more than $500,000.

Optimizing Packaging

We saw that sales of pre-sliced deli meats were increasing as busy shoppers looked for ways to avoid time waiting at the deli counter. Our Prime Fresh line offers consumers premium deli-quality meats already packaged for them at affordable prices.

The proprietary, minimalist packaging, which is designed to look like the meat was just sliced at the deli counter, keeps it fresher longer. The bagged packaging also uses 31 percent less packaging than the conventional tubs that hold other pre-sliced deli meats, which provides a host of sustainability benefits such as fewer transportation miles (due to the ability to fit 50 percent more product on trucks) and less waste sent to landfill. The resealable package and pre-sliced quality of the meat reduces handling and minimizes food waste.

Waste Reduction

We believe the best packaging improvements come from eliminating the parts that aren't necessary so our customers won't generate as much waste.

Our food safety team in Omaha, Nebraska, conducted shelf-life studies on its line of products and determined that the pepperoni bagger line doesn't need oxygen absorber packets to keep the product safe and fresh for consumers. When the packets were omitted from the packages, the facility cut costs by more than $183,000 annually, and customers will send 15,000 fewer pounds to landfill each year.

Transportation and Logistics

Improving transportation logistics is one of the keys to reduce our greenhouse gas (GHG) emissions. Our logistics network in the United States includes a system of multiple distribution warehouses and a fleet of nearly 6,500 third-party trucks traveling more than 3 million miles each week. For many years, our separately managed processing and distribution systems resulted in transportation inefficiencies, creating millions of miles in redundant trips that expanded our environmental footprint and reduced our profits. For example, pork bellies harvested in Tar Heel, North Carolina, might be turned into bacon in Milwaukee, Wisconsin, then driven back to the Southeast for sale at retail stores.

A major part of our logistics optimization initiative is reducing the number of our regional distribution centers and rerouting transportation routes to be more efficient. These changes, expected to be fully completed in late 2019, will result in four strategically located distribution centers: a new facility in Tar Heel, North Carolina, which was completed in 2018; a new facility in North East, Maryland, which is expected to be completed in 2019 and will be our first LEED-certified building; as well as facilities in Edwardsville, Kansas, and Greenfield, Indiana.

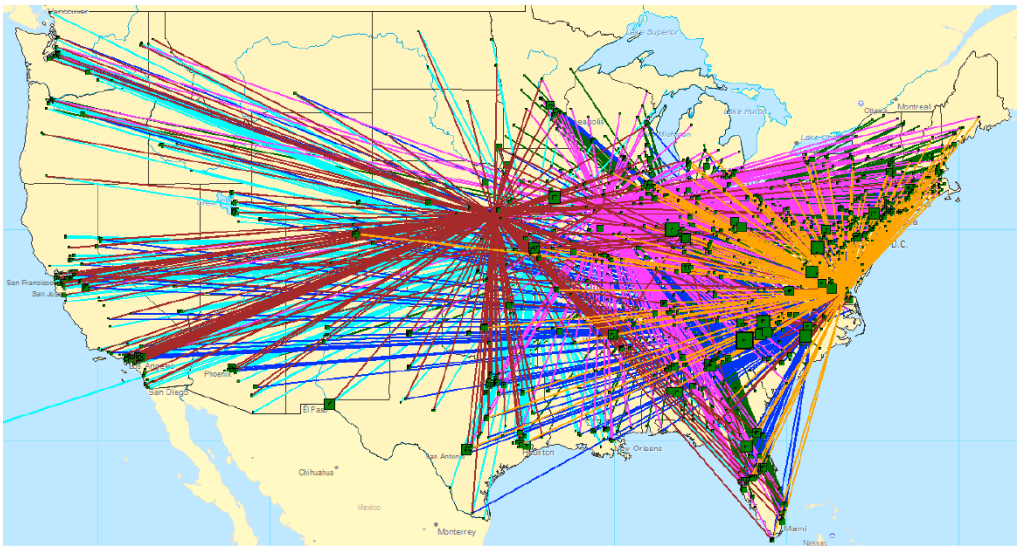
We estimate these optimization efforts will reduce distance traveled each year by approximately 11.2 million miles and reduce diesel consumption by 1.6 million gallons, equating to an annual GHG emission reduction of nearly 13,000 metric tons of carbon dioxide equivalent (CO_2e), or taking more than 2,800 passenger cars off the road annually. These changes also will reduce annual transportation and warehouse costs by an estimated $45 million and enhance customer service. Our efforts are

expected to create new efficiencies for our transportation partners as well, allowing us to negotiate better rates and reduce our costs further.

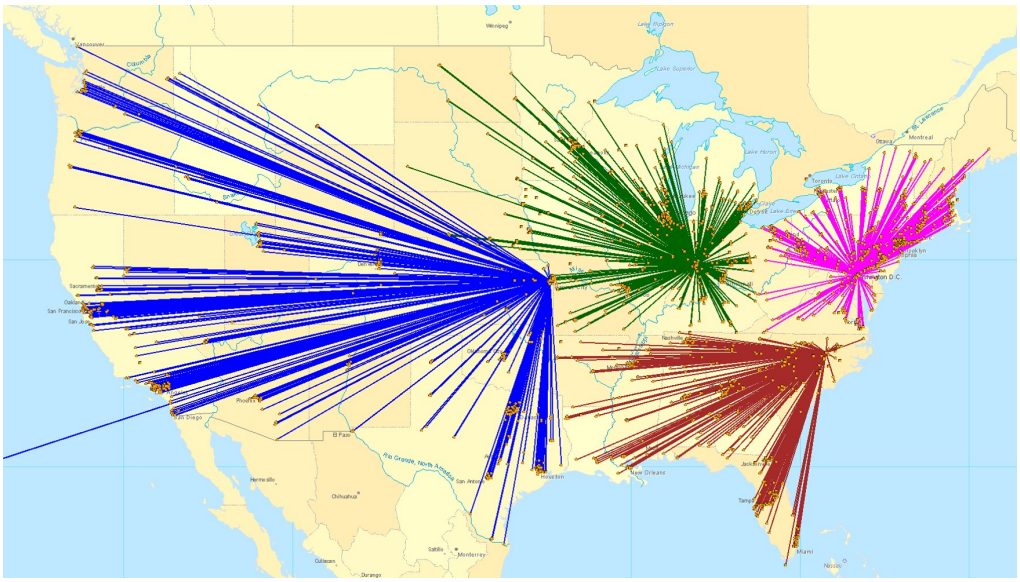
During 2018, we implemented the first phase of this initiative, investing over $100 million in building a new 500,000-square-foot, state-of-the-art distribution center in Tar Heel, North Carolina. The new building, which opened in November, is adjacent to our largest meat processing facility. The combination of these facilities, including the addition of new blast freeze and expanded cold storage capabilities, eliminates the demand for off-site cold storage, reduces product handling and product loss, and improves delivery times. The new facility incorporates many upgrades to reduce energy usage as well, including the use of LED lighting and efficient refrigeration systems.

Streamlining logistics is a substantial undertaking, but initial projects are showing great promise. Changes already implemented—shipping directly from our processing facilities to customers (without staging products at distribution centers); utilizing software to optimize transportation routes; finding ways to put more product on each truck; increased use of newer, lighter trucks; and renegotiated rates with our third-party trucking companies—lowered annual costs by $19 million in 2018, compared to 2015 (when the reorganization process began).

Prior Distribution Model



Distribution Future State



Equipment Optimization Earns Recognition

Staff at our Kinston, North Carolina, facility noticed that the refrigerated trailers were running at lower temperatures for longer periods of time than necessary at their default settings. By adjusting the program that controls the trailer's temperature, the team was able to reduce trailer fuel use by 49 percent without impacting food safety. This relatively simple change equates to an annual reduction in GHG emissions of 2,722 metric tons CO_2e, and lowers annual fuel costs by $140,000. We're excited by the potential this project has shown and estimate that adjusting the refrigeration units on the rest of the fleet could realize cost reductions of $1.5 million per year. The facility earned company recognition in 2018 for its waste reduction efforts.

Lightweight Equipment

Smithfield Foods' new contracts with third-party haulers require the use of new, lighter equipment when delivering Smithfield products. These trucks are more fuel-efficient and can carry more product, saving money, reducing the number of trips, and decreasing emissions. The table below illustrates the rapid adoption—and the immense potential—of lightweight equipment used by Smithfield's transportation contractors. We will continue supporting investments like this as we make our entire fleet as efficient as possible.

Transportation Using Lightweight Equipment	2016	2017	2018
Trucks	48	131	180
Shipments	5,020	13,630	18,720
Product shipped (pounds)	216 million	586 million	804 million
Loads eliminated	502	1,360	1,872
Miles saved	128,010	347,570	477,360
Fuel reduction (gallons)	18,290	49,650	68,194
Fuel savings (dollars)	$80,650	$218,970	$300,054
Greenhouse gas reduction (metric tons CO_2e)	148	401	551

CO_2e stands for carbon dioxide (CO_2) equivalent.

Consumer Use

The consumer use stage of the value chain (including refrigeration, cooking, cleanup, and waste disposal) accounts for a significant part of our greenhouse gas (GHG) emissions: 20 to 25 percent.

Because we have limited control over how consumers prepare our products, we are focusing our GHG reduction efforts in this area on producing more on-trend shelf-stable, pre-cooked foods with smaller portion sizes, which tend to reduce consumer energy use and minimize food waste. We actively work to increase energy efficiency at our facilities which mitigates the effects of this trend.


OVER 35 SLICES
RESEALABLE PACKAGE
Margherita
FOR TRUE ITALIAN TASTE
ITALIAN DRY SALAMI
Nutrition Facts
NET WT 5 OZ (142 g)
Margherita
SLICED
HARD SALAMI
NET WT. 5 OZ.
RESEALABLE PACKAGE RESEALABLE PACKAGE
Margherita
ITALIAN DRY SALAMI
NET WT. 7 OZ.

Case Study: Helping the Monarch Butterfly Recover

Who knew that hog farms could hold a key to boosting the population of monarch butterflies? Monarch populations have dropped by an estimated 95 percent since the 1980s—so much that they may soon be listed as a threatened species.

Smithfield Foods has partnered with Environmental Defense Fund (EDF) and Roeslein Alternative Energy (RAE) in the Monarch Butterfly Habitat Exchange (The Exchange), a program that aims to restore 1.5 million acres of high-quality breeding and nectaring habitat along the butterfly's migration route.

In 2018, we contributed $300,000 to fund the planting of monarch-friendly native milkweed and wildflower species on 1,000 acres of land near the hog farms that we own in northern Missouri. Watch the following video to learn more about this project.

David Wolfe, director of conservation strategy at EDF, likens the project to an "Airbnb for butterflies," opening up land on private farms and ranches for the monarchs to breed, feed, and rest along their migration route.

"We're excited about the potential of this unique partnership to support recovery of the beloved monarch butterfly and other pollinators that rely on healthy prairie habitat," said Wolfe. "In addition to providing habitat for bees, butterflies, birds, and other wildlife, this program offers multiple other environmental and financial benefits. The economic savings come from the benefits prairies have for helping hold water and nitrogen in the soil and reducing potential waste. There are also added revenue opportunities that come from appropriately timed harvesting of the prairie for biomass that can be used for biogas generation of clean natural gas."

The Exchange uses a Monarch Habitat Quantification Tool to evaluate the quantity and quality of butterfly habitat to help maximize the benefits of the restoration project for monarchs and for landowners, too. Not all habitats are created equal. Monarchs, for example, especially favor an abundance and diversity of milkweed and nectar plants for breeding, feeding, and migrating. Much of the biodiversity of native prairie lands has been lost over the decades, and many of the remaining grasslands have been invaded by non-native grasses that are not suitable as habitat for butterflies and other pollinators.

These prairie lands will also create biomass for methane generation.

Case Study: Supporting Sustainable Fertilizer Development

Since announcing our goal to reduce our greenhouse gas (GHG) emissions 25 percent by 2025, we have accelerated our efforts to find innovative ways to address our carbon footprint. Our new strategic partnership with Anuvia™ Plant Nutrients represents another innovative approach to support these efforts.

"Through Smithfield Renewables, we are aggressively pursuing opportunities to reduce our environmental footprint while creating value," said Kraig Westerbeek, senior director of Smithfield Renewables and Hog Production Environmental Affairs. "Along with projects that transform biogas into renewable natural gas, this is another example of how we are tackling this goal on our hog farms."

Organic matter in hog manure collected at Smithfield Foods' company-owned and contract farms in North Carolina will be used to create a commercial-grade fertilizer (SymTRX™) that achieves better crop yields compared to regular fertilizer.

"This is the beginning of a partnership based on a shared vision that will positively impact livestock and crop production," says Amy Yoder, Anuvia Plant Nutrients' CEO. "Our products reduce leaching and put organic matter back in the soil. Our process is a prototype for a circular economy as we reclaim organic waste, convert it, and reuse it on cropland."

Research conducted by Anuvia shows that SymTRX improves yields for corn, cotton, rice, and sugar beets when compared with ammonium sulfate fertilizers. Smithfield is partnering with the North Carolina Department of Agriculture to conduct independent trials, funded by Anuvia, aimed at verifying that similar results can be achieved with wheat crops.

Three Smithfield farms are participating in the trials, and one of our agronomists is assisting in the program. The farms were chosen to represent distinct geographic areas across North Carolina, as well as production of both milling wheat (for bread) and feed wheat (for hogs). Once harvested, in June 2019, the crops will be evaluated for overall yield, weight, and soil quality. Based on our own review of research, we expect the wheat grown with SymTRX will generate five to seven more bushels-per-acre than the state average.

The partnership also provides an opportunity to share best practices about efficient application of nitrogen fertilizer with farmers that supply wheat to us. Farmers participating in Smithfield's wheat program also receive a rebate from Anuvia on purchases of SymTRX, helping to boost the farms' operating profits.

Case Study: Expanding Our Efforts to Generate Renewable Energy

At Smithfield Foods, we have spent decades testing financially viable ways to turn manure into energy, creating value for our company and farmers while significantly reducing our carbon footprint.

These efforts are critical because methane emissions from hog manure account for approximately 40 to 45 percent of Smithfield's carbon footprint. Over the last several years, we launched various pilot programs to convert hog manure into renewable natural gas (RNG). In October 2018, we announced an expansion of these efforts that will help us achieve—and exceed—our goal of reducing the company's greenhouse gas (GHG) emissions 25 percent by 2025.

Under this initiative, we will implement manure-to-energy projects across 90 percent of Smithfield's hog finishing spaces in North Carolina, Utah, and Virginia and nearly all Smithfield's hog finishing spaces in Missouri over the next 10 years. We will convert existing anaerobic treatment lagoons to covered digesters or build new covered digesters to capture biogas.

To convert the waste methane on our farms to a form that can be used to heat homes and power local businesses, we formed a joint venture with Dominion Energy called Align Renewable Natural Gas to capture and transport biogas to central processing facilities. Smithfield and Dominion Energy are jointly investing at least $250 million in this initiative over the next decade with initial application on 90 percent of Smithfield's hog finishing spaces in North Carolina and Utah. In addition to these states, projects will be implemented in Virginia and have the potential for wider-scale application across the country. The new joint venture will immediately begin work at two large farm clusters in Duplin and Sampson Counties, North Carolina; Waverly, Virginia; and Milford, Utah. Construction of these facilities began in late 2018 with the first projects scheduled to be in-service in late 2019.

"Thanks to the dedication of our team members, technological advancements, and a viable market for renewable natural gas, 'manure-to-energy' projects are a sustainable endeavor for hog farms," said Stewart Leeth, vice president of regulatory affairs and chief sustainability officer of Smithfield Foods. "We are proud to expand our efforts across the country, shrinking our environmental footprint and investing in the protection of our planet's resources."

North Carolina Pilot Proves the Concept

In Duplin County, North Carolina, anaerobic waste digesters are now capturing biogas from approximately 60,000 hogs on five Smithfield contract farms as part of a project called Optima KV, which is depicted in the video below. Optima BioEnergy, LLC, a North Carolina-based company, is leading this project, which entails building new digesters and waste collection systems to reroute hog manure and liquids away from the properties' lagoons and into the digesters.

The digesters offer an environment free of oxygen, which enables anaerobic bacteria to feed on the hog waste, producing methane gas, as well as carbon dioxide (CO_2). After the manure is digested, the biogas is upgraded to pipeline-ready natural gas and injected into nearby pipelines. Duke Energy has signed a 15-year agreement to purchase the renewable natural gas (RNG), expected to be about 80,000 dekatherms (dth) per year. That's enough to power roughly 1,000 households in North Carolina.

We will expand these efforts across eastern North Carolina, including working with our contract farmers to convert existing anaerobic treatment lagoons to covered digesters or constructing new covered digesters to capture and sell biogas for conversion into RNG. In addition to producing RNG, the covered lagoon digesters will reduce the risks associated with severe rain events, such as hurricanes.

Our Tar Heel, North Carolina, facility is also working with Optima BioEnergy to leverage its wastewater treatment system to collect and clean biogas from an existing digester. The cleaned biogas will be injected into the natural gas pipeline to serve local consumers. Once completed, the project will power more than 2,000 homes in the surrounding area each year.

A Statewide Solution for Smithfield Locations in Missouri

In Missouri, Smithfield and Roeslein Alternative Energy (RAE) have expanded efforts to convert manure into energy at our hog farming operations throughout the state. Once completed, the project is expected to produce about 1.3 million dth of RNG annually, enough to provide electricity to about 15,400 homes and displace 130,000 gasoline vehicles, while eliminating 750,000 tons of CO_2 equivalent methane.

In addition to using manure to create RNG, this project will harvest replanted native prairie plants to supplement biogas generation, particularly during the cold winter months. This work is part of a prairie restoration effort aimed at supporting monarch butterfly numbers that Smithfield has supported in northern Missouri.

"From their leadership in creating renewable energy to conservation, Smithfield is changing what it means to be a food company," said Rudi Roeslein, chief executive

officer of RAE. “Smithfield’s willingness to embrace the power of prairie proves the industry can play a meaningful role in seizing the economic benefits of conservation.”

Creating Renewable Energy Opportunities for Utah Farmers

In Utah, we are building 26 hog farms equipped with covered lagoons capable of capturing RNG and piping it to the marketplace. This is the first time that Smithfield is building U.S. hog farms equipped with renewable energy technology.

The engineering includes in-ground digesters to collect biogas that will be refined and pumped into the natural gas pipeline. Once completed, the project will create enough RNG to power 4,000 homes each year. The farms, which will ultimately be owned and operated by contract growers, will generate new economic opportunities for local Utah farmers.

Producing Renewable Energy at our International Locations

We also are working to generate renewable energy at our hog farming operations in Poland. We have manure supply agreements with biogas project developers who designed, financed, and constructed three biogas plants located in villages near our locations. These plants produce approximately 9.2 megawatts of electricity and heat energy annually.

Recognition & Awards

Our sustainability program encourages and acknowledges the individuals and teams who seek to go beyond compliance and are making a positive impact on our operations.

Each facility—including those in Poland and Romania—is expected to submit at least one application to our internal awards program, which recognizes and rewards projects, innovations, initiatives, and programs that advance sustainability throughout our supply chain. Our goal is to capture the benefits from best practices related to six categories (community, energy, packaging, training and education, waste, and water) and share them across the company.

Environmental & Sustainability Awards are given to a winning facility or team based on several factors, including environmental impact, social significance, efficiency, cost-effectiveness, originality, technical value, and how easily the project or program could be implemented at other facilities. Winning facilities or teams receive recognition from senior management and cash awards of $2,000, with an additional $3,000 for donation to a local nonprofit of the award recipient's choice.

The President's Sustainability Excellence Award is given for projects that meet all the criteria above and best exemplify our guiding principles of Responsibility, Operational Excellence, and Innovation (ROI). Winning teams receive a $7,000 cash reward and an additional $3,000 for donation to a local nonprofit of the award recipient's choice.

The Zero Hero Award recognizes an individual who has made a significant contribution to our goal of 100 percent compliance through collaboration with operations, regulatory agencies, and stakeholders.

We presented 12 Environmental & Sustainability Awards, one President's Sustainability Excellence Award, and one Zero Hero Award in 2018.

Internal Awards

Environmental Excellence Awards

- Energy—Opole, Poland
- Energy—Kinston, North Carolina
- Water—Denison, Iowa
- Water—Starachowice, Poland

- Packaging—Omaha, Nebraska
- Waste—Kinston, North Carolina
- Waste—Orange City, Iowa
- Waste—Warsaw, North Carolina
- Community Outreach—Sioux City, Iowa
- Community Outreach—Central Region, North Carolina
- Training—Salt Lake City, Utah
- Training—Junction City, Kansas

President's Sustainability Excellence Award

See the Packaging section for information about the source reduction project in our Springdale, Ohio, facility that earned the President's Sustainability Excellence Award.

Zero Hero Award

This year's Zero Hero Award went to Moe Lavoie, environmental coordinator and safety manager at our Springfield, Massachusetts, facility. Moe's leadership contributed to top-tier environmental management performance including zero major or minor findings in the facility's latest ISO 14001 audit and zero notices of violation for the last nine years.

External Awards

All facilities also are expected to apply for at least one third-party environmental award (e.g., local government, environmental group, regulator, trade association, or charitable foundation). In 2018, our operations received 94 third-party awards, recognizing efforts to improve packaging, water management, and energy consumption, including several from the following organizations:

- Colorado Department of Public Health and Environment
- Ducks Unlimited
- Environmental Stewardship Institute
- Kansas Department of Health and Environment
- Kansas Water Environment Association
- Hampton Roads Sanitation District
- North American Meat Institute (NAMI)
- North Carolina Association of Soil and Water Conservation Districts
- North Carolina FFA (Future Farmers of America)
- U.S. Department of Energy's (DOE) Energy Reduction Recognition

Our Commitment to Safe, High-Quality Foods

Consumers put their trust in Smithfield Foods every time they eat one of our products. That's why the safety and quality of our foods is fundamental to our success as a company, underscoring our mission to provide "Good food. Responsibly.®"

Food safety starts on the farm, where we have rigorous systems in place to raise healthy animals. It continues at the processing plants, where we follow meticulous and exacting procedures. Our vertically integrated business enables traceability from the conception of the livestock to the shipment of the final products to our customers. At Smithfield, every employee along that path plays a role in ensuring that our processes are followed, including our senior executives and CEO who support and encourage our efforts to maintain—and even raise the bar—on our industry-leading food safety practices.

Our Food Safety & Quality Goal

- Deliver safe, high-quality meat products

Our Food Safety & Quality Targets

- No incident requiring a product recall
- Maintain Global Food Safety Initiative (GFSI) certification at all applicable facilities
- Maintain a robust food safety employee training program
- Offer a variety of products for different diets and needs, and in our international operations, include products designed to address health and wellness in accordance with European Union nutrition and labeling standards

We partner with industry, government, and independent experts to create and implement leading, science-based food safety and quality practices that we constantly strive to improve. We have a zero-tolerance policy regarding food safety violations and have built a workplace culture that places responsibility for food safety squarely on the shoulders of every employee.

Consumers' expectations of food companies continue to evolve. They want to know more about what is in the foods they purchase—and they want simplified labels with ingredients that they can understand and pronounce. Strengthening trust with customers and consumers is important to us, and we continue to increase transparency about what goes into our products. We also look for new ways to develop products that meet changing consumer preferences.

Innovation—both in the foods that we make and in the way that we make them—is essential to our business as a consumer packaged goods and protein company. Our heightened focus on innovation is driven by consumer preferences, transparency, nutritional concerns, and opportunities to reduce our environmental footprint.

In the following video, learn more about fresh pork production and our leading traceability program:

Value Creation

By maintaining the highest food safety standards, we build value for our own company and for the customers that sell our products.

Product quality and safety is one of the biggest areas of risk for food producers and manufacturers. All food products are susceptible to contamination by disease-producing organisms or pathogens, which are found naturally in the environment. Product contamination can subject food companies to product liability claims, adverse publicity, government intervention, and decreased sales as customers lose confidence in the safety and quality of the food. But most important, product contamination threatens to affect the health and well-being of our consumers and their families, which remain paramount to everything we do at Smithfield Foods.

Given the potential negative impacts from food safety failures, our company has numerous systems in place that are designed to monitor and mitigate food safety risks. Read more about our food safety laboratories.

Smithfield invests millions of dollars each year in capital improvements to facilities and equipment, focusing on the safety of our products and protection of our employees while simultaneously enhancing production. During 2018, we spent approximately $128 million on capital projects across the company that continue to advance our industry-leading food safety and quality standards, such as installing new robotics technology, blast freeze units, X-ray machines, product processing, and packaging equipment; upgrading refrigeration, cleaning and sanitation systems; and maintaining the physical integrity of our facilities.

We also emphasize product innovation, which we see as one of the keys to unlocking value and driving growth for Smithfield and for our retail and foodservice partners.

Our Processing Plants

Detailed procedures, complex protocols, certifications, and sound science are the hallmarks of an effective food safety program. However, no matter how professionally it is done, food production always entails some food safety risk. Our job is to manage those inherent risks, using science as our guide.

From good personal hygiene to good manufacturing practices, there are thousands of procedures we must follow every day to produce our products safely. We have automated processes to minimize the possibility of bacterial and incidental foreign material contamination. For example, in 2017 and 2018, we added new cutting-edge robotics technology and X-ray machines on the slaughter and processing floors in several of our U.S. facilities. These technologies enhance sanitation and safety, improve accuracy, and increase product yields during the cutting, deboning, and packaging process.

Food safety is really about the employees who live and breathe it every day on the production lines.

But we cannot rely on new technology alone. Food safety is really about the employees who live and breathe it every day on the production lines. During and after each production shift, our equipment is manually cleaned, and the machinery is

inspected. Our most critical manufacturing equipment gets disassembled, scrubbed clean, sanitized, and put back together each night for the next day's production run.

Because our employees are so integral to our success, we promote a culture that includes food safety as their highest priority. This concept comes from the very top of the company—from leaders who insist that food safety is non-negotiable. For example, plant workers have the authority to shut down production if, for any reason, someone believes that the safety or quality of the food might be compromised. We tell all production employees that food safety is up to them, and they take that responsibility seriously.

Our Raise Your Hand program was implemented in the United States to reinforce this culture of safety. Employees are empowered to immediately report any questions or concerns about food safety or quality—from sanitation issues to potential foreign materials in our products. As part of this program, all meat processing plant leaders have been encouraged to develop measurable goals and to customize their program.

Employees across the company are taking the program to heart. One employee in our Kansas City, Missouri, facility noticed a missing bolt on a piece of machinery. He immediately notified his supervisors, which helped avoid potential injuries and downtime. Other employees have been recognized for excellence in food safety inspections and for identifying machinery repairs and revisions to product labels.

Our employees in international locations also are encouraged to report any food safety or quality concerns, as well as any incident of noncompliance with standard procedures or regulatory requirements.

In 2018, we unfortunately had one U.S. Department of Agriculture product recall, which kept us from meeting our annual target of zero. We recalled approximately 24,000 pounds of pepperoni five cheese calzone products that were suspected of containing pieces of plastic. After a consumer reported the issue to us, we took swift action to alert our customers and remove the products from store shelves.

Multiple agencies in Poland and Romania oversee food safety requirements and recall procedures for our international facilities. In 2018, in Poland, we had three recalls of about 9,275 pounds of product due suspicion of pieces of metal, potential presence of *Salmonella*, and labeling issues. We also had one recall of approximately 1,240 pounds of fresh meat products in Romania after a customer's internal testing program detected *Salmonella*.

To control the risk of recalls, we work to maintain a robust Food Safety and Quality program that takes into account sound science and best practices. When recalls

occur, our protocols require that the root cause is swiftly identified, and immediate corrective actions are put in place to prevent a recurrence.

Food Safety Certification

The Global Food Safety Initiative (GFSI) is a collaborative of food industry experts that aims to drive continuous improvement in food safety management systems around the world. Its food safety standards are internationally recognized, making food safety and quality assessments more consistent and efficient while ensuring compliance in foreign markets. Many of our customers rely on GFSI certifications, knowing that they represent the gold standard in the industry.

One hundred percent of applicable Smithfield Foods facilities in the United States, Poland, and Romania are certified to GFSI standards and subject to annual third-party audits. We have an annual target of maintaining that certification at all applicable facilities.

Each of our facilities in Poland and Romania maintains all applicable certifications to international and local food safety standards (e.g., ISO 22000, BRC Global Standard for Food Safety, and International Food Standards) and is subject to routine—and often unannounced—third-party audits. Some of our other facilities, hog farms, and feed mills in Poland are also GLOBALG.A.P. certified, a global standard that brings farmers and retailers together to produce and market safe food, protect scarce resources, and build a sustainable future.

Training

Our Food Safety and Quality Training Policy and procedures outline required food safety and quality training topics, trainer qualifications, and the frequency of training at all of our processing facilities.

Food safety training at Smithfield Foods is a robust process that happens daily—from new employee orientation to training about food allergens. Our plant employees are trained upon hiring and retrained on an ongoing basis depending on their job requirements. Facilities spend thousands of man-hours training employees in food safety procedures and hold daily pre-shift meetings that often include food safety or worker safety topics.

This approach helps to ensure that all employees are trained fully for their roles at the company and that food safety remains at the forefront of their responsibilities. It also ensures that our food safety practices capture the latest in science and best practices. While some training elements are standardized, facilities can also tailor some elements based on their specific needs.

Our training programs also take into account the ethnic diversity of our employee base, with training manuals and hands-on sessions offered in multiple languages.

We also offer advanced food safety training designed specifically for Smithfield employees. In the United States, these sessions—known as Brown Belt and Black Belt training—are unique in our industry and cover a range of food safety and food science topics. Our food safety personnel also regularly present scientific papers at national conferences and attend educational seminars, professional meetings, and regulatory meetings.

Auditing, Inspections & Testing

Our facilities undergo multiple safety and quality audits and inspections, including internal, government, and third-party. In addition, we regularly conduct mock product recalls in which facility staff must locate 99.9 percent of affected food products within two hours, or as designated by customer requirements.

Any nonconformance discovered by an audit is addressed swiftly at each facility. We conduct a follow-up audit after the initial audit to make certain that any corrective actions have been accomplished and then share our findings with other Smithfield facilities.

We also conduct routine environmental and pathogen testing at our processing facilities to guard against organisms that might impact the safety and quality of food we produce. Learn more in our case study, Combating Pathogens Through Science.

Case Study: Combating Pathogens Through Science

Keeping our food products safe is a complex process requiring constant vigilance across our farms and facilities. One of the important elements of this process is our network of in-house food safety and research laboratories that help us ensure the products that leave our facilities are safe and high quality.

Nearly all our processing facilities in the United States include an in-house lab. Most are microbiology labs that allow us to monitor our equipment and other surfaces—as well as the air—at the plants where they are based. These labs help us quickly identify the presence of microorganisms before they can become a problem.

Five of our labs are accredited by the American Association for Laboratory Accreditation (A2LA), which verifies their technical competence to perform specific types of testing and provides an unbiased and objective evaluation of their quality management system. Having this accreditation allows for more advanced capabilities. For example, these locations conduct pathogen product sampling and *Listeria* species environmental monitoring for all of our processing facilities. We are working toward accreditation at two additional labs over the next two years.

Above all, our food safety labs infuse robust science, facts, and empirical data into our food safety decisions. Our scientific approach and insight allow us to truly say we are producing "Good food. Responsibly.®"

Our A2LA-accredited labs are located in Cincinnati, Ohio; Arnold, Pennsylvania; Kinston, North Carolina; Denison, Indiana; and at our Innovation Center in Smithfield, Virginia. Each location includes a staff of dedicated microbiologists who support our processing facilities in a myriad of ways. Our Cincinnati and Denison locations are the most advanced, dictating the procedures and methods that our other labs follow and providing technical guidance when needed.

We also have the capability to do more in-depth research at these locations. For example, our scientists conduct special shelf-life studies and specialized pathogen investigative work. In the labs, they intentionally inject product samples with microorganisms—such as *Salmonella, Listeria, and E. coli*—to see how the pathogens will react over time to cooking, chilling, or refrigerated storage.

Among their responsibilities is oversight of the expiration dates stamped on our packaged meats products. Many categories of foods, such as cereals, crackers, or canned goods, are considered "best" if consumed by a certain date. Meat, on the other hand, will eventually spoil, so the shelf-life dates are based on scientific risk assessments of *Listeria* growth, as well as quality parameters.

In recent years, our laboratories have been especially focused on helping Smithfield Foods transition to "clean labels" in response to consumer requests for products made with more understandable ingredients. Currently, our scientists are partnering with researchers from Iowa State University to determine how curing with nitrites from natural ingredients, such as celery juice powder, can impact pathogen growth in products, particularly when there are deviations to the cooking process (e.g., a power outage at the manufacturing facility). The research is being supported by the Foundation for Meat and Poultry Research and Education.

We already know a significant amount about how common preservatives such as lactate, nitrite, and benzoate work in our foods, but there isn't much published science about the natural ingredients, such as vinegar-based antimicrobials, that are replacing them. We conduct ongoing research, to meet consumer demand for cleaner labels while ensuring we create safe, high-quality products.

In addition to this work, we also periodically test product samples to ensure we are keeping product free from pathogens or other harmful organisms. Having both smaller in-house labs and more complex A2LA-accredited facilities allows us to more quickly and efficiently obtain test results so that we can deliver safe, high quality products to our consumers.

Above all, our food safety labs infuse robust science, facts, and empirical data into our food safety decisions. Our scientific approach and insight allow us to truly say we are producing “Good food. Responsibly.®”

Case Study: Leading the Industry Through Collaboration

Our responsibility to produce safe, high-quality food for our customers drives the work we do every day at Smithfield Foods. Our staff of food safety and quality scientists work exclusively on making our products—and the industry as a whole—safer.

One way we do this is by collaborating with other industry participants and research partners—an approach that allows us to stay on the cutting-edge of food safety and add our knowledge and experience to industry-wide improvements.

The meat industry has long been a major contributor to improvement in food safety science and establishment of best practices. However, the risk of pathogens or other contamination is ever-present in food production and we must continually evaluate the food safety implications from changes to our products, processing technologies, packaging options and consumer preferences, as well as the globalization of our supply chain. Because food safety is so vitally important, we openly share our knowledge with competitors to make all consumers safer. In fact, our scientists frequently publish scientific papers to share new information that may benefit the industry by enhancing food safety practices or creating efficiencies.

We routinely work with academic institutions, equipment manufacturers and others to facilitate advances in food safety science. For example, we work with vendors to provide feedback as they develop new equipment or services to enhance food safety. We may test their innovations in our facilities, provide products for testing or offer input from our team.

We are currently working with Corvium, a food risk intelligence company developing software, analytics, and data solutions to automate our environmental monitoring program. This new technology—now in place at 30 of our packaged foods facilities—improves communication between our plants and testing labs, streamlines work, reduces data entry errors, and allows us to respond to food safety issues more quickly. Our participation allows the vendor to gain real-time feedback on their technology while we—and ultimately the industry—gain a new tool to enhance our food safety practices.

We routinely work with academic institutions, equipment manufacturers and others to facilitate advances in food safety science.

"Smithfield is an ideal partner due to their desire to constantly seek innovation in their food safety practices," says David Hatch, chief strategy officer at Corvium. "Their collaboration has helped us further refine our technology, leveraging the power of data to drive benefits to Smithfield including mitigating financial, regulatory and food safety risk; reducing food waste; and increasing operating efficiency."

We also collaborate with academic institutions that specialize in food science innovations. For example, we have partnered with researchers from Iowa State University (ISU) who are investigating natural ingredients in our nitrite curing process, in response to consumer demand for clean labels. Nitrites are necessary in meat production to control pathogen growth. As part of Smithfield's research with ISU, we are exploring how natural ingredients, such as celery juice powder, can impact pathogen growth in products under different production scenarios. This research is being led by Dr. Shannon Cruzen, a food scientist at Smithfield, and is supported by the Foundation for Meat and Poultry Research and Education.

Our participation in industry organizations, such as the North American Meat Institute (NAMI), helps connect our food safety and quality team with new opportunities for collaboration. For example, Dr. Hayriye Cetin-Karaca, a food scientist at Smithfield, established a research partnership with one of the leaders in high pressure processing (HPP), a technique that holds promise in increasing the shelf life of our products, and providing food safety without heat and preservatives. Because HPP does not utilize heat, it does not alter food taste, texture, color or quality as thermal treatments can. In addition, HPP is applied to products in their final consumer package, eliminating the risk of cross-contamination. We are primarily using HPP for lunch meat products, as requested by specific customers.

In addition, NAMI's training program regarding the control of *Listeria*, one of the most common and serious foodborne pathogens, is offered annually with the participation of our scientists, including Dr. Hayriye Cetin-Karaca, as experts and instructors. This program helps train new generations of food industry specialists and offers expertise to companies with more limited resources.

Smithfield takes food safety and quality very seriously, utilizing a 360-degree approach to maintaining and constantly improving our food safety and quality program. An important part of this approach—our efforts to collaborate and share knowledge with other industry stakeholders—contributes to the protection and satisfaction of our customers and consumers and, ultimately, to the industry's efforts to strengthen food safety and quality.

Product Innovation

Innovation is a core tenet across all of Smithfield Foods. Team members from accounting through manufacturing to transportation and warehousing work to continuously improve all aspects of our business.

Product development is essential to ensure that we continue to deliver "Good food. Responsibly.®" We have developed a three-year pipeline of new products to realize the strategic objectives of the brands in our portfolio.

We monitor consumer preferences and market research to stay ahead of the curve with new food and packaging solutions that capitalize on emerging trends. Consumers have been interested in healthier foods for many years, and we continue to provide options throughout our product portfolio that are lower in sodium, a good source of protein, gluten-free, all natural, or provide other benefits to support their health and wellness lifestyle goals. Consumers increasingly look for foods that are minimally processed and contain only ingredients that they recognize. With this in mind, we reformulate or create new products to simplify ingredient labels without sacrificing taste or quality. The launch of Pure Farmland products, described below, is an example of how we are responding to this trend. We strive to provide our consumers with the right product, at the right price, to satisfy their individual needs.

Launching a New Line of Clean-Label Products

In late 2017, our Farmland brand launched a new line of clean label products—Pure Farmland—that is all-natural, minimally processed, and contains no artificial ingredients, added nitrites or nitrates,[1] preservatives, monosodium glutamate (MSG), or added hormones.[2] Additionally, Pure Farmland products aim to respond to consumers' increasing desire for more responsibly sourced

products. Research shows that 57 percent of U.S. adults state that they "expect brands to be a force for positive change."[3] Millennials, in particular, are very likely to have social responsibility expectations, with 83 percent stating that it is extremely or very important for companies to implement programs that improve the environment.[4]

Pure Farmland now offers a spiral sliced ham, as well as new, all-natural breakfast products focused on capturing the trend for healthy and sustainable breakfast items, including all-natural uncured bacon from pork without antibiotics and all-natural uncured turkey bacon.

For 60 years, Farmland has relied on the tireless work of farmers and recognizes the fundamental role of our nation's farmland in offering our consumers a wholesome protein option for every meal. Unfortunately, American farmland is disappearing at an alarming rate of three acres each minute due mainly to the pressures of urbanization and development. With the world population expected to grow from 7 billion today to nearly 10 billion by 2050, the loss of this irreplaceable natural resource threatens our ability to feed a growing population.

As a result, in July 2018, Farmland announced it was partnering with American Farmland Trust (AFT), a nonprofit founded nearly 40 years ago to address the loss of our nation's farmland and ranchland. For every Pure Farmland item purchased through December 31, 2019, Farmland will donate the cost of protecting one square foot of farmland, up to $140,000.

Farmland's donations will help support AFT's mission to protect the nation's farmland and ranchland, including sharing information about sustainable practices with farmers, educating lawmakers, and operating a network that helps match farmers and ranchers with owners selling farmland.

AFT champions its cause with a simple message, "No Farms, No Food," but protecting farmland has additional benefits beyond helping to feed a growing global population. Keeping farmers on the land supports the economy and culture of farming communities and provides environmental benefits for all of us.

[1] Contains no artificial ingredients and is no more than minimally processed.

[2] Federal regulations prohibit the use of hormones in pork.

[3] Mintel (April 2017). "American Lifestyles: Finding Common Ground – US."

[4] Nielsen (November 2018). "Unpacking the Sustainability Landscape."

Nutrition

Smithfield Foods employs chefs, food scientists, and nutritionists who work to ensure that our product portfolio remains innovative and competitive with emerging health and nutrition trends.

We believe sustainability includes issues related to health and nutrition and, as a result, we keep these in mind when considering changes to our product portfolio. Our innovation team works proactively to improve product benefits, including nutritional enhancements, across product categories without sacrificing the great taste that consumers expect.

As examples, we have dozens of products across multiple brands—including Smithfield®, Farmland®, Healthy Ones®, and Kretschmar®—that meet the American Heart Association's certification criteria for foods that are low in saturated fat and sodium content. In addition, we have more than 250 products that offer health and wellness benefits, such as lower sodium, reduced fat, no added sugar, gluten-free, no artificial ingredients, and no nitrites or nitrates. These span across our deli, retail, and foodservice channels. For example, over 80 percent of Smithfield-branded bacon volume now features claims such as gluten-free and no artificial flavors or colors.

In recent years, we have also focused in particular on breakfast meats, from fully cooked pork sausage patties made with all-natural ingredients, no preservatives, and no monosodium glutamate (MSG) to bacon with 50 percent less sodium than traditional bacon and no added sugar.

Our international operations also offer dozens of fresh meats and packaged food products that satisfy a wide assortment of consumer needs and tastes while meeting all European Union nutrition and labeling standards. Several of our recent offerings in Poland are free of preservatives, stabilizers, monosodium glutamate, and phosphates. In Romania, we've historically only produced fresh meat, which is free of sodium and other additives.

Smithfield's Balance Program

There are thousands of nutritionists working in retail stores around the country, offering nutritional expertise and guidance to shoppers eager to learn more about cooking and improved health. To understand what role we could play as a strategic partner and advisor in this area, our Smithfield® brand partnered with retail dietitians as part of an internal Retail Advisory Committee. In 2018, we launched a new nutrition and health website to showcase how Smithfield's pork can play a key role in a balanced lifestyle. The website, targeted to nutrition professionals, our retail partners, and other health influencers, offered nutrition information and tool kits, recipes certified by the American Heart Association, fact sheets, health trends, and more.

Sodium

We continue to evaluate the sodium levels in our products so we can offer the right choices to accommodate different diets and lifestyles. We currently offer more than 100 reduced-sodium products in the marketplace and all our brands offer a variety of products that are lower in sodium than their traditional counterparts.

Sodium is a life-essential nutrient and is important for food preservation and food safety. Curing meats with salt, for example, blocks the growth of bacteria and prevents spoilage. Salt is a key ingredient in many of our products and helps us meet customer and consumer demands for quality, authenticity, flavor, and convenience.

Our Armour brand Lower Sodium Pepperoni has 50 percent less sodium than the original pepperoni product.

At the same time, we recognize that there are concerns about too much sodium, which can lead to high blood pressure in some individuals. According to the Centers for Disease Control, Americans eat more sodium than they should each day.

Our sodium policy guides our commitment to producing wholesome food products for our customers and is consistent with the view that a healthy lifestyle is based on a range of factors, including diet and exercise.

Clean Labels

What started as a trend several years ago has become increasingly more mainstream: a desire among consumers to buy foods made with simpler, shorter, and easier-to-understand lists of ingredients.

People are paying closer attention than ever to what goes into their food. And they want to eat those made with ingredients that they can recognize and pronounce. According to 2018 research by Nielsen, consumers consider information about ingredients to be one of three key purchasing decisions, along with sustainability and processing claims (e.g., organic, natural).

In response, we routinely look for opportunities to offer products for a variety of lifestyle choices while still maintaining product safety and quality.

To enhance transparency, we provide interested consumers an online ingredient glossary that includes more than 100 definitions of ingredients that can be found in our foods. The glossary includes our most popular products by volume and is updated annually.

In 2018, we completed an extensive audit of our major U.S. brands to identify short-term and long-term health and wellness goals. Where possible, we started to use this information to supplement our core brand portfolios with cleaner label options that support consumers' lifestyle preferences. For example, our Nathan's brand launched an all-natural beef frank to their product portfolio, and the Carando brand launched mini Italian sausage links with no monosodium glutamate (MSG) and no artificial flavors or colors.

Through thoughtful brand development, our Farmland brand began to incorporate more sustainable ingredients and labeling to differentiate from other pork brands in 2018. Farmland will focus on delivering products with no MSG and no artificial flavors or colors, while the Pure Farmland sub-brand is rooted in health and wellness, providing consumers with all-natural and cleaner ingredients, as well as pork from animals raised without antibiotics. Our Farmland and Pure Farmland brand priorities were developed with extensive consumer research in mind.

Where possible, we also replace certain antimicrobial preservatives, such as sodium lactate and sodium diacetate, with vinegar or lemon juice concentrate. Antimicrobials are important because they prevent dangerous bacteria from growing. But vinegar and lemon juice have similar positive impacts on product shelf life. (See the case study on our laboratories to learn more.)

We also have been analyzing manufacturing techniques, such as microwave pasteurization during food processing, which can reduce the need for some typically used preservatives.

We routinely look for opportunities to offer products for a variety of lifestyle choices while still maintaining product safety and quality.

Finding "cleaner" alternatives is a challenge for all food companies, particularly when it comes to maintaining food safety. We also need to ensure that any replacement ingredients don't have an unwanted impact on flavor, texture, or color.

Adding to the complexity is quite a bit of confusion about some products that are labeled as "natural" products. For example, sodium bicarbonate is baking soda; it's a naturally occurring product, but it has a complex name that may confuse some consumers. And celery juice can be used as an alternative to nitrates and nitrites in cured meat, but celery itself contains a significant amount of nitrates that are naturally occurring. To avoid that confusion, we do not label any product as "natural" unless it satisfies the U.S. Department of Agriculture (USDA) definition of minimally processed with no artificial ingredients and until the USDA has approved our "natural" labeling claim.

We also are mindful that some of our customers—such as large restaurant chains—have been publishing so-called "no-no lists" of ingredients that they will not allow in their supply chains. We work with our customers to make products that will fit their specific needs.

Making Marinated Pork Even Better Through Simpler Ingredients

Smithfield's Marinated Fresh Pork line is one of our best sellers, reflecting consumers' ever-growing desire for great taste coupled with convenience. We recently added "clean labels" to the list of this product line's many benefits.

We completely reformulated these products to remove sodium phosphates, potassium acetate, and potassium lactate in favor of only all-natural ingredients, including pork broth, vinegar, and salt. The simpler ingredient statement offers the transparency consumers seek, without any impact to the product's flavor, texture, or shelf life.

This latest reformulation built upon earlier improvements that reduced the sodium in the products by 20 percent per four-ounce serving. All reformulated products were offered in retail locations in 2018.

Our Commitment to Helping Communities

Smithfield Foods greatly values our connection to the communities where our people work and live. We strive to maintain a relationship of mutual support, and we take seriously our responsibility to keep our communities strong.

Our Community Goal

- Support our communities through targeted philanthropy, employee volunteerism, and other engagement opportunities

Our Community Targets

- Each facility/farm region to participate in annual community events (four events in the United States and two events internationally)
- At least one event per year must include a stakeholder presentation
- Maintain hunger-relief programs to help those in need
- Interact with schools and students by providing school supplies, scholarship assistance, and facility support

As one of the leading consumer packaged goods and protein companies, we are especially well-positioned to contribute to hunger relief as part of our philanthropic and community outreach efforts. We have focused on tackling food insecurity in America through more than just food donations; we also are committed to raising public awareness through a diverse set of partnerships and employee-led community activities.

Education and support for U.S. veterans and military families are two other key elements of our giving strategy, which includes financial support and employee volunteerism.

Our Social Purpose

Smithfield Foods is committed to improving food security and ending hunger by donating high-quality, nutritious food. We created our Helping Hungry Homes® initiative to alleviate hunger across the United States. We also support other philanthropic solutions in the fight against hunger as well as in the areas of education, veterans, and those that align with our sustainability program.

We continue to leverage and develop specific programs that address the unique needs of communities at each of our locations, including donations to schools, beautification efforts, and local fundraisers.

In 2018, for example, we made a $210,000 donation to BoysGrow, a Missouri-based nonprofit focused on mentoring Kansas City's urban youth through agricultural entrepreneurship programs. Through the BoysGrow program, every year about 15 young men receive hands-on vocational training in agriculture and culinary skills, and receive access to healthy food. Smithfield's donation will support the construction of a new 3,400 square-foot farm kitchen to support food production, culinary arts, vocational training, events, and agritourism.

Additionally, we support other culinary training programs, including The Culinary Institute of America (CIA), a recognized leader in the field. In 2018, we became the dedicated sponsor of Smithfield's Fundamentals Teaching Kitchen at the CIA's Hyde Park, New York, campus, building on our six-year relationship with the school.

We also support veterans-focused nonprofit organizations and, through our Operation 4000! initiative, we aim to employ more veterans in the United States and increase our support for veteran employees.

In recent years, we have centralized all domestic charitable giving activities at the corporate level. This holistic approach allows us to more strategically and effectively coordinate giving across all of our operations so that we can amplify our impact and fulfill our mission, vision, and social purpose. In 2018, we announced a new, formal Smithfield Foundation grant program, through which we will donate up to $1.5 million each year, in addition to the tens of millions in other giving programs. Projects funded through the new grant program will support our three focus areas—hunger relief, education and veterans—and receive a minimum of $250,000 for the year.

Value Creation

The strength of our business depends in large part on the strength of the communities where we work. Stable and prosperous communities support our ability to recruit and retain excellent workers—a crucial ingredient to our success—and provide a desirable place for our employees to live.

Moreover, the economic vitality of our local communities provides the basis for a reliable supply of the goods and services we need to operate.

Smithfield Foods creates value in the communities where we work in a number of ways. We provide jobs, pay taxes, and, in many locations, underpin the economic health of the regions where our operations are located. The vast majority of our workforce is comprised of full-time, benefit-eligible employees, further contributing to economic stability in the community. We also create societal value through our initiatives related to hunger relief, education, and support for U.S. military veterans.

2018 By the Numbers	Domestic	International
Cash and in-kind donations	$7.4 million	$448,000
Food donations (cash value)	$21.4 million	$88,000
Food donations (servings)	26.3 million	253,000
Total value of donations	$28.8 million	$560,000

U.S. food donations are valued at an average retail price of $3.25 per pound. There are four servings to a pound. International food donations are valued at production cost. Other donations (e.g., school supplies) are valued at cost.

We also help create strong communities by engaging our employees and supporting their giving efforts. Our domestic employee matching gift program provides a 1:1 company match for any employee donation of at least $100 to a recognized 501(c)(3) charity. For employees who serve on the board of a charitable organization, Smithfield will match double the amount of any donation to that organization. Through the employee match program, Smithfield donated nearly $240,000 to domestic charities in 2018.

In addition to financial support, we also encourage our employees to volunteer for local causes they are passionate about. In 2018, our employees volunteered more than 11,000 hours to important causes across the company, including hunger relief, disaster preparedness, environmental cleanups and beautification projects in our communities, toy collection for children in need, and much more. For example, our

employees in Waverly, Virginia, volunteered over 400 hours at community events during Earth Week in April 2018. Volunteer projects included greenhouse repairs at a local high school, highway trash collection, and assisting at Special Olympics events.

Our cause marketing efforts, often in partnership with retailers, also help to generate funds for nonprofit organizations and raise awareness of issues such as food insecurity and the challenges facing many veterans and their families.

Cause Marketing

We are passionate about giving back to the communities and households that purchase our products, and we believe that the best way to maximize our charitable donations is by partnering with causes that resonate with our brands and consumers. In the United States, we use consumer research to find the right fit between reputable and relevant partners that link our consumers, brands, and causes. Through these partnerships, we have been able to support a wide range of important objectives, including support for veterans and their families, American farmers, and teachers and school systems across the country.

Our cause marketing collaborations add value to the charities and retail partners involved while also adding value to our brands. In addition, consumers buying Smithfield Foods products can feel good knowing that their applicable purchases result in a donation to nonprofits doing great work. We like to think of it as “doing good, while doing well.”

Partnering with retailers provides an opportunity to expand our giving capabilities. In 2018, we continued to make several kinds of donations, including hundreds of thousands of dollars in free groceries and several new cars. We also held more than 20 cause marketing events around the country. We often partner with celebrities, musicians, and athletes who are able to draw further attention to a cause, generate excitement at events, and boost product sales (which, in turn, results in bigger donations for the charity).

In 2018, Smithfield contributed more than $640,000 in cash and in-kind donations through domestic cause marketing programs to support veterans, hunger-relief programs, and other key areas that align with our sustainability program.

Some of our most successful brand campaigns include the following:

Our Kretschmar® Brand and Make-A-Wish

Since 2012, our Kretschmar brand has donated nearly $1 million to the national arm of the Make-A-Wish Foundation, which creates once-in-a-lifetime experiences for children with serious illnesses through the brand's Legendary Wishes campaign. In December 2018, we announced we would continue this partnership for another year with a $105,000 donation. In addition to direct donations, Kretschmar and its retail partners have contributed more than $150,000 through in-store events and fundraisers over the past six years. For example, in 2018 Kretschmar joined with Jewel-Osco to donate $1,000 to the Illinois branch of Make-A-Wish, helping 17-year-old country music fan Kaitlyn, a Make-A-Wish grantee, and her family enjoy a VIP experience at the 2018 CMA Fest®.

Our Eckrich® Brand and Extra Yard for Teachers

In January 2018, our Eckrich brand made a $500,000 donation to the College Football Playoff Foundation's (CFP Foundation) Extra Yard for Teachers cause, which seeks to inspire and empower America's teachers. ESPN "College GameDay" analyst Kirk Herbstreit made a nearly impossible 20-yard throw through a target before the College Football National Championship Game to generate the donation, the largest ever received by the CFP Foundation from an outside benefactor. This contribution from Eckrich will help Extra Yard for Teachers provide classroom resources, increase recognition of teachers in the United States, and support educator recruitment and professional development.

Our Smithfield® Brand and No Kid Hungry

In 2018, our Smithfield brand continued its partnership with No Kid Hungry (NKH) for the second consecutive year by donating $200,000—double our 2017 gift. Through the brand's "Most Important Meal" initiative, Smithfield pledged to donate enough for 10 meals every time participants shared their breakfast on social media platforms under the hashtag #BreakfastPower during the back-to-school season. Smithfield's donation will enable NKH to provide two million meals to students in need through in-school breakfast programs.

Our Farmland® Brand and National FFA Organization

Our Farmland brand is passionate about protecting the future of farming in this country. During 2018, Farmland raised $100,000 through its "Table to Farm" campaign

supporting the National FFA Organization (formerly known as Future Farmers of America).

Our Pure Farmland® Brand and American Farmland Trust

In July 2018, Farmland began a partnership with American Farmland Trust (AFT), the only national conservation organization dedicated to protecting farmland and the working farmer. AFT estimates that 175 acres of farm and ranch land are lost every hour. Through the end of 2019, Farmland will donate the cost of protecting one square foot of farmland for every item sold under the brand's new all natural, minimally processed product line, Pure Farmland. The brand's donation—up to $140,000 over the course of the campaign—will support AFT's work saving American farmland, promoting environmentally sound farming practices, and keeping farmers on their land. For more information about new sustainably sourced Farmland products, see Food Safety & Quality in this report.

Our Gwaltney® Brand and Roc Solid Foundation

In 2018, our Gwaltney brand teamed up with the Roc Solid Foundation (RCF), a Virginia-based nonprofit that builds hope for children with cancer through the power of play. Gwaltney reached its maximum pledge of $50,000 through a campaign to donate $0.02 for every eligible product sold. Gwaltney's contribution will help fund RCF's work building playsets for children diagnosed with cancer in several states around the country.

Smithfield Foodservice and Children of Restaurant Employees (CORE)

Our Smithfield Foodservice group is a Sustaining Partner for CORE, a nonprofit that provides financial support to the families of food and beverage service employees facing difficult life circumstances, like a natural disaster or a serious medical diagnosis. This year, we partnered with CORE at two industry events to raise a total of $26,000 for the charity.

Hunger Relief

Despite relative improvements in the economy, hunger and food insecurity remain serious and often overlooked problems in the United States.

Millions of Americans are having to make difficult choices every day, according to hunger organizations like Feeding America. About two-thirds of those served by Feeding America have had to choose between food and medical care, transportation, or utilities payments, according to their latest survey.

The U.S. Department of Agriculture (USDA) estimates that 40 million people in the United States are food insecure or experience hunger—including 12.5 million children. While these statistics have improved slightly in recent years, food insecurity remains above pre-recession levels and one in eight Americans often does not know where his or her next meal will come from.

Hunger is also a significant concern in the international countries where we operate. According to The Borgen Project, malnutrition is one of the main challenges Poland faces, impacting more than 170,000 children, while 25 percent of children and pregnant women experience iron deficiency. In Romania, hunger is linked to poverty, which affects 25 percent of the population.

As a leader in the food industry, we have a responsibility to help families in need, and we are well-placed to make a unique impact. At Smithfield Foods, hunger relief is the cornerstone of our social purpose. Through our support for food banks, disaster relief efforts, and community outreach programs, we help raise both funding for, and public awareness of, food insecurity in the communities where we live and work.

Addressing Hunger Across the United States

Helping Hungry Homes®, Smithfield's initiative to help address the ongoing problem of food insecurity in the United States, has been supporting food banks since 2008. We focus on providing donations of fresh and packaged meats, which help fill the shortfall of nutritious, protein-rich food sources that many hunger relief organizations often face. Our retail partners have also made generous donations to local and regional food banks in tandem with the company to support this important effort.

2018 Helping Hungry Homes Donation Total

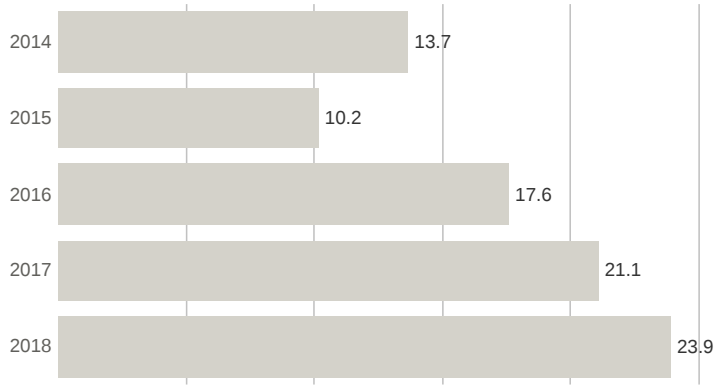
- Donated 23.9 million servings of protein to food banks and hunger relief organizations nationwide

In addition to Smithfield donations, our employees volunteer at food banks and host food drives to support the Helping Hungry Homes initiative.

Each year, Smithfield makes dozens of donations to food banks and hunger relief organizations across the country—from Washington to Florida to Maine—as part of our Helping Hungry Homes initiative. In 2018, Smithfield marked the 10-year anniversary of the program. To find out more about our donation activities, visit the Helping Hungry Homes® section of our website.

Total Helping Hungry Homes® Food Donations

(servings in millions)



There are four servings in a pound.

Addressing Hunger in Our Communities

Beyond our signature Helping Hungry Homes® program, many of our Smithfield locations work at the local level to donate food in their communities. For example, as part of the Hunger Action Month employee food drive in September 2018, Smithfield employees collected more than 45,000 pounds of food—a three-fold increase from our 15,000-pound collection in 2017—and volunteered at local food banks across the country.

We also support the fight against hunger with monetary grants through the Smithfield Foundation, the philanthropic arm of our company. We continued our ongoing giving partnership with the national anti-hunger organization, Share Our Strength, in support of the No Kid Hungry Virginia campaign. The Smithfield Foundation donated $150,000 in 2018, building on two years of previous donations. No Kid Hungry Virginia aims to decrease childhood hunger in the Commonwealth and increase accessibility to school-breakfast, summer-meal and after-school food programs. In a separate donation, Smithfield gave $60,000 to No Kid Hungry (NKH) as part of its annual Chef's Cycle event, which included over 200 chefs biking to raise awareness and money for NKH's work. Over the past three years, we have donated $460,000 to various NKH campaigns.

In North Carolina—where a large portion of our employees work and where our Tar Heel plant, the largest pork processing facility in the world, is located—we partnered with the Food Research & Action Center (FRAC) to raise awareness about rural hunger. According to FRAC, 17 percent of all households in North Carolina, which has the second largest rural population in the United States, cannot afford to buy food. Smithfield has fulfilled its pledged contribution of $137,000 over two years, which helped FRAC provide resources and information to help people access federal nutrition programs through a comprehensive campaign titled "Rally Against Rural Hunger."

We also actively work to address hunger in Romania and Poland. Since it was established in 2009, our "Food for Souls" program has provided more than 400,000 hot meals to citizens in need near Timisoara, Romania. In 2018, this program provided more than 30,000 pounds of food supporting 10 different organizations serving the community.

In 2018, we delivered 32,380 pounds (129,525 servings) of food products to local people in need in Poland. We also donated more than $20,000 to local schools to provide food for children.

Learn about our hunger relief efforts for U.S. military veterans.

Food Fight for Hunger Relief

DC Central Kitchen, a community kitchen and job training organization in Washington, D.C., provides culinary training to jobless adults, including the formerly incarcerated. The organization sources food that would otherwise be wasted and turns it into nutritious meals for those in need, all while preparing the unemployed for employment in the foodservice industry.

It's an innovative approach to combating hunger that Smithfield is proud to support through monetary and product donations. In 2018, Smithfield provided more than 15,000 pounds of protein, prepared by students and distributed to feed the hungry throughout our nation's capital. We also contributed $100,000 to sponsor DC Central Kitchen's signature fundraising event, Capital Food Fight, which this year raised over $770,000 to combat hunger in 2018.

Case Study: Ten Years of Impact Through Helping Hungry Homes

Many people might think problems like hunger and food insecurity only touch people far from U.S. borders. In fact millions of Americans face these issues every day.

For the past 10 years, Smithfield Foods' Helping Hungry Homes® program has been focused on alleviating hunger and helping Americans become more food secure. The program sends nutritious Smithfield products to foodbanks across the country. Over the past decade, Smithfield is proud to have contributed to the important work of these organizations by donating more than 120 million servings of protein to foodbanks in 47 states.

To celebrate, we toured the country throughout 2018, visiting 49 foodbanks in the Feeding America network—the country's largest hunger relief organization—to donate nearly six million pounds of protein. In 2018, tour stops included the Los Angeles Regional Food Bank, where we made a 400,000-pound product donation, and Biloxi, Mississippi, where we made donations to local food pantries and broke the Guinness World Record for world's largest serving of pulled pork. We also pledged to match all employee donations to Feeding America 2:1, up to $25,000, a goal we reached in September. As part of the program, we removed the usual $100 minimum giving requirement so all employee donations were matched.

Hunger relief organizations often lack reliable protein sources for meals, particularly fresh protein, because such foods are infrequently donated and expensive to purchase. This makes Smithfield, as a food industry leader, uniquely positioned to make an impact.

"Time, food, and money—those are the types of things that any food bank would be very glad to have, and Smithfield generously provides all three."

—Karen Joyner, CEO, Virginia Peninsula Foodbank

"Protein is the number one requested item by partner agencies and the people they serve," explained Karen Joyner, CEO of the Virginia Peninsula Foodbank, which serves nine cities in Virginia. Over the past 10 years, Smithfield has donated 4.6 million pounds of food and nearly $800,000 to the foodbank. Smithfield employees also regularly volunteer at the Virginia Peninsula Foodbank, which is close to our headquarters in Virginia.

"Time, food, and money—those are the types of things that any food bank would be very glad to have, and Smithfield generously provides all three," said Joyner.

For Tim McDermott, chief development officer at Feed More, which serves five cities and 29 counties in Central Virginia and is a frequent Helping Hungry Homes recipient, Smithfield's protein donations fill an important gap in the diet of many of the people they serve.

"Between 65 and 70 percent of recipients report that themselves or someone in their household is living with a health condition like heart disease, obesity, or diabetes. These people often need nutritious protein in their diet to help combat these illnesses, but many can't afford it," he said.

Beyond traditional food donations, Smithfield has also been able to help its partner food banks solve unique issues that arise. For example, in 2018, Feed More used a $180,000 gift from the Smithfield Foundation to purchase a new refrigerated tractor-trailer. The new vehicle has helped the organization expand donations to rural communities in its southern service area, where approximately 25,000 people are food insecure. Many food pantries in rural areas tend to be churches, and they often lack the refrigerator space needed to store large amounts of food. Feed More's fleet expansion will improve its ability to bring refrigerated products, like fresh and packaged protein, to rural pantries, which then immediately distribute food aid to those in need. McDermott noted that the new vehicle and other capital improvements will help drive the organization's goal to increase its food distribution from 28 million pounds of food in 2017 to 30 million over the next three years.

McDermott added that, because of Smithfield's high profile, its donations can have a

positive ripple effect. “There is a lot of credibility that comes from a partnership with a company as well regarded as Smithfield,” he said. “I think it raises our visibility in the community and increases donations from individuals and companies.”

It’s a sentiment echoed by other food banks across the country, including at the Food Bank of Central & Eastern North Carolina, which serves a little over one-third of the state. “Smithfield does a lot of engagement around their donations to bring awareness, and that tends to prompt other companies to also give back,” said Carter Crain, director of food partnerships.

Along with product donations, in 2018 the Smithfield Foundation made a $100,000 donation to the food bank to support its Wilmington Branch’s efforts, an area that was hard-hit by Hurricane Florence, to increase food access and alleviate hunger in southeastern North Carolina. Planned facility upgrades will help increase service capacity in the area, as well as operational efficiency.

In Kansas City, Missouri, Sarah Biles, director of communications at Harvesters, a local food bank, says that Smithfield’s donations have helped to serve an acute need and raise awareness of the problem of hunger. Over the past 10 years, Smithfield and its family of brands have donated nearly 1.4 million pounds of food through Helping Hungry Homes, along with approximately $200,000 in monetary donations.

While food insecurity rates have improved slightly in recent years, hunger remains a persistent issue in many communities.

“We are still seeing 353,000 people in need in our service area,” explained Biles. “Many are working families, but the jobs just don’t pay enough. And with costs going up for everything, including food, many families are forced to make tough choices.”

As Smithfield looks back on 10 years of service through Helping Hungry Homes, we are proud of what we have been able to accomplish. We are eager to continue to help serve communities in need as we live up to our social purpose and further expand the impact of our program.

“Smithfield doesn’t just come after the disaster or after the holidays, they’re here with us year-round,” said Crain.

Case Study: Providing Support After Hurricane Florence

Hurricane Florence, which made landfall in North Carolina on September 14, 2018, was one of the most destructive natural disasters of the year in the United States.

It caused historic flooding across the state, killing over 40 people and displacing thousands. The storm's impact, estimated at as much as $50 billion in damages, will likely continue to be felt for some time.

In the aftermath of the storm, Smithfield Foods mobilized its Helping Hungry Homes® program to donate 120,000 pounds of protein to two local food banks, the Second Harvest Food Bank of Southeast North Carolina and the Food Bank of Central and Eastern North Carolina. These organizations distributed our donations, equivalent to 480,000 servings of protein, to first responders and communities impacted by the storm. We also provided refrigerated trucks to help food bank facilities maintain operations during extended power outages.

Disaster recovery is a long process, and the flooding caused by Florence has continued to affect many North Carolina residents. Food insecurity is often an issue for displaced families as their work and home life are disrupted. Smithfield remains committed to responding to the needs of these communities as the recovery process continues. In early November, we returned to the same food banks mentioned above to provide additional protein. In conjunction with a local retail partner, we donated more than 125,000 pounds of protein (equivalent to 500,000 servings) and 9,000 pounds of fresh produce to communities in need.

In the aftermath of the storm, Smithfield Foods mobilized Helping Hungry Homes® to donate 120,000 pounds of protein to two local food banks, the Second Harvest Food Bank of Southeast North Carolina and the Food Bank of Central and Eastern North Carolina.

"Smithfield is committed to our communities and caring for the well-being of our employees and neighbors in need," said Jonathan Toms, associate manager of charitable initiatives for Smithfield Foods. "Hunger is a year-round epidemic that is magnified when natural disaster strikes. With these donations, we hope to alleviate that concern for those affected, so they are able to focus on a full recovery."

In addition to product donations, Smithfield Foods gave $100,000 to the American Red Cross to support its disaster-relief efforts in the area.

For Smithfield, which employs more than 10,000 North Carolina residents and owns 200 farms in the state, Florence was a storm that hit particularly close to home. While natural disasters always involve some uncertainty, our hurricane preparation plan, which we update after each event, helps us protect our animals, employees, and community. It includes steps such as lowering lagoon levels, monitoring feed and fuel levels, and defining internal communications. Based on our learnings from previous storms, we took the proactive step of relocating approximately 27,000 animals to higher ground. Many of our employees worked around the clock to protect our farms and animals, and only one of our company-owned farms had flood waters inundate its lagoon.

"It was a real trying time," said Dexter Edwards, the general manager of the central region, which was most heavily impacted by Florence. "As bad as the storm was, you had people show so much dedication to make sure Smithfield animals were taken care of, as well as, of course, people in the community."

Due to widespread road closures during the storm, some farm managers stayed overnight at their farm to ensure animal safety. Power outages meant that all tasks had to be done by hand, including tracking animal movements and distributing feed. Helicopters were brought in to bring additional employees to the farms and deliver food to flooded communities after the storm. Some employees, unable to get to work because of impassable roads, volunteered instead at donation distribution centers.

Unfortunately, many of our employees living in the area felt the impact of the storm and floods first-hand. To help aid them in the long process of recovery, Smithfield set up a dedicated telephone line to help answer questions about the insurance and Federal Emergency Management Agency (FEMA) claims process, provided generators at a deeply discounted price and offered financial donations to some employees affected by the storm. In addition, employees that were not able to get to work immediately after the storm due to travel issues or damage to their property were paid in full. Smithfield employees from other areas sent money and supplies to those employees impacted by the storm, and over 20 people from our Princeton, Missouri, production facility traveled to North Carolina to help their colleagues rebuild in the wake of the storm.

“It was a terrible event, but at the same time, Smithfield and our people have really stepped up,” added Edwards.

Education

At Smithfield Foods, we believe that education has the power to dramatically strengthen communities over the long run.

In line with our social purpose, we support existing education programs in areas where we live and work through a variety of donations. We also seek to create unique and new learning opportunities in communities around the country. Our 2018 donations supporting educational and scholarship programs totaled $3.3 million in the United States, and $404,000 in Poland and Romania.

One long-standing education initiative is our commitment to scholarship funding for Smithfield families. Since 2002, through the Smithfield Foundation, we have funded educational scholarships for children and grandchildren of employees, as well as other educational partnerships. In 2018, we provided scholarships for 183 students, totaling over $790,000.

Smithfield Foundation scholarship recipient Adam Romaine graduated from Virginia Tech in 2018.

In 2018, through the Smithfield Foundation, we also donated $25,000 to fund scholarships at Virginia State University that will aid more than 30 students.

We also look toward other areas of education where we can make a significant impact. In Virginia, where we are headquartered, community leaders and education experts have raised attention to the issue of early childhood education. In July 2018, we made a $50,000 donation through the Smithfield Foundation to the Virginia Early

Childhood Foundation to support its mission to advance school readiness among children.

We are working with partners to address after-school care in Virginia. More than one-third of middle school students in Virginia care for themselves after school, and most do not participate in after-school activities. In March, we made a $75,000 donation to NextUp, a free after-school program for middle school students in Richmond, Virginia. The program provides safe, high-quality opportunities for young students to learn and grow after class through a range of activities.

In addition, we seek to respond to the specific needs of local schools in the communities around the United States where we live and work. For example, for the seventh consecutive year, Smithfield sponsored TeamMates, a mentoring program serving middle and high school students in Crete, Nebraska, giving $50,000 to the program in 2018. We also frequently make donations in the form of scholarships, school supplies, and additional forms of assistance to local school districts in locations where we operate.

We also proudly support the Science Bound program, a partnership with the Denison, Iowa, Community School District and Iowa State University. Science Bound is a rigorous five-year college preparation course focused on encouraging students of diverse backgrounds to pursue higher education degrees in math and science. Those who successfully complete the course earn a four-year scholarship to Iowa State if they pursue a degree in science, technology, math, or engineering (STEM). To date, through Smithfield Foundation donations, we have provided 60 students with tuition-free scholarships via the Science Bound program.

In Poland, we created the Zygmunt Piwoński Smithfield Polska Foundation to support the education of young people by awarding academic scholarships. Each fall, we encourage the children of our employees, suppliers, and contractors to apply by posting applications online. In 2018, we provided more than $260,000 for more than 430 scholarships for children of employees and farmers from rural areas. Since 2002, the Foundation has granted more than 2,500 scholarships worth nearly $1.5 million.

Supporting Future Farmers

We are proud to support the development of the next generation of farmers. We partner with the National FFA Organization (FFA) and 4-H to create a future where students of agriculture will discover their passion in life and build on that insight to chart the course for their educations, careers, and personal futures.

In 2018, we contributed nearly $155,000 to FFA and 4-H programs through cash, matching gifts, and in-kind donations.

Our Farmland brand also raised $100,000 for FFA through a cause marketing campaign.

Our international operations support early education by helping students attend school, funding rural libraries, providing school supplies, and celebrating academic achievements in our local communities.

For more than a decade, we have supported more than 46,000 students in dozens of Romanian villages through the “Back to School” program, which provides essential supplies to preschool and primary school children. Each year, roughly 100 volunteers travel thousands of miles to distribute backpacks, school supplies, and sports equipment for the school year.

In addition, “Smithfield Academics” is a collaboration with local universities and high schools in Romania designed to prepare future specialists in our industry (e.g., animal husbandry, food processing, veterinary sciences) through internship

programs, conferences, seminars and field trips to our facilities. In 2018, more than 40 local students participated in internships at our locations.

In 2018, we launched the "Adopt a School" program in Romania, which was created to support basic infrastructure for the schools in communities where we operate. To date, we have donated furniture, playgrounds, and information technology equipment to 25 schools in local villages and towns.

Environmental Education

Environmental stewardship is a cornerstone of our sustainability program at Smithfield, and we strive to support other organizations teaching the same principles to the next generation. The National Conservation Foundation's Envirothon (NCF-Envirothon) is an annual academic challenge that engages 50,000 U.S. high school students in real-world environmental problem solving. The goal is to develop the next generation of dedicated and informed citizens ready to take on the challenges of environmental conservation. NCF-Envirothon organizers work with local conservation, forestry, and education experts to create curriculum and field experiences that train student teams in five categories: soils and land use, aquatic ecology, forestry, wildlife, and current environmental issues. Teams from across the United States and Canada participate in state and provincial competitions to advance to the NCF-Envirothon finals, and competition finalists receive cash prizes.

For the fourth year in a row, Smithfield provided financial and volunteer support to the program. This year, we contributed $30,000 for scholarships to the top three

national teams at NCF-Envirothon, along with $5,000 to cover administrative costs. In addition, we donated over $56,000 to local and state Envirothon programs around the country through our facilities and farms, for a total of $91,000 in donations in 2018. We also met our goal to have 100 percent of our farms and facilities participating in the program, either through direct volunteering or donations to local teams. Smithfield employees collectively donated over 400 hours of their time as program volunteers, helping student teams in their communities learn about environmental conservation or judging at local competitions. For example, six members of our Hog Production team in Missouri volunteered as "station monitors" during their local Envirothon event, helping ensure students followed competition rules while doing environmental testing.

In addition to our continuous support of Envirothon, we also made a $25,000 contribution to the Chesapeake Bay Foundation (CBF) to fund its award-winning environmental education programs. CBF's offerings include a field experience that takes students into the Chesapeake Bay to learn about the importance of conservation, as well as Teacher Professional Learning programs that help teachers integrate environmental education into other lessons. Our donation will help CBF reach more than 13,000 teachers and students in 4th through 12th grade in schools across Virginia.

"As a company, Smithfield is passionate about educating our youth and protecting our natural environment," said Stewart Leeth, vice president of regulatory affairs and chief sustainability officer for Smithfield Foods. "This partnership with the Chesapeake Bay Foundation is an incredible opportunity to help inspire the next generation of environmental stewards."

Case Study: Building an Education Legacy

We strongly believe that education is one of the surest paths to building vibrant, healthy communities. We also know that the workforce is changing rapidly and, in order to be prepared, the next generation needs an adaptable and diverse skillset.

With this in mind, in early 2017, Smithfield Foods committed to a $3 million donation—$1 million a year over three years—to Isle of Wight County Schools in southeast Virginia, for an innovative and multifaceted educational program known as the Smithfield Foods Legacy Project. The gift—the largest the school district has ever received—is supporting a comprehensive education project aimed at preparing students at Smithfield High School and Windsor High School for a range of future careers.

The Smithfield Foods Legacy Project includes a new Junior Reserve Officer Training Corps (JROTC) fieldhouse at Smithfield High School that opened in October of 2018. The new fieldhouse provides JROTC participants and instructors with dedicated classroom space and equipment storage for drill and competition practice for students interested in pursuing military careers.

"The new JROTC fieldhouse is a tremendous addition to Smithfield High School, and we are grateful to Smithfield Foods for making it a reality for our students," said Dr. Jim Thornton, superintendent of Isle of Wight County Schools. "I'm confident that great things will happen here as our JROTC participants sharpen their skills and prepare for successful careers in the military and beyond."

The project also includes a Career Building that will house several vocational training programs, including Culinary Arts, Nursing, and Mechatronics (an emerging field that combines electronics and mechanical engineering). The facility also includes a new, state-of-the-art MakerSpace facility, which opened in January 2019, offering 3-D printers and other technologies that facilitate hands-on student research and design. A separate facility dedicated to Global Logistics is also expected to open in 2019.

In Smithfield High School's MakerSpace, students design, develop, and create products in response to requests—both from the school and the community. Here a junior works on a router preparing award plaques for the school's athletics program. Manufacturing students produced more than 100 hand-crafted plaques this past year.

The new additions will build on innovative educational facilities that are already in use in the school district. This includes a welding lab that opened at Smithfield High School in January 2018, along with a fitness room at Smithfield High and a building trades lab and greenhouse at Windsor High. A working farm, known as the Land Lab, is being expanded with a variety of small animals as part of Isle of Wight County's commitment to hands-on learning. Students have constructed fencing and a tool shed, and vegetables grown on-site are used by culinary program students.

The Smithfield Foods Legacy Project is part of a wider initiative at the school district to revamp its technical career education offerings, including plans for engineering, welding, and health sciences labs, along with culinary training facilities.

Case Study: Victory Junction Is On Target

Victory Junction is a special place. The North Carolina camp provides life-changing experiences for children with chronic medical conditions or serious illnesses. Since it opened in 2004, the camp has served nearly 48,000 children and their families through summer, weekend, and outreach programs.

In March 2018, we announced a $500,000 gift from the Smithfield Foundation to build a new indoor archery range for the camp. The Smithfield Foods Archery Range, which opened in May, provides a safe gathering place for campers to learn the sport, make friends, and enjoy the adventures and experiences of camp life—a welcomed break for children who spend much of their years enduring medical treatments or hospital visits.

"Our partnership with Smithfield is so important to Victory Junction because we simply can't serve 10,000 kids a year without the help of our generous partners and donors," said Chad Coltrane, chief executive officer of Victory Junction. "We now have an amazing indoor venue for archery, which was open in time for the start of the 2018 summer camp sessions. We look forward to watching our campers of all ages and abilities enjoy this fun and popular activity."

Victory Junction was the dream of Adam Petty, a fourth-generation racecar driver from the famous Petty family and a rising star in the sport. After Adam's tragic passing from a racing accident in 2000, the Petty family realized his dream of a camp to serve children with serious medical conditions through the opening of Victory Junction.

"Thanks to the vision and compassion of the Petty Family, Victory Junction is changing lives, and we're delighted to be a part of it," said Kenneth M. Sullivan, president and chief executive officer of Smithfield Foods. "Smithfield is proud to support Victory Junction, and we hope this new facility inspires campers to realize their own unique and incredible abilities."

Supporting U.S. Military Veterans

Veteran-related causes represent one of Smithfield Foods' charitable focus areas, and we are committed to honoring the service and sacrifice of American veterans and their families.

In 2018, Smithfield made a $50,000 donation to the Virginia Peninsula Foodbank's mobile pantry at the Hampton VA Medical Center.

We form partnerships with nonprofits that work directly with military families, as well as employee-led events that celebrate and support local veterans.

We make donations across a range of organizations and veteran-related causes. For example, in 2018, Smithfield donated $50,000 to the Virginia Chamber Foundation, part of which will directly support the HIRE VETS NOW program, which provides transitioning service members and veterans with access to career opportunities with partnering businesses in the state. We also made a $25,000 donation to a "Stars and Stripes" charity golf tournament that raised money for three veterans' causes.

For the second consecutive year, Smithfield made a $50,000 donation to the Virginia Peninsula Foodbank's mobile pantry at the Hampton VA Medical Center. In 2018, the program distributed meals to more than 2,587 veteran families in need. Thanks in part to Smithfield's donation, the pantry was able to increase the number of veterans served by 50 percent. In addition, members of Smithfield Salutes, our business resource group focused on veteran employees, volunteered at the mobile pantry to help distribute meals to fellow veterans for the second year in a row.

Our Eckrich® brand also has maintained its lasting commitment to veterans and their families. In 2018, we partnered with retailers including Safeway, SHOP 'n SAVE, and Albertson's, to donate nearly $37,000 worth of groceries to veteran families in several communities across the country. Donations included a year of free groceries —worth over $13,000—to Derrick Johnson, a U.S. Air Force technical sergeant and a three-time veteran of Afghanistan, and his family in Arizona.

Meanwhile, our employees around the country also help sponsor various veteran-focused events throughout the year, including Military Appreciation Day, Wounded Warriors fundraisers and Ride for the Warriors, a modified-bike ride to aid veterans with post-traumatic stress disorder (PTSD).

We have also stepped up our commitment to veterans with Operation 4000!—a Smithfield initiative to employ 4,000 military veterans, or 10 percent of our domestic workforce, by 2020. To learn more about our commitment to hiring veterans, see the People section of this report.

Case Study: Supporting Veteran Entrepreneurs Through the Global Good Fund

Veteran entrepreneurs fill a unique and often overlooked niche in the transition from the battlefield to the job market. According to the Small Business Administration, there are 2.5 million veteran-owned businesses that employ five million people in the United States.

Through the Smithfield Foundation, we provided a $400,000 grant to The Global Good Fund, a leadership development enterprise focused on social entrepreneurship, to launch the 2018 Veterans Leadership Program. The program offers six veteran entrepreneurs eight months of training on creating stable, long-lasting jobs and facilitating job placements for underemployed and unemployed veterans. With the Global Good Fund's expertise in social entrepreneurship, the program is specifically geared toward creating positive social impact across the veteran community.

Program participants include Dan Caporale, a Marine Corps veteran and the founder and CEO of Hire Our Heroes. The nonprofit is focused on empowering veterans and employers with tools needed to help lower veteran unemployment and underemployment at the national level. Another participant, Fred Barnes, is founder and CEO of TAC Integrated Solutions, an information technology and professional services company focused on serving defense and national security customers. Prior to starting the company, Barnes served as a Supervisory Special Agent in the U.S. Naval Criminal Investigative Service.

With the Global Good Fund's expertise in social entrepreneurship, the program is specifically geared toward creating positive social impact across the veteran community.

Veteran entrepreneurs also were invited to participate in a three-day mentor retreat with top Smithfield executives to provide hands-on advice as they work to grow and scale their businesses. Smithfield executives shared both personal experiences and lessons learned, as well as learnings from the company's own transitions with veteran entrepreneurs.

The lessons learned during the Veterans Leadership Program have already started to bear fruit for some participants. For example, Caporale's business, Hire Our Heroes, grew its revenue by almost 80 percent in 2018 compared to the previous

year, and helped over 90 veterans and military spouses get hired at full-time positions.

Our Commitment to Employees

Smithfield Foods' people are the key to our success. In order to be successful as a company, we must create the conditions for our employees to flourish and reach their full potential through talent development, diversity and inclusion, and engagement programs.

Under "One Smithfield," our workforce and our independent operating companies are unified under one holistic umbrella. Our more cohesive structure allows us to enhance our focus on employee engagement, retention, and diversity. At Smithfield, we are committed to ensuring we offer all current—and future—employees opportunities to reach their full potential.

Employees at a Glance
More than 54,000 employees globally
Approximately $700 million in pension contributions over the last five years
Approximately $835,000 in education programs

In recent years, we have expanded our focus on hiring U.S. military veterans. Veterans are not only an important part of our society, they also bring valuable skills and expertise to the workforce. Through Operation 4000!, an initiative we launched in 2016, Smithfield has a goal to employ 4,000 military veterans—or 10

percent of our domestic workforce—by the end of 2020. The initiative focuses on hiring skilled candidates with prior military service while working to retain and engage veterans already in our workforce. Operation 4000! is part of Smithfield's commitment to supporting our country's veterans and building a more diverse and talented workforce.

We know our employees are our greatest asset, and we strive to create a fair, ethical, and rewarding work environment. We want employees to spend their careers at Smithfield, and we are developing new ways to make the experience of working at the company a more enriching and fulfilling one. We place a priority on promoting employees internally and supporting educational opportunities, including internal training, scholarships, and tuition assistance, which can advance employees' careers.

Our Workforce by Segment	2018
Fresh Pork and Packaged Meats	35,500
International	13,800
Hog Production	5,100
Corporate	100
Total	**54,500**

Workforce figures as of the end of 2018. About 47 percent of our U.S. workforce is unionized, and substantially all our employees are full time. About 87 percent of our workforce is compensated based on hourly rates.

Value Creation

We create value through the employment of more than 54,000 people, many of them in rural areas where job opportunities are sometimes limited.

Our operations also contribute to the economic stability and development of local communities, where we purchase goods and services and where employees reside. The vast majority of our workforce holds full-time, permanent positions, which contribute to individual, family, and community stability.

By the Numbers	2018
Total wages and salaries (including bonuses and stock options)	$2.2 billion
Total benefits (including pension expense)	$360 million
Total compensation expense (excluding payroll taxes)	$2.6 billion

Data includes our domestic and international operations and may not sum due to rounding.

To develop and maintain a skilled workforce, we invest in employee training, workplace safety, and health and wellness activities. These programs can have an impact on our bottom line by helping improve employee productivity and decrease company costs. For example, workplace safety improvements reduce workers' compensation claims and absenteeism, while employee engagement programs support recruiting and retention, thereby helping reduce turnover.

We also offer a pension plan for employees in the United States that contributes to employee retention. Over the last five years, we've contributed approximately $700 million to the pension plan which remains more than 90 percent funded.

Employee Retention and Recruiting

Over the past several years, we have made a strategic push to reduce employee turnover through a variety of safety and employee engagement programs, and today, our turnover rate beats the industry average.

Our rate in the United States has fluctuated over the years and was approximately 32.5 percent[1] in 2018, compared to an average in the meat industry of over 50 percent. Our U.S. operations continue to implement employee engagement programs that give us a competitive advantage in hiring and retaining our employees. Although we achieved lower turnover than the industry average, we continue to seek solutions that will reduce turnover in our low unemployment U.S. market.

Similarly, at our international locations, turnover is nearly 25 percent and is mainly driven by low unemployment rates and opportunities for skilled workers to work in other European Union countries. Smithfield Foods remains committed to improving our overall retention rates for both our salaried and hourly workforces through positive employee relations, engagement initiatives, and competitive compensation and benefits programs.

As part of this effort, we developed an Onboarding Committee in 2018 tasked with identifying best practices and areas for improvement in new employee orientation protocols at our U.S. processing facilities, where turnover rates can vary widely across locations. In addition, Smithfield surveyed approximately 2,000 employees across six U.S. locations in 2018 to develop an "engagement score" at each location. The survey allowed us to identify impediments to engagement, such as communication or leadership issues, as areas for improvement.

In Poland, we offer employee development programs targeted at increasing employee retention. For example, we offer training for management at all levels focused on building leadership skills. We also developed a program aimed at identifying individualized career development paths for production workers, and ensuring compensation is aligned with local benchmarks.

Rethinking Recruiting

Finding the right people for the right jobs is a perennial challenge for many industries, and this is especially true in the meat industry. We are keenly focused on retaining talent and attracting the next generation of employees.

Increasing diversity across the company is also a high priority at Smithfield. We regularly recruit at colleges and universities with a focus on Internship, Manager-in-Training, and Career Foundation Program roles. Through "One Smithfield," we have been able to present a more global, cohesive presence to potential recruits, helping to improve recruiting across the company.

In Poland, we work with several life science and agricultural universities to enhance students' academic experience by organizing conferences for students and animal care professionals specializing in porcine disease management and providing employment opportunities. This partnership provides important relationships with the universities' scientific community. In addition, our food processing operations have a robust internship program for more than 200 interns from nearly two dozen Polish secondary schools each year. At our training facility in Opole, Poland, we develop skilled instructors and provide important vocational education and job skills training to students.

Our operations in Romania support various internship programs in partnership with universities. For example, we have worked with Banat University of Agricultural Sciences and Veterinary Medicine for the past decade to offer a six-week internship program in the United States to help students gain knowledge and real-world experience related to modern hog production practices.

To encourage more internal applications from Smithfield employees, we enhanced our U.S. online human resources portal in 2018. Through this upgrade, we centralized all internal job listings, added capabilities to identify current Smithfield employees, and simplified the application process.

Our farming operations in Europe also utilize centralized job listings, giving mid-level managers the ability to apply for positions of interest at any European location. Removing perceived geographic barriers to employment has resulted in improved performance at several locations.

[1] We do not currently track employee turnover by age group or gender, although we do track turnover regionally at each of our segments except International.

Talent Development

Providing training and development opportunities to all our employees is a crucial aspect of talent retention. It also contributes to our company's success and overall ability to drive innovation.

We offer a range of talent development programs, both in-person and online, to employees across the organization. To ensure we develop strong leaders across the company, we offer training programs in the United States aimed at the supervisory level:

- Our **Emerging Leaders** program helps prepare select employees for new roles with greater levels of responsibility.
- Our **Smithfield Leads** program is a 12-month program to strengthen and develop top leaders through formal classroom training, executive briefings, and team projects. Over the past eight years, we have produced nearly 200 Smithfield Leads graduates with a nearly 78 percent retention rate.
- Our **Manufacturing Excellence: Understanding Yields, Labor, and Quality** program helps frontline managers understand the business operations of the company. The in-person class includes hands-on instruction about yields, margins, and cost efficiencies, as well as meat science and meat processing techniques.

In 2018, we carried out a Leadership Skills Assessment to identify key competencies for our supervisor positions. The feedback received from more than 600 employees will help us more effectively target the development of new training programs in the future. In addition, every employee in the supply chain department participated in training and a skills assessment in 2018 to drive employee development and advancement, in line with our guiding principle of Operational Excellence.

In total, in 2018, over 4,300 employees in the United States attended more than 500 training sessions at 19 plants, two distribution centers, and three Smithfield Foods offices, representing nearly 40,000 hours of learning. Additionally, in 2018, over 500 training sessions reaching nearly 30,000 employees were conducted on the topic of preventing workplace harassment. This training represented an additional 30,000 training hours.

We also offer online training geared toward workers in our office locations as part of the Smithfield University program. Available through our company intranet, Smithfield University courses can be self-led or instructor-led and offer a range of topics, including computer skills, leadership training, sales knowledge, and public speaking and communications. In 2018, over 3,500 people completed an online learning course, up from around 1,400 last year. While Smithfield University is primarily utilized by our salaried employees, we are exploring ways to make the

platform more accessible to hourly workers, as well as expanding our course offerings.

Our Career Foundation program, which allows 25 newly hired, recent college graduates to discover different aspects of the business through a two-year rotation schedule, continues to serve as a pathway for developing talent. In 2018, we streamlined the program, which began in 2013, based on feedback from participants and senior managers. Our participants in the Sales and Business track now focus on one of three business channels—retail packaged, retail fresh, or foodservice—and will serve three eight-month rotations in sales, management, and marketing roles. The new program structure allows participants to build a more holistic understanding of a specific business channel and achieve greater impact in their role. In 2018, over one-third of our Career Foundation participants came from a diverse background, and 55 percent were women.

Our ACHIEVEmentorship Program matches U.S. employees with an experienced mentor based on their interests and expertise. In 2018, 390 mentors and mentees participated in the program, including partnerships among 90 people that were continued from the previous year—a sign of the value created by these partnerships. In a survey of ACHIEVEmentorship participants, 92 percent said they would recommend the program to others. Many participants point to the valuable learning opportunities and exposure to different business areas, as well as the genuine friendships formed, as program strong points.

Several of our locations globally offer classes that aim to teach basic language skills to improve communications with employees that may not speak the local language.

In Poland, we conduct an apprenticeship program that prepares hundreds of recent graduates to hold specialized positions. Once they are accepted into the program, apprentices are assigned a mentor who helps them follow personalized development plans. For the first three months, the apprentice works in a variety of departments, acquiring basic skills and becoming familiar with food production. After deciding on an area of specialization, the apprentice spends another three months working in a department of his or her choice, with the goal of being placed in a permanent position.

More than 100 of our managers in Poland have completed a six-month career development program aimed at cultivating skills in leadership, time management, public speaking, and financial management.

In our Romanian operations, we provide a three-year training program designed to develop highly qualified maintenance employees with specialization in the electrical and mechanical fields.

Our hog production operations in Romania offer employees professional development opportunities through internal certification programs. These multi-year programs include up to 80 hours of theoretical training and 600 hours of practical training designed to address a wide variety of topics tailored to each employee's area of expertise. To date, hundreds of employees have participated. In 2018, 63 percent of eligible hog production employees had completed certification programs.

We also developed an onboarding program aimed at successfully integrating new employees into our fresh meat processing operations in Romania. In 2018, nearly 270 employees participated in this program. In addition, 22 employees participated in a new training program for machine operators.

We also have a series of professional development programs in Romania for our management teams and sales force. These programs are designed to help individuals meet their Personal Development Plan goals. By supporting personal development of leadership skills for key positions within the company, we hope to retain our most promising employees and reach new production and sales targets for our company. To date, more than 100 employees have participated in the program.

Educational Opportunities

Education is an important part of our employee engagement strategy. Our employees often need to learn skills through the training programs we offer in order to advance within the company. We are also continuously looking for ways to identify and support the growth of employees across the company who are seeking to learn new skills.

For example, in addition to our many on-the-job training programs, we provide financial support for employees who are going back to school to earn college or graduate degrees. Eligible employees have access to a tuition assistance program to help meet the cost of pursuing their educational goals. In 2018, we provided over $835,000 to employees in the United States toward their education.

The Smithfield Foundation, our company's philanthropic arm, provides scholarships for the children and grandchildren of our employees. In 2018, the Foundation awarded 183 scholarships totaling over $790,000, up from around $660,000 in 2017. In order to be eligible, a student must be a dependent of a Smithfield employee who has been with the company for at least 18 months, demonstrate financial need, and be accepted by one of 12 schools we have named as partners. Since the inception of this

program, we have awarded 880 annual scholarships with a combined worth of more than $4.8 million.

Benefits

Competitive wages and benefit programs vary according to facility, location, and position. In 2018, the average hourly wage across Smithfield's domestic operations was $19.71, including salaried personnel—significantly above the current federal minimum wage of $7.25 an hour. Hourly positions are hired locally whenever possible as part of our commitment to strengthening the communities where we live and work.

We offer comprehensive health insurance and benefits packages to employees in recognition of the value they bring to the company. These include a variety of benefits depending on country of residence, including life insurance; medical, vision, and dental care; and 401(k) plans. Smithfield has contributed about $700 million in voluntary pension contributions for employees in the United States over the last five years. With these contributions, the pension plan remains more than 90 percent funded.

Diversity, Inclusion & Engagement

Companies thrive through the people they employ. As workforce demographics continue to shift across most industries, we recognize that it is more important than ever to ensure each employee—and job candidate—is embraced for his or her unique strengths and background.

We also understand that our consumer base is very diverse, and we strive to make our workforce more reflective of the people who buy our products.

Promoting an atmosphere of equality and respect in the workplace is of primary importance. For that reason, all Smithfield Foods facilities in the United States adhere to our Equal Employment Opportunity policies and programs. Our operations in Poland and Romania follow local labor laws in their respective countries that govern fair treatment and discrimination.

Diversity and inclusion don't stop at hiring and recruitment. We work every day to make Smithfield a place where all our employees feel welcomed and supported. To support these efforts, in 2018, Smithfield employees in the United States participated in a new training program focused on creating a harassment-free workplace. New hires will also be required to participate in the training. New employees in Romania are trained on human rights during their orientation. In addition, their training includes information about how to keep harassment out of the workplace. At our operations in Poland, we have conducted numerous trainings over the last five years about harassment in the workplace and new supervisors are trained to avoid and counteract harassment as part of their orientation to the company.

Smithfield enjoys good representation of women and people of color as an organization, but we recognize we have more work to do to increase diversity in various leadership positions. To support these efforts, we participate in industry groups—such as the Agriculture Diversity and Inclusion Roundtable; Together We Grow, a diversity-focused agricultural consortium; and the STEM Food & Ag Council—that are focused on engaging the next generation in STEM-related careers in the agriculture industry.

In 2018, we succeeded in increasing both the number of applications and hires of diverse candidates for corporate management positions in the United States. For roles in middle management or higher, diverse candidates—which include women, diverse women and diverse men—made up 53 percent of applications submitted to hiring managers, compared to 50 percent in 2017. In total, diverse hires for positions in this tier increased from 37 percent to 46 percent.

Supporting Our U.S. Military Veterans

Smithfield's commitment to hiring veterans is one important way we are able to serve the military community. Operation 4000! is our initiative aimed at employing 4,000 veterans at Smithfield by the end of 2020, representing 10 percent of our domestic workforce.

We believe that this is not only the right thing to do for the country, but also the right thing to do for Smithfield. We are constantly looking for skilled workers with a technical background, and there are many qualified veterans seeking long-term employment who fit this profile. These men and women not only bring their skills and expertise to the company, but, as faithful servants to the country, they also embody one of our core principles: Responsibility. Operation 4000! will help Smithfield continue to fulfill its mission to produce "Good food. Responsibly.®"

In 2018, we hired a total of 606 veterans, bringing the total number of veterans working at Smithfield to 1,761, or 4.4 percent of our U.S. workforce. Our recruitment efforts rely on local hiring managers, with distinct hiring goals for our individual locations. To facilitate the recruiting process, we also engage directly with military transition offices, which provide resources for families returning to civilian life.

Since launching Operation 4000! in 2017, we have honed our recruiting process, identifying more effective ways to find and hire qualified veterans. These include creating military-specific recruitment materials and job postings, as well as expanding our presence at military-exclusive job fairs at bases around the country. In 2018, Smithfield attended over 35 military hiring events, an increase of more than 50 percent from the previous year. We also have added more resources to support our Operation 4000! goal, including the addition of a dedicated full-time employee to support our military talent acquisition manager.

In late 2018, we began to focus our efforts at 13 military bases across the country that are key recruitment targets due to their proximity to Smithfield facilities and their size. Recruitment activities at each base include job fairs and hiring events and also extend to employer panels, networking events, and volunteer activities that help spread awareness of Smithfield. We also developed an onboarding program specifically tailored for veterans that sets expectations and emphasizes opportunities within Smithfield.

In addition, we offer two programs specifically aimed at preparing veterans for leadership opportunities at Smithfield. Our Military Fellowship program is an 18-month rotational leadership development program for high-caliber, recently transitioned military leaders. Our Military Supervisor-in-Training program trains 12

high-potential veterans in the skills they need to become production supervisors in our fresh and packaged facilities over the course of a year.

We have continued to strengthen the presence of our veteran-focused Employee Business Resource Group (EBRG), Smithfield Salutes. The aim of this group is to ease the transition of veterans into the company and to provide support resources for existing employees with prior military service. Members focus on three key pillars: Recruitment, Outreach, and Internal Engagement. Since launching in 2017, local Smithfield Salutes chapters have expanded to locations around the country.

Smithfield is a Virginia Values Veterans (V3)-certified company, showing our commitment to hire veterans in that state, and we have also joined the Veteran Jobs Mission, a national collaboration of over 200 companies aiming to hire one million veterans.

Expanding the Pipeline

Ensuring that a more diverse roster of candidates reach our applicant pool is a fundamental part of Smithfield's commitment to increasing diversity at all levels of the company. As part of this objective, we continue to expand and evolve the ways we recruit employees.

College recruiting in the United States is an important part of our drive toward diversity and, in addition to the many animal science programs from which we have traditionally recruited employees, we have expanded hiring outreach at historically black colleges and universities (HBCUs) and at schools associated with the Hispanic Association of Colleges and Universities (HACU). In 2018, we focused recruitment efforts on 13 schools, four of which are HBCU or HACU schools. We also refreshed our Campus Coordinator Program, which places current Smithfield employees at college recruiting events. The program now includes a selection process and training to ensure our campus ambassadors, who dedicate a considerable amount of their free time to the events, are more effective. In 2018, Smithfield coordinated 76 on-campus events, compared to 70 events in 2017, and engaged with approximately 1,700 students.

In 2018, we exceeded our inaugural diversity goal for our internship program in the United States. The 10-week program, which provides a small group of students an opportunity to experience the work culture of Smithfield, welcomed 41 students, 37 percent of whom were diverse. This exceeded our goal of 30 percent and represented an increase of 10 percentage points from the previous year. Fifty-six percent of our interns in 2018 were female, and we remain committed to maintaining at least 50 percent participation by women in the program.

The internship program also continues to expand across Smithfield. Interns are recruited for a range of positions across our organization, including roles in finance, engineering, marketing and animal care. In 2018, interns were recruited to our corporate offices, fresh and packaged plants, and, for the first time, our distribution center. Program participants receive training courses that provide a broad overview of the company, support development of workplace skills, and provide an opportunity to become integral members of the Smithfield team.

Around 40 interns also were involved in Smithfield's hunger relief efforts, helping to prepare over 1,500 meals for people in need at foodbanks in Hampton, Virginia, and Kansas City, Missouri.

According to a survey of interns in 2018, 92 percent of respondents said they felt they took away real-world experience and would recommend the internship, while 90 percent of intern managers recommended their intern for full-time employment. About 55 percent of Career Foundation Program openings were filled with summer internship participants.

We are proud of the progress on diversity that we have made in recent years and are working to make continuous progress in the future, but we also acknowledge that there remains room for improvement.

2018 U.S. Workforce Diversity	Executives	Hourly Employees	Salaried Employees	Companywide
American Indian or Alaskan Native	0.0%	1.4%	1.1%	1.4%
Asian	2.7%	8.0%	2.7%	7.2%
Black or African-American	1.8%	32.9%	10.4%	29.5%
Hispanic	0.9%	33.0%	12.1%	29.9%
Native Hawaiian or Other Pacific Islander	0.0%	0.2%	0.1%	0.2%
Two or more ethnicities	0.0%	0.9%	0.7%	0.9%
White	94.7%	23.6%	72.8%	31.0%

2018 U.S. Workforce by Age and Gender	Female	Male	Under 30	30–50	50+	Total
Governance bodies (leadership)	880	2,930	218	1,938	1,654	3,810
Number of full-time employees	14,538	24,543	7,017	19,058	13,012	39,087
Percentage of employees	37.2%	62.8%	18.0%	48.8%	33.3%	

We do not have a substantial number of part-time or seasonal employees. Therefore, we do not report them separately. Smithfield's work is not substantially performed by workers who are legally recognized as self-employed, or by individuals other than employees, including employees and supervised employees of contractors. All figures represent the domestic workforce as of the end of 2018. Six employees did not provide their gender, and 126 employees did not report their racial or ethnic identity.

2018 International Workforce by Age and Gender	Female	Male	Under 30	30–50	50+	Total
Number of full-time employees	6,461	7,368	2,657	7,370	3,802	13,829
Percentage of employees	46.7%	53.3%	19.2%	53.3%	27.5%	

Workforce data as of the end of 2018. Figures include operations in Poland, Romania, and the United Kingdom.

Employee Engagement

We have a responsibility to ensure our employees are not only treated with respect at all times but are also provided opportunities for fulfilling employment. To do this, we engage our employees through various programs and have taken steps across our operations to evaluate and enhance employee satisfaction. Our ultimate goal is to make Smithfield a place where employees can find long-term careers, not just temporary work, and gain the knowledge and expertise needed to continually advance within the company.

Employee Business Resource Groups (EBRGs)

EBRGs are a valuable way for Smithfield to engage with our people while creating new professional and personal connections among employees across all levels and operating areas. Over recent years, we have expanded the number of EBRGs at Smithfield locations in the United States, which has been well received. At the same time, we recognize that most EBRG participation comes from our salaried workforce, and we are exploring ways to better engage our hourly employees.

Our Women's Connect EBRG organizes lectures, panels, networking events, and other enrichment opportunities that help support its four "core competencies": Leading Business, Leading Culture, Leading People, and Leading Self. In 2018, Women's Connect held speaking events, featuring executives from Smithfield and outside companies, that touched on the themes of leadership and change management.

Our Smithfield NEXT group, focused on millennials, helps expand our definition of "diversity" beyond just race and gender to also include age and thought processes.

The group connects employees early in their career to learning, networking, and development opportunities. The group's speaking, networking, and community engagement events have attracted interest and participation across all age groups, allowing for additional opportunities to network across Smithfield. In 2018, Smithfield NEXT hosted several speaking events with outside experts who focused on issues like innovation and diversity in the workplace. The EBRG organized other member events, including meet-and-greets for company interns and top executives, and a volunteering event to help a local YMCA collect school supplies and clothes for students in need.

Both the Smithfield NEXT and Women's Connect leadership teams include representatives from our plants, farms, and offices across the country.

Our newest EBRG, established in early 2019, is the Black Professional Network, a group committed to helping Smithfield achieve its mission and vision by attracting, retaining, developing, and promoting Black and African American leaders. Individuals who join the new business group have the opportunity to share best practices, mentor, and network with other individuals. The primary goal of this group is to help employees fully leverage their diverse backgrounds in positive business outcomes and professional development and to achieve personal and professional goals. In addition, the group will focus on developing a networking system among Black and African American employees, providing effective mentoring, supporting increased promotions, improving business outcomes, and achieving better representation of Black and African American individuals in key roles throughout our company.

Team Smithfield

Team Smithfield is our employee engagement initiative focused on strengthening company culture and building internal support for Smithfield's mission, vision, and social purpose. Team Smithfield is comprised of employee-volunteers who act as internal corporate brand ambassadors. They share information on company programs and initiatives within the workplace and encourage colleagues to participate in Smithfield events. Our goal is to recruit one percent of our workforce, or about 400 people, from facilities, farms, and offices across the United States to serve on Team Smithfield. As of the end of 2018, about 340 employees had signed on. This initiative helps bring our people together—no matter where they are located.

Local Employee Engagement Activities

Each Smithfield facility has its own unique relationship with the surrounding community, and many of our employee engagement activities occur at the local level. Human resources and plant management teams at our facilities look for new opportunities to better integrate Smithfield into their communities while giving employees a chance to access meaningful events and activities.

Every year, Smithfield employees participate in hundreds of local events, including Local Hero Appreciation Days honoring first responders, Envirothon, collection of holiday donations, community clean-ups and celebrations, and cook-off competitions.

As a global consumer packaged goods and protein company, Smithfield plays a vital role in providing nutritious, affordable protein sources to consumers around the globe. All our employees help us fulfill this mission through their daily efforts at Smithfield, or through direct community action.

Responsibility, Operational Excellence, and Innovation Awards

We recognize employees who improve our company by exemplifying three of our guiding principles—Responsibility, Operational Excellence, and Innovation (ROI). The ROI Awards are designed to inspire and encourage individuals and teams to strive for excellence and to build a better, more sustainable future for our company and our communities. Employees at all levels of the company are eligible to apply or be nominated, and winners receive a $5,000 award.

The 2018 winners are as follows:

Responsibility

- Mike Holt, Cincinnati, Ohio
- Bruce Taguchi, Vernon, California
- Don Bond, Middlesboro, Kentucky
- Tom Cambron, Middlesboro, Kentucky
- Dave Patenaude, Springfield, Massachusetts
- Tracy Radcliff, Aaron Coleman, Adonis Brown, Alex Nolen, Charles Warren, Dominic Bailey, Eric Williams, Ron Gill, Tyler Terry, and Tyrone Reynolds, Greenfield, Indiana

Operational Excellence

- Jason Bame, Sioux Falls, South Dakota
- John Keller, Bolingbrook, Illinois
- Daniel Tort, Arnold, Pennsylvania
- Steve Ramsey, Bentonville, Arkansas
- Timothy Cooper, Jack Buckner, Miguel Talamantez, Harold Hammond, Arthur Evans, and Phyllis Fannin, Grayson, Kentucky
- Gerry Black, Richard Kennedy, Colleen McConnaughey, Lisa Wycich, and Douglas Bryner, Arnold, Pennsylvania

Innovation

- Tysen Jay, Yuma, Colorado
- John Sloas, Shane Tarring, and Joe Cremeans, Grayson, Kentucky

- John Zabel and Dave May, Kansas City, Missouri; Ted Stafford and Chuck Piper, Tar Heel, North Carolina; Ricardo Burgos, Milan, Missouri; Dennis Hamm, Sioux Falls, South Dakota; Ronald Hickman, Smithfield, Virginia; Jason Roskilly, Orange City, Iowa; and Tom Roling, Denver, Colorado
- Adina Uta, Florin Raba, Gheorghe Szekely, and Ioana Bobici, Romania
- Gina Henry, Laurinburg, North Carolina; Judy Fenton, Wilmington, North Carolina; and Teri Noe, Princeton, Missouri
- James Davidian, Hector Garcia, Jeff Gonzalez, Vladimir Lobato, Everett Sandoval, and Michael Spainhower, Vernon, California

Health & Safety

The meat industry has long been associated with hazardous work. However, at Smithfield Foods facilities in the United States, injury rates have, for years, been significantly better than the industry average.

While we have made great strides over the last decade, Smithfield is constantly working to better our safety performance at all our locations. For facilities in the United States, we report three performance metrics to the U.S. Occupational Safety and Health Administration (OSHA): Total Incident Frequency Rate (TIFR); Days Away, Restricted, or Transferred (DART); and Days Away from Work Injury and Illness (DAFWII). Our long-term improvement in workplace safety stems from ambitious targets to continuously improve our performance and to meet or beat relevant industry averages for these metrics.

Safety policies at our international facilities are aligned with national regulations and European Union directives, including those of the European Agency for Safety and Health at Work. To better align our companywide practices, we developed our own methodology to track safety performance in Poland and Romania, and also set annual performance targets aimed at achieving continuous improvement. In 2018, we saw a double-digit improvement in injury rates.

Our Health & Safety Goal

- Reduce employee injury rates

Our Health & Safety Targets

- Continue to reduce Total Incident Frequency Rate (TIFR) and maintain levels below the relevant industry average in the United States
- Achieve annual Days Away, Restricted, or Transferred (DART) and Days Away from Work Injury and Illness (DAFWII) results better than relevant industry averages in the United States
- Maintain safety engagement level at 40% or more of employees globally
- Each operating segment to score at least an average of 86% to 93% on monthly safety scorecard globally
- All safety leadership complete at least 10 hours of health and safety-focused training globally
- Meet or beat location-specific injury rate targets in Poland and Romania

With our "One Smithfield" approach, we have continued to further standardize health and safety policies across our locations. For example, in 2018, we rolled out the Smithfield Injury Prevention System (SIPS), our new safety management protocol, to all international locations. By aligning practices at our facilities around the world, we aim to create a more holistic safety culture and maintain our record of continuous improvement in safety performance.

Health & Safety Performance

At Smithfield Foods, the health and safety of our employees is a core value. While there will always be room for improvement, we have seen dramatic reductions in worker safety incidents in recent years and, in the United States, have consistently out-performed our industry peers. Our consistent performance improvements over time illustrate our ongoing efforts to ensure our safety management programs encompass best practices, including prioritizing the implementation of a strong safety culture at Smithfield.

Smithfield recorded across-the-board improvements in our OSHA metrics in 2018, including our best TIFR performance in more than a decade. We attribute these continuous improvements to our "One Smithfield" approach, including the implementation of our Smithfield Injury Prevention System, which has allowed us to effectively share safety best practices across locations.

In 2018, two workers were accidentally killed while working at Smithfield—one at our Tar Heel, North Carolina, facility—and one at a hog farm. We are deeply impacted whenever tragedy impacts our Smithfield Family and worked diligently to determine the factors that contributed to these events. We conducted detailed internal investigations and cooperated fully with all external investigations. We followed up with improvements to our safety programs to reduce the risk of similar accidents occurring in the future.

OSHA Total Incident Frequency Rate (TIFR)

The number of work-related injuries and illnesses per 100 employees that result in medical treatment has fallen substantially. In 2018, our TIFR fell by over seven percent from the previous year.

OSHA Days Away, Restricted, Transferred (DART) Rate

The number of work-related injuries and illnesses per 100 employees that result in an employee missing work, having restricted duty, or being transferred from his or her regular duty work assignment fell by eight percent from the previous year.

OSHA Days Away from Work Injury and Illness (DAFWII) Rate

The number of work-related injuries and illnesses that result in one or more days away from work per 100 employees fell by over 14 percent from the previous year.

Processing Facilities: TIFR, DART, and DAFWII Rates Compared with National Averages

Year	TIFR			DART			DAFWII		
	Smithfield	A&P	AI	Smithfield	A&P	AI	Smithfield	A&P	AI
2014	3.45	5.5	3.4	2.48	3.7	1.8	0.64	1.0	1.1
2015	4.08	5.4	3.3	2.90	3.7	1.7	0.79	1.0	1.0
2016	3.75	5.3	3.2	2.57	3.8	1.7	0.77	1.0	1.0

2017	3.46	4.8	3.1	2.50	3.5	1.6	0.62	0.9	1.0
2018	3.21	N/A	N/A	2.30	N/A	N/A	0.53	N/A	N/A
14–18 Change	**–7%**			**–7%**			**–17%**		

A&P = National averages for animal slaughtering and processing industry
AI = National averages for all industries, including state and federal government
All values are calculated per 100 U.S. employees for a calendar year. National averages for meat industry and all industries are from the U.S. Department of Labor's Bureau of Labor Statistics (BLS). Data were not yet available for 2018 at the time of this report's publication.

Hog Farms: TIFR, DART, and DAFWII Rates Compared with National Averages

Year	TIFR		DART		DAFWII	
	Smithfield Hog Farms	National Average—Hog Farming Industry	Smithfield Hog Farms	National Average—Hog Farming Industry	Smithfield Hog Farms	National Average—Hog Farming Industry
2014	4.6	9.0	3.9	6.6	1.1	2.9
2015	4.6	8.0	3.3	5.1	0.9	2.1
2016	4.2	6.8	3.1	3.5	1.0	1.7
2017	3.8	7.7	3.0	4.4	0.6	2.1
2018	3.3	N/A	2.3	N/A	0.5	N/A
14–18 Change	**–28%**		**–41%**		**–55%**	

National averages for hog farming industry are based on data from the U.S. Department of Labor's Bureau of Labor Statistics (BLS). Data were not yet available for 2018 at the time of this report's publication.
We track OSHA metrics for Hog Production separately so that we can better compare our progress to relevant industry averages.

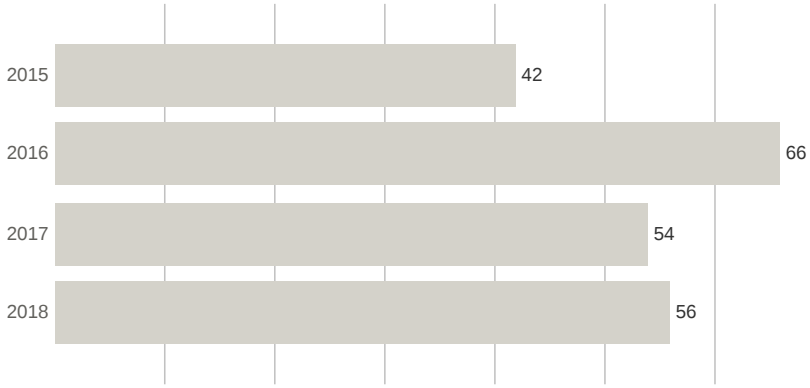
OSHA Citations

In 2018, Smithfield had 56 regulatory inspections conducted at locations across the country, receiving 15 citations, in line with the previous year's results. Some OSHA investigations, not included in the annual tally below, began in 2018 and are continuing into 2019.

Smithfield remains committed to constantly improving our safety record wherever and however possible.

OSHA Inspections, Citations, and Penalties

Inspections



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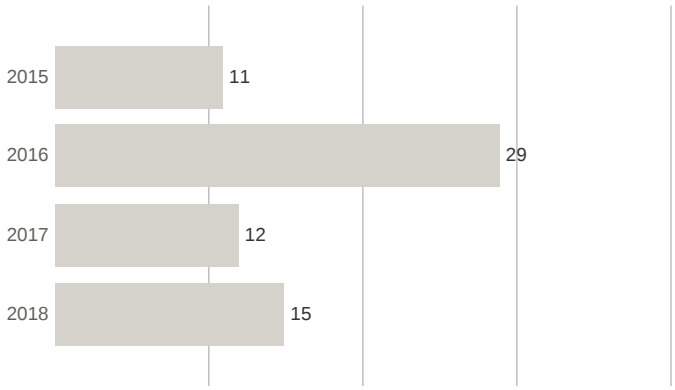
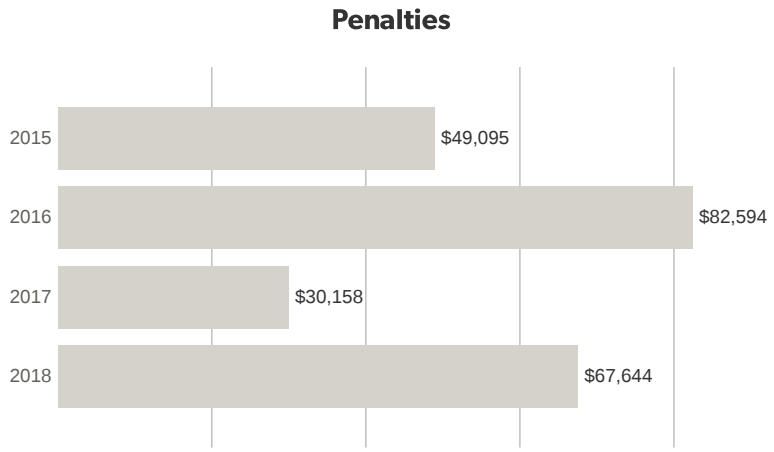


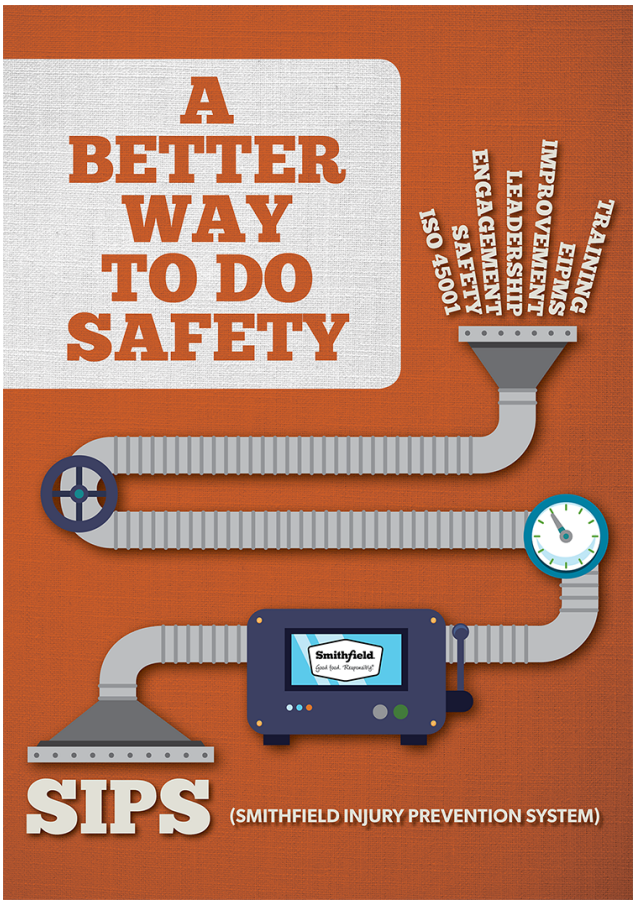


Some inspections that began in 2018 did not conclude before the end of the calendar year. As a result, the number of citations and penalties may be adjusted after all inspections are finalized.

Our Safety Management System

For more than a decade, Smithfield Foods has taken a systematic approach to injury prevention. In 2018, we continued the implementation of a new safety management program: the Smithfield Injury Prevention System, or SIPS. The new program, now in place at all locations globally, builds upon the successes of our original Employee Injury Prevention Management System (EIPMS) while working toward greater process standardization and worker participation across all aspects of the business.

SIPS is based on the proven principles of EIPMS while incorporating key components of a new set of standards developed by the International Standards Organization (ISO). ISO 45001, which was introduced in early 2018 as the first ISO management system standard created specifically for worker safety and health, is becoming the new global benchmark against which organizations can be measured for these areas. Many of the basic building blocks within ISO 45001 mirror Smithfield's EIPMS.



Worker participation and consultation are crucial components of the success of SIPS. Prior to roll out, the program was socialized through companywide videos and posters in our facilities and breakrooms. We also offered a series of regional training modules, including monthly web-based workshops. The SIPS implementation process took place throughout 2018, with a new module introduced each month at all locations globally. Implementation concluded in December, and we are conducting internal audits throughout 2019 to validate program compliance.

Our Management Approach

Safety management operations in the United States are centralized under a single role, the senior safety director. Our core team of safety leaders, each responsible for one of five strategic areas, all report to the senior safety director. This approach allows us to build a more cohesive safety culture throughout our domestic operations.

We continue to distribute information to our employees in innovative ways, such as our interactive safety trainings. We offer computer-based training courses that cover

a range of safety topics, including customized lessons based on the unique needs of certain locations. Since 2015, when we launched our first online training module in the United States, employees have completed nearly 22,000 modules through 16 different online safety courses.

Specific training courses for plant-level safety managers in the United States were created in response to a common challenge across our company: Safety managers working on the floor have very little time to schedule in-person, follow-up training classes outside of their day-to-day tasks. By moving the course material to a digital platform, safety supervisors are able to complete the necessary training at their own pace, thereby spending less time in a classroom and more time on the plant floor eliminating hazards.

The interactive courses are built through a software program that allows us to customize the material with animated videos, voice-overs, and quizzes that give immediate feedback on incorrect answers. Quiz results are recorded, and our management team is able to analyze responses on an individual and group level to identify any gaps in understanding and respond accordingly. Course topics are selected based on an analysis of companywide safety audits and employee feedback.

In 2018, we implemented a new series of eight training modules focused on new supervisor safety orientation. This new program was designed to improve the efficiency of our existing orientation program in the United States and help new recruits coming from outside the meat industry better understand our safety operations. The training is required for both existing and incoming supervisors.

Properly trained employees create value at every level of our company. The regular, high-quality training provided to team members enables them to work more safely, create a better work environment, and continue company successes.

While health and safety performance in our international operations is overseen by the U.S. senior safety director, safety personnel at our international locations report to senior management in their respective country of operations.

Our operations in Romania developed the P.O.R.C. program which empowers employees to identify risks in several areas, including health and safety, biosecurity, animal welfare, environment, and food safety and quality.

P.O.R.C. stands for the following:

- “Prevenire” (Preventing accidents)
- “Observare” (Observing risks in all areas)
- “Reportare” (Reporting by all employees)

- "Corectare" (Correcting by the management system)

This program aims to leverage our employees' valuable insights into process improvements, improved compliance, increased certification and standardization, and optimized internal management procedures. To date, employees have made well over 4,000 observations which have avoided potential incidents.

Our locations in Romania also provide web-based training programs at all hog production locations.

Injury Prevention & Engagement

Employee engagement is an important part of managing safety processes at all levels of the organization, particularly during the transition to SIPS. We measure worker participation—and progress toward our annual engagement targets—through monthly safety scorecards. In 2018 we adapted the existing scorecard, which every location fills out, to better match SIPS. Each employee participating in a voluntary event—such as a safety talk, meeting inspection, or any process improvement planning—is counted once through the safety scorecard to measure each location's engagement percentage.

For our U.S. locations, we raised our safety engagement target from 30 percent to 35 percent in 2018—a level that we have surpassed in recent years. This year, our safety engagement level reached 45 percent, a slight decline from 48 percent the previous year. Our international locations exceeded their 2018 safety engagement target of 30 percent, showing consistent improvement over the last three years. Our companywide target for engagement in 2019 is 40 percent.

Engagement	2015	2016	2017	2018
United States	38.2%	43.1%	48.0%	45.0%
Poland	15.6%	24.5%	31.0%	31.3%
Romania	10.2%	27.8%	30.0%	37.5%

Our Behavioral Risk Improvement (BRI) program is another initiative that increases engagement by encouraging hourly employees to observe each other and prevent at-risk behavior to reduce the potential for injuries and illnesses. We currently have nine active BRI locations in the U.S. To further support our efforts, we plan to

conduct a one-day "Safety Bootcamp" event in 2019 to provide a networking and training opportunity for all safety employees who have joined our U.S. locations within the last year.

In Poland, we hold monthly team meetings to review occupational risk, confined space work, and corporate policy. Every location also undergoes a monthly safety review and inspection.

Our operations in Romania increased engagement by encouraging employee involvement in our P.O.R.C. program. In 2018, we launched a series of round table meetings designed to improve performance by providing continuous training on how to identify and prevent occupational health and safety risks.

Auditing and Inspections

Consistent inspections and auditing of each facility is a key element of our success in reducing injury and illness rates. Each month, every Smithfield facility is required to undergo a complete inspection, performed by the internal safety and management teams. The inspection covers specific items and areas of each worksite.

In addition to monthly inspections at every location, each segment of the business has an audit program that evaluates our safety management systems and our regulatory compliance for effectiveness and opportunities for improvement. The systems and compliance audits focus on hazard identification and injury prevention, supplemented with regulatory compliance opportunities. These efforts help us identify potential hazards and risks, as well as develop injury prevention solutions before employees are subjected to unnecessary risks. During and after our transition to SIPS, we have conducted internal audits to ensure compliance with the new system.

We complement site-specific inspections with annual audits conducted by teams trained and led by company-certified lead auditors. The results of these audits are addressed by the location's SIPS core team through its required management review process of the system.

Smithfield also undergoes external audits of compliance and hazard control programs at U.S. worksites on a revolving schedule. These audits, led by independent, third-party personnel with experience in the meat industry, augment the management systems audits through in-depth examination of injury and illness hazards control at a particular worksite. We also conduct external Process Safety Management audits as required in areas of Mechanical Integrity, Process Hazard Analysis, and Compliance for our Anhydrous Ammonia Systems.

During these third-party audits, we review operational controls, such as training, machine and tool safety, personal protective equipment, chemical safety, hearing conservation, and emergency planning and response, as well as employee engagement. We highlight the success stories from facilities that perform well and share their best practices with other sites. Facilities that score poorly on the audits not only must correct their practices, but they also are subject to more frequent audits. Failure to improve audit scores results in increased involvement from the director of health and safety and higher-level company leaders, if necessary, to facilitate improvement.

Workers' Compensation Claims Management and Return to Work

Although we are very proud of our achievements in reducing employee injuries, workplace accidents still do occur. We have established a comprehensive workers' compensation claims management program in the United States with a dedicated Return to Work element that seeks to return every injured employee, wherever possible, to full and regular work once it is medically feasible to do so.

We also are working to better manage the costs associated with workers' compensation claims. The foundation of this initiative is our comprehensive Claims Management program. This formal written process, which includes standard operating procedures, best practices, and reference information, provides a road map for our operations to follow in the oversight of their claims and the management of their related costs. We also have centralized oversight of our risk management claims team. Our three regional claims managers report to our director of claims management. Together they provide high-level oversight and strategic direction of our program.

To ensure we appropriately implement, and consistently follow, all of the elements of our Claims Management program, we conduct audits at a number of our locations each year. Facilities that score poorly on the audits must correct their practices and are then subject to more frequent audits. Failure to improve audit scores or poor annual performance results in planning meetings with company leaders and the location's management team. We also use these audits to identify areas where retraining is needed and to build our annual training plans around the identified gaps.

We also produce several reports throughout the year that allow our locations to see, understand, and better manage their workers' compensation claims, performance, costs, and other key data.

Fleet Safety

We strive to keep our employees safe in all aspects of their job. That concern extends to the transport and delivery of our products. According to U.S. government statistics, injury and accident rates for truck drivers rank among the highest of any industry, accounting for about 20 percent of all fatal work injuries.

In recent years, we have added innovative new technologies to our fleet of trucks in the United States to increase worker safety. Our Direct Store Delivery (DSD) service, which supplies Smithfield Foods products and other frozen food to retailers, transports nearly 220 million pounds of food a year to 15,000+ retail stores across the country. We lease a fleet of nearly 570 DSD trucks, replacing them every few years with ever-safer models as the lease agreements expire. At the end of 2018, we had rolled out about 240 new trucks with a collision mitigation/lane departure warning system, called OnGuard™, that alerts the driver if the vehicle veers out of a traffic lane or is about to crash into slowed or stopped traffic. Within the next few years, we expect that our entire DSD fleet will have the lane departure warning system.

Our delivery vehicles were the first medium-duty fleet trucks to hit the road with this electronic stability control system, according to truck manufacturer Navistar, which called our commitment to the technology an "industry-leading decision" and a "significant milestone."

In 2018, we began adding a new alert system on the back of our DSD trucks. The system warns workers when they are near the edge of the truck to prevent accidental falls while loading or unloading products. We equipped about 55 DSD trucks with the system and plan to further expand use of the technology in our fleet. All trucks leased in the future will include this warning system.

Camera Ready

New camera and recording technologies have allowed us to better monitor and respond to on-the-road safety events in the United States. In recent years, we installed in-dash cameras in our entire DSD fleet. The SmartDrive® system helps to identify opportunities for driver training and also may protect our employees and our company in the event of an accident.

The two-camera system—one directed inside the cab at the driver, the other pointed out the windshield toward oncoming traffic—only records when triggered by a G-force event, such as a crash or a sudden lane swerve, capturing 10 seconds before and 10 seconds after the incident. Analysts with SmartDrive review the recorded

episodes and send reports to us, so we can understand the root cause of any incident and learn from it.

The footage captured through SmartDrive has resulted in a reduction in employee violations of Smithfield safety policies. For example, in several cases, we could clearly see that a driver was using a cell phone at the time of a SmartDrive-triggering episode. We have a strict policy against cell phone use when driving, and the camera system has allowed us to better manage and correct such policy violations through appropriate methods, from training to termination. The system also has been valuable in protecting our company and drivers from false accusations of wrongdoing in some accidents and lawsuits.

We finished installing the cameras on our entire DSD fleet in 2017 and have already recorded impressive results. After this success, we began testing the same camera technology in some of our fleet used in Hog Production. In 2018, cameras were tested in two Hog Production regions, with a wider rollout expected in 2019.

We also have been adding a new camera technology system that reads speed limit signs and alerts the driver if the vehicle goes over the limit. We installed this equipment on a total of 240 trucks as of December 2018.

Recognition & Awards

Smithfield Foods' significant safety efforts continue to be recognized by our industry. Moreover, we have a robust safety-related internal awards program that recognizes individual accomplishments as well as team and facility-wide achievements.

External Recognitions

In 2018, the North American Meat Institute (NAMI) recognized 34 of our facilities with worker safety awards.

Twelve Smithfield locations received the Worker Safety Award of Honor, the highest award bestowed by the organization. The awards program is administered by the National Safety Council and based on evaluation of each eligible facility's safety record, as well as its implementation of various key components of an effective safety and health program.

2018 Award of Honor Winners

- Algona, Iowa (Hog Production)
- Des Moines, Iowa
- Kinston, North Carolina
- Omaha, Nebraska
- Orange City, Iowa
- Rose Hill, North Carolina (Hog Production)
- Roanoke Rapids, North Carolina (Smithfield Premium Genetics)
- Salt Lake City, Utah
- Sioux Center, Iowa
- Sioux Falls, South Dakota
- Wichita, Kansas
- Wilson, North Carolina

In addition to the locations highlighted above, 22 facilities received Worker Safety Awards for outstanding achievements in workplace safety.

Internal Recognitions

Smithfield also has an internal Health & Safety and Workers' Compensation Awards program as part of the annual Safety and Workers' Compensation Claims Conferences. On the safety side, we presented four categories of awards to recognize outstanding performance. Two of the awards categories are performance-based, for which the winning facilities are selected through a scoring system that reviews their efforts against our vision of being an industry leader for worker safety and health.

During the review process, facilities are scored on a number of categories, including effective implementation of a health and safety management system that meets the requirements of Smithfield's Injury Prevention System (SIPS), monthly safety scorecard measurements, regulatory compliance and audit results, and injury and illness rates. They are also evaluated on progress toward other key initiatives such as improving U.S. Occupational Safety and Health Administration (OSHA) performance, achieving Voluntary Protection Program (VPP) status, and implementing Behavioral Risk Improvement (BRI) or other innovative programs.

The performance-based awards are the President's Circle Award, given to locations with outstanding performance for the year, and the coveted President's Award, given to an individual location with the highest level of performance.

2018 President's Award

- Arnold, Pennsylvania. This facility was recognized for outstanding improvement in several areas, including injury reduction, risk reduction, and exceptional Safety Compliance Audit Process assessment.

2018 President's Circle

- Des Moines, Iowa
- Elizabeth, New Jersey
- Hog Production—Midwest
- Hog Production—Rocky Mountain
- Hog Production—West
- Kansas City, Missouri (Kansas City Sausage)
- Kinston, North Carolina
- Newport News, Virginia
- Omaha, Nebraska
- Orange City, Iowa
- Salt Lake City, Utah
- Sioux Center, Iowa
- Sioux Falls, South Dakota
- Smithfield, Virginia (Smithfield Pet)
- St. Charles, Illinois
- St. James, Minnesota
- Wilson, North Carolina
- Norson, Mexico
- Elk, Poland
- Ilawa, Poland
- Krakow, Poland
- Morliny, Poland
- Starchowice, Poland
- Ferme, Romania
- Prod, Romania

Two additional health and safety awards presented at the safety conference are the Safety Professional of the Year and the Innovation Award. Winners of these awards are chosen based on nominations from people and organizations across Smithfield. A panel of judges, consisting of a companywide core team and senior leaders, as well as several external partners that work closely with Smithfield in our worker safety efforts, reviews each nominee before deciding the winners.

2018 Safety Professional of the Year

- Bryn Jensson—Hog Production, Midwest. Bryn was recognized for her dedication, positive attitude, and outstanding contributions to safety culture.

2018 Innovation Award Winner

- Joaquin Garcia and John Dang—Crete, Nebraska. Joaquin and John formed the Motive Power Refrigeration Team to create an Ammonia Valve Training Station to help train operators in a safe and controlled environment without disrupting production.

Our Workers' Compensation Claims Management Awards program includes two individual award categories. The Claims Professional of the Year Award recognizes that individual who has shown unequaled commitment to his or her claims management role within the organization and whose efforts have had a profound and measurable impact to injured workers, their location, operating segment and/or the organization as a whole. The Organizational Excellence Award is intended to reward an individual location for its ongoing performance and sustained positive results in the area of claims management. This award measures results from the prior performance year in combination with historical performance.

2019 Claims Professional of the Year Award

- Bianca Collins (Tar Heel, North Carolina)

2019 Organizational Excellence Award

- Kinston, North Carolina

Case Study: Health & Safety Employee Spotlight

Smithfield Foods' improving safety record would not be possible without the hard work and dedication of our employees at our farms and production facilities. While our management teams are responsible for standardizing and implementing safety strategies, it is ultimately our production employees that inform and execute these practices.

We value the work of all our employees, and some go above and beyond to improve their workplace. One example is Joe Overman, a utility butcher at our Sioux Falls, South Dakota facility. Overman, a 22-year veteran of Smithfield, is so dedicated to workplace safety that he wrote a poem about it for his coworkers. "You can say 'be safe,' but if you put it in a poem and make it catchy, it kind of sticks with people," he said.

When a position on the Joint Safety Committee opened up five years ago, Overman jumped at the opportunity and now represents the cut line employees. He says serving on the committee has given him a chance to learn from outside sources, like safety conferences, and to bring that knowledge to people beyond his own department. He also leads training sessions and orientations for new employees and is an evacuation team leader.

"I've learned a lot about safety culture and the prevention of injuries. SIPS (Smithfield Injury Prevention System) is a really good program, and I know how much the company cares about safety culture."

—Misael Bennett, Head of Department Trainer
Hog Production, Oklahoma

After over two decades at Smithfield, he has worked a range of positions at Sioux Falls and knows the facility inside and out. His intimate knowledge of Smithfield operations means he can spot problems right away. For example, Overman helped bring in an automatic skinner machine after multiple people reported cuts and surface injuries.

Overman says his remarkable dedication to his work is something he learned from his parents, who worked in the auto industry.

"They taught me to love what you do no matter what it is. I found something I love, and I've never thought about leaving."

Like Overman, Rob Retchin, a meat handler at the Springfield, Massachusetts, facility, sought out a safety leadership position. Retchin, who has worked at Smithfield for 17 years, is a charter member of the ergonomics team, the first safety team, which was formed in 2002.

As part of the ergonomics team, he works directly with line workers to reduce repetitive motion injuries. One tactic proposed by the team, rotating employees between stations, has helped reduce injuries.

Retchin sees how Smithfield's overall efforts to improve safety have paid off over the years. "It's safer here now than it ever has been," he said. But he also knows safety is a task that requires constant vigilance and training. "All you have to do is wait one minute too long, and someone can get hurt," he said.

Retchin is always looking for ways to make operations safer and is on the core team for our Behavioral Risk Improvement (BRI) program. Recently, the team helped add Spanish-language translations of operational instructions at key points throughout the facility. Retchin and the team proposed the bilingual additions to help employees with limited English skills.

"I like that I'm making a difference," said Retchin. "I hope we keep up the good work and always ask other employees' opinions."

Employees like Misael Bennett, a head-of-department trainer at our farm in Oklahoma, are the frontline of Smithfield's safety system. Bennett, who was recruited from Mexico as a herd technician in 2015, now trains farm employees on a range of safety topics.

Recently, his training came in handy as he acted quickly to put out a fire that had started in a breaker box. Bennett's quick thinking and fire extinguisher training helped avoid what could have been a major incident.

"I've learned a lot about safety culture and the prevention of injuries," he said. "SIPS (Smithfield Injury Prevention System) is a really good program, and I know how much the company cares about safety culture."

Employee Wellness

The ability to live a healthy life that includes work-life balance is an important part of our commitment to our employees. We believe that investing in employees' health and well-being pays dividends in the long term.

Healthy employees feel better, perform better, contribute to a more positive work environment, and drive down overall company healthcare costs.

Work in the protein industry can be extremely demanding, and our employees often work long hours. Finding ways to emphasize a healthier work-life balance is a top priority for Smithfield Foods, and we are looking for new ways to provide greater support to our employees, including through Employee Business Resource Groups (EBRGs), mentorship programs, and healthy living resources.

In some cases, our efforts are recognized by external parties. For example, in 2018, our Kansas City, Missouri, location earned a silver-level Healthy KC Workplace Wellness certification for the second year in a row. The certification, awarded by the Greater Kansas City Chamber of Commerce, recognizes local organizations for innovation and excellence in promoting a culture of health in the workplace.

Technology-Fueled Healthy Habits

Our wellness program for U.S. employees provides direct incentives to salaried employees, encouraging them to form healthy habits. Participants receive a subsidy to purchase a Fitbit™ fitness tracking device after they have completed an initial health assessment.

Employees are encouraged to participate in a year-long program that allows them to earn points based on Fitbit data and participation in challenges through our wellness portal. Employees can also earn points for taking other healthy actions, such as having a preventative care dental visit. Those who earn a total of 100 points over the year receive a $600 wellness bonus. Employees also have access by phone to health coaching to help reach their personal health and wellness goals.

We continue to offer more traditional health and wellness programs, which vary from location to location across the company. Some examples include hiring a full-time personal trainer for employees, professional counseling services, blood pressure and cholesterol screenings, free mammograms, massages, intra-office weight-loss competitions, flu shots, and more.

Promoting Healthy Behaviors

Our “fit” wellness program, which is offered to employees at several locations in the U.S., represents our commitment and responsibility to support good health for employees and their families. It offers enhanced benefits, such as diabetes management, smoking cessation programs, and a healthy pregnancy program—including a $200 gift card for new parents. We also host regular “lunch-and-learn” events to discuss healthy living topics, such as stress management, weight control, and employee assistance program services.

Several offices offer annual health fairs that include blood pressure screening, cholesterol checks, massages, mammogram screenings, and more.

Weight Loss and Exercise

Several of our U.S. locations have formal participation programs with local Weight Watchers® chapters. These programs add on to other, more informal weight loss and exercise programs at other offices. For example, some locations offer to reimburse employees 50 percent of the Weight Watchers joining fee if they complete the majority of their weigh-ins and meetings, while other offices host on-site gyms for employee use. Several of our employees are certified yoga instructors who lead regular classes for their colleagues.

Human Rights

Our formal Human Rights Policy ensures the fair treatment of employees throughout the company.

The policy spells out the expectations we have in the areas of equal opportunity; health, environment, and safety; harassment and violence; the rights of employees; and other key topics.

We provide copies of the policy to all employees, including new hires, and encourage workers to call a toll-free hotline number to report any violations. We also communicate our Human Rights Policy to all major suppliers and expect them to comply. In addition, our Supplier Code of Conduct promotes adherence to all relevant laws and regulations, including those addressing slavery and human trafficking.

Our long-standing Code of Business Conduct and Ethics is also part of our governance framework and is designed to help create a safe and fair work environment. The Code is communicated to all employees and sets forth our expectations for appropriate employee behavior, as well as corporate hiring and disciplinary policies. For more information on ethics, see the Governance & Management section.

Governance Overview

At Smithfield Foods, we're passionate about producing good food, the right way. We aim to be an ethical food industry leader that sets benchmarks for sustainability.

Keira Lombardo, Executive Vice President, Corporate Affairs and Compliance

We do this in part through sound governance and management principles and practices, which provide the foundations for trust, transparency, and progress at our company. Our systems for ethical conduct, the way we engage with stakeholders, our approach to public policy, and our management of supply chain issues are all important elements of our sustainability strategy, cutting across our key pillars and creating value for our company and for our stakeholders. Our CEO reviews our sustainability performance on at least an annual basis.

Smithfield Foods is a wholly owned subsidiary of Hong Kong-based WH Group Limited, a publicly traded company with shareholders around the world. Operationally, we are part of an enterprise that shares our belief in global opportunities and our commitment to the highest standards of product safety and quality.

In this section of our report, we discuss ethics and compliance, our sustainability management structures, our stakeholder engagement efforts, and public policy issues of interest to our company. This section also discusses the results of our most recent materiality analysis that we used to better understand—and better report on—the issues that are of greatest importance to our company and to our stakeholders.

Materiality Analysis

Our materiality analysis, which identifies our company's key sustainability issues, plays an important role in our reporting. We regularly analyze our material issues to better understand both internal and external stakeholders' perspectives on the most important sustainability topics for Smithfield Foods.

We have conducted a review every two to three years since 2010. We weight our discussion around the topics that have been identified as most important to our business and to our stakeholders.

We also use the results of our materiality analysis to guide our sustainability strategy and to manage the issues of concern to our stakeholders and to our company. This informed decision-making demonstrates our commitment to leadership in responsible food production.

In the fall of 2017, we conducted a detailed materiality analysis[1] using a four-step process: identify issues, prioritize issues, review and revise the issues, determine what to report.

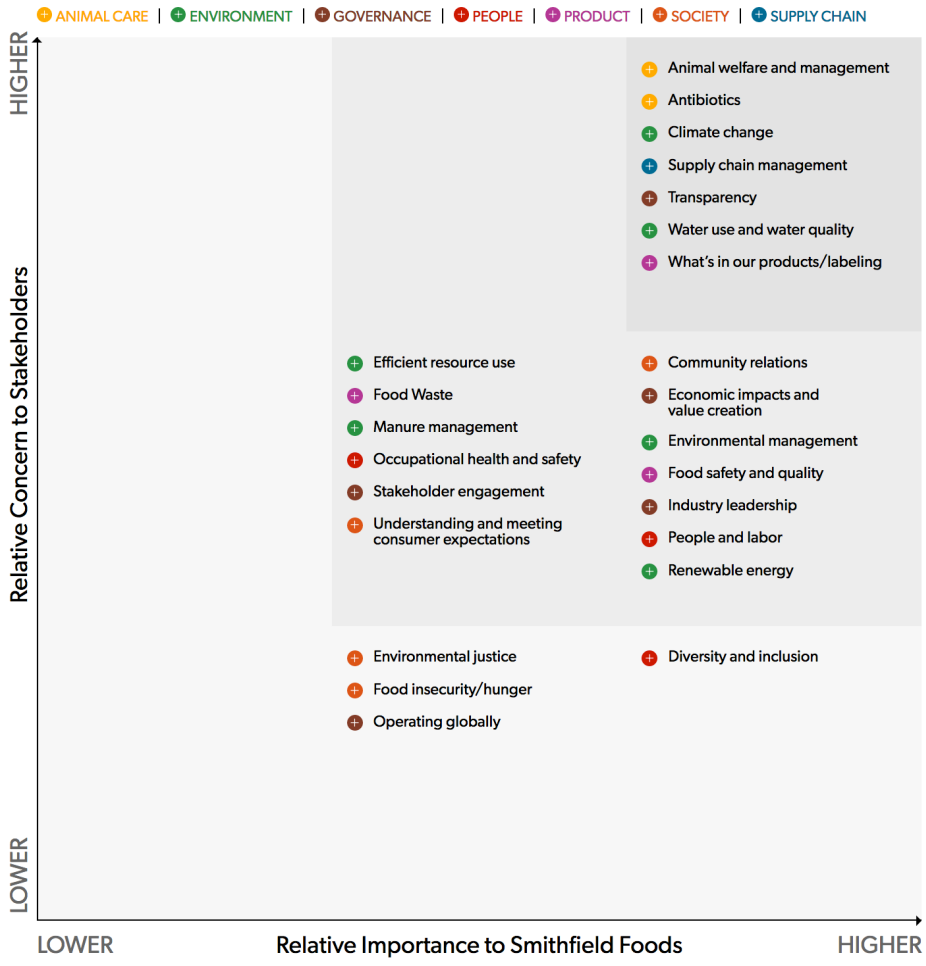
To identify the issues, we interviewed more than two dozen internal and external stakeholders. External stakeholders included representatives from customers and supply partners, nongovernmental organizations and nonprofit organizations, and government regulators and community representatives, among others.

Overall, we reviewed more than 60 inputs, which also included reporting frameworks, such as the Global Reporting Initiative (GRI), GRI's Food and Beverage Sector Supplement, and the Sustainability Accounting Standards Board (SASB); peer company materials and reports; media articles on the meat industry; industry analyses; and the United Nations' Sustainable Development Goals, among other inputs.

We condensed and prioritized the list of potential material issues based on the significance of their potential impact, stakeholders' level of concern about the issues and their likelihood of influencing stakeholder decision-making, their perceived impact to the company, and the frequency with which issues were raised. To confirm the accuracy of the ratings, we validated and finalized the analysis with a group of internal Smithfield stakeholders and external sustainability experts.

Materiality Matrix

The matrix below illustrates the results of our materiality analysis completed in 2017. As a result, in this year's report, there has been no change to our material issues or their rankings of importance. Issues in the upper right box are most important to both stakeholders and the company. Issues are color-coded based on the broad categories used to organize this report. The material issues listed below are the most critical to our company's ability to create and sustain value today and in the future.



What's included in our material issues?

Below we provide additional insight into how we define our material issues, including the boundaries of where the primary impacts associated with each issue occur. All of

our material issues are directly linked to Smithfield's operations. To determine the external boundary for each issue, we assessed the importance and impact of issues across our value chain, from upstream in the supply chain to downstream product consumption and disposal. We define the external boundary based on the entities in our value chain that are most directly associated with the issue. We also analyzed the stakeholders most affected at each value chain stage. In addition, we have identified the relevant GRI aspects associated with each of our material issues, a requirement of the "in accordance" level of the GRI Standards.

Animal Care

Animal welfare and management

- Issue definition: Our policies and performance as they relate to the health, safety, and comfort of our animals
- External issue boundary: Contract growers, regulatory entities
- Other stakeholders: Customers, consumers, nongovernmental organizations
- Related GRI aspects: Animal welfare

Antibiotics

- Issue definition: Our policies, practices, and administration of antibiotics; this issue includes stakeholder concerns about perceived overuse in the industry and antibiotics resistance
- External issue boundary: Contract growers, suppliers, regulatory entities
- Other stakeholders: Customers, consumers, nongovernmental organizations
- Related GRI aspects: Animal welfare

Environment

Environmental management

- Issue definition: Our policies, performance, and systems for reducing our footprint and going beyond compliance
- External issue boundary: Regulatory entities, contract growers
- Other stakeholders: Customers, consumers, local communities, nongovernmental organizations
- Related GRI aspects: Compliance, environment overall, emissions, effluents and waste, water

Manure management

- Issue definition: Our policies, programs, and performance for managing manure; this issue includes our systems for treating and utilizing manure, as well as our programs to turn manure into a renewable energy source
- External issue boundary: Regulatory entities, contract growers
- Other stakeholders: Customers, consumers, local communities, nongovernmental organizations
- Related GRI aspects: Compliance, waste and effluents, energy, water

Water use and water quality

- Issue definition: Our policies and programs to manage fresh water use responsibly, especially in water scarce areas, and to eliminate water quality impacts of our operations
- External issue boundaries: Regulatory agencies, contract growers, grain suppliers
- Other stakeholders: Customers, consumers, local communities, nongovernmental organizations
- Related GRI aspects: Compliance, water, effluents and waste

Climate change

- Issue definition: Addressing global climate change by reducing our carbon footprint
- External issue boundary: Contract growers, suppliers
- Other stakeholders: Customers, consumers, local communities, regulatory entities, nongovernmental organizations
- Related GRI aspects: Energy, emissions

Renewable energy

- Issue definition: Advancing the use of renewable energy, including finding innovative ways to turn manure into an energy source
- External issue boundary: Regulatory entities, contract growers, local utilities
- Other stakeholders: Customers, consumers, local communities
- Related GRI aspects: Energy, effluents and waste

Efficient resource use

- Issue definition: Producing more while using less water, energy, and materials, as well as generating fewer emissions and solid waste
- External issue boundary: Regulatory entities
- Other stakeholders: Customers, consumers, local communities, nongovernmental organizations
- Related GRI aspects: Water, energy, materials

Governance

Transparency

- Issue definition: Explaining what we do and how we do it through proactive and clear communications
- External issue boundary: Contract growers, suppliers
- Other stakeholders: Customers, consumers, regulatory entities, nongovernmental organizations
- Related GRI aspects: Compliance, procurement/sourcing practices, anti-competitive behavior, economic performance, labor/management relations, product and service labeling, marketing communications

Operating globally

- Issue definition: Addressing challenges related to diverse export markets, free trade, and risk management
- External issue boundary: Suppliers
- Other stakeholders: Customers, regulatory entities, suppliers
- Related GRI aspects: Procurement/sourcing practices, market presence, anti-competitive behavior

Stakeholder engagement

- Issue definition: Working with our customers, regulators, investors, and others to understand their concerns and needs and to share our efforts to address them
- External issue boundary: Local communities, contract growers, suppliers, customers, nongovernmental organizations
- Related GRI aspects: Local communities

Economic impacts and value creation

- Issue definition: Creating value for our own business and for our customers, employees, investors, and society
- External issue boundary: Local communities, contract growers, suppliers, customers
- Related GRI aspects: Economic performance, local communities, market presence, indirect economic impacts

Industry leadership

- Issue definition: Leveraging our scale and promoting innovation to operate as sustainability leaders in our industry
- External issue boundary: Contract growers, suppliers, competitors
- Other stakeholders: Customers, nongovernmental organizations
- Related GRI aspects: Procurement/sourcing practices, economic performance, market presence, indirect economic impacts

People

Occupational health and safety

- Issue definition: Policies, practices, and performance related to keeping our people healthy and safe
- External issue boundary: Regulatory entities
- Related GRI aspects: Occupational health and safety

People and labor

- Issue definition: Creating jobs, providing professional development opportunities, and fostering a work environment that allows our employees to stay and grow with us throughout their careers
- External issue boundary: Regulatory entities
- Other stakeholders: Customers, consumers, local communities
- Related GRI aspects: Employment, training and education, labor/management relations, market presence

Diversity and inclusion

- Issue definition: Being an equal opportunity employer that values all our people and fosters an environment of diversity and tolerance
- External issue boundary: Regulatory entities
- Other stakeholders: Local communities
- Related GRI aspects: Diversity and equal opportunity

Product

What's in our products/labeling

- Issue definition: Clearly communicating what's in our products; using labels to help our consumers make informed dietary choices
- External issue boundary: Contract growers, suppliers, regulatory entities
- Other stakeholders: Customers, consumers, nongovernmental organizations
- Related GRI aspects: Customer health and safety, product and service labeling, compliance, marketing communications

Food safety and quality

- Issue definition: Producing safe, high-quality meat products for our consumers
- External issue boundary: Contract growers, suppliers, regulatory entities
- Other stakeholders: Customers, consumers
- Related GRI aspects: Customer health and safety, product and service labeling, compliance

Food waste

- Issue definition: Reducing food waste through innovations in packaging and optimized logistics
- External issue boundary: Suppliers, customers, consumers, regulatory entities
- Related GRI aspects: Effluents and waste

Society

Understanding and meeting consumer expectations

- Issue definition: Predicting and responding to our consumers' evolving needs and preferences
- External issue boundary: Customers, consumers, contract growers, suppliers
- Related GRI aspects: Healthy and affordable food

Community relations

- Issue definition: How Smithfield supports local communities through social outreach and engagement
- External issue boundary: Local communities, nongovernmental organizations
- Related GRI aspects: Indirect economic impacts, local communities

Food insecurity/hunger

- Issue definition: Providing food to those in need
- External issue boundary: Local communities, nongovernmental organizations, customers
- Other stakeholders: Consumers
- Related GRI aspects: Indirect economic impacts, local communities

Environmental justice

- Issue definition: Understanding and addressing the potential for inequitable distribution of impacts and benefits
- External issue boundary: Local communities, nongovernmental organizations
- Related GRI aspects: Emissions, local communities

Supply Chain

Supply chain management

- Issue definition: Working with contract hog farmers and grain producers to optimize performance on environmental and social issues and working with non-agricultural suppliers to minimize our use of resources such as cardboard and other packaging materials
- External issue boundary: Contract growers, grain producers, suppliers
- Other stakeholders: Customers
- Related GRI aspects: Procurement/sourcing practices, indirect economic impacts

[1] Smithfield conducts a robust materiality analysis every two to three years. In the interim years, we typically conduct a materiality "refresh" review process to ensure we're still focusing on the most important topics.

Ethics & Compliance

Safeguarding the integrity of our business remains a critical priority. Ethical and lawful conduct is an essential part of our company's culture, and we are committed to conducting our business with the highest standards every day.

Smithfield Foods maintains a Code of Business Conduct and Ethics (the Code) for all employees and corporate officers. We publish the Code in the four major languages of the countries where we have operations. It conveys policies and practices for conducting business in accordance with applicable laws and the highest ethical standards. All employees are asked to sign a statement upon joining the company indicating they have read the Code and that they will act in full compliance.

Our executive-level Ethics and Compliance Committee, chaired by our chief legal officer, oversees the full range of compliance issues for Smithfield and administers the Code. We also provide employees with opportunities to report ethics violations or similar concerns through an anonymous telephone hotline. The company reviews and responds to all hotline complaints.

Sustainability Management

Overall management of Smithfield Foods' sustainability program rests with the chief sustainability officer and a core team of senior managers and subject matter experts from business units and facilities.

This cross-functional team facilitates decision-making, recommends sustainability goals, promotes sustainability, reviews best practices, and coordinates and disseminates key sustainability data.

Smithfield's sustainability and environmental core teams communicate sustainability goals and targets through our operations. Each location tracks individual progress to the goals, providing data through a centralized information gathering system.

Vice President of Regulatory Affairs and Chief Sustainability Officer Stewart Leeth

We developed our sustainability management strategy more than a decade ago. At that time, we identified several sustainability areas that merited a more consistent management approach across the company to meet our goal of leading the industry with our practices. The first such area was environmental management. We implemented and certified environmental management systems at all farms and processing facilities. Over the years, we expanded that approach to other areas such as animal care and employee health and safety. We formed corporate committees to develop and implement consistent approaches, including committees focusing on environmental compliance and animal care. Common elements of the management systems developed in these areas include policies, employee training, goal setting, corrective action, third-party auditing, and executive review.

International Operations & Acquisitions

While our sustainability program initially focused on operations in the United States, the program also applies to our operations in Europe. Of course, regulatory frameworks vary from country to country. Therefore, we, like many other companies, are working hard to align our goals and approaches to important issues, such as environmental management, with international operations.

When we acquire a new company, we conduct various reviews, including an assessment of the company's practices related to key sustainability areas such as employees, safety, sow housing, and the environment. We also try to address the current relationship with local regulators and the communities in which they are based. Following an acquisition, we promptly implement our environmental and health and safety management systems (described in the respective areas of our sustainability program on this site) and identify practices already in place, as well as gaps. We then use our corporate-level training programs and intranet sites to communicate best practices.

We also make available our environmental management expertise and safety expertise to the companies in which we hold a minority interest, and we encourage them to utilize environmental and safety compliance practices that are consistent with our own.

Enterprise Risk Management

Risk management continues to be an important concept for Smithfield Foods. We continue to enhance our Enterprise Risk Management (ERM) program as part of an effort to promote an aligned, integrated ERM framework across the entire company.

Our ERM program is based on the Committee of Sponsoring Organizations of the Treadway Commission (COSO)[1] ERM Integrated Framework. The objective of our ERM program is to have a sustainable process in place that can identify complex and emerging risks (both internal and external) that, if not addressed, might prohibit us from achieving our strategic, financial, and compliance objectives.

Through our parent company's (WH Group) listing on the Hong Kong Exchange (HKE), Smithfield is required to demonstrate that an effective ERM program is in place. WH Group, and, by extension, Smithfield Foods, must demonstrate that we have a formalized ERM program that includes, but is not limited to, risk identification and annual risk assessment, mitigation processes and controls, management and monitoring of key risks areas, and timely and effective reporting.

Although we had annually assessed our ERM program through a robust risk assessment process, a formal audit/evaluation of the effectiveness had not been performed until the 2016 HKE requirement. Although we identified 22 key risk areas, the annual audit process prioritized 10 key risks for the assessment, including commodity prices, food safety, planning and strategy, animal welfare, customer relations, environmental, international markets, litigation, competitor activity, and government regulations and policies.

Based on the results of the internal audit, we believe that the employees responsible for each key area understand and own the risks for their specific parts of the business and that our ERM program meets the "effectiveness" definition as set forth by the HKE.

[1] COSO defines ERM as a "process effected by an entity's board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives."

Supply Chain Management

Suppliers are integral to our commitment to produce "Good food. Responsibly.®"

Our Supplier Code of Conduct helps ensure that suppliers continue to meet or exceed our high standards. The Code, which is incorporated into all new and renewed contracts with our suppliers, sets forth the business conduct requirements for all suppliers who do business with Smithfield Foods.

The degree to which suppliers comply with the requirements—and the extent of their sustainability efforts—will be a consideration for future business with Smithfield. The Code outlines expectations around legal compliance, environmental sustainability, and business integrity, as well as labor and human rights issues. We monitor our suppliers' performance, although we do not conduct formal audits.

We maintain standardized vendor requirements, which include food safety, equal employment opportunity, and animal welfare guidelines, for all ingredient and packaging suppliers. (See the Animal Care section for a detailed discussion of management policies and practices around hog supply, including our relationships with contract producers.)

We also conduct regular surveys of our largest suppliers to understand their efforts in areas such as energy reduction, natural resource use, employee safety, and community giving.

Since 2008, we have been a member of the Global Environmental Management Initiative (GEMI), an organization of leading companies dedicated to fostering environmental sustainability excellence. Our recent collaboration with GEMI and other member companies resulted in the publication of a Quick Guide in September 2018 that is designed to help companies engage with their suppliers in a collaborative way to create sustainable, shared value. The Quick Guide includes guiding principles and examples of such collaborations, including an example of our work with grain farmers to implement sustainable practices.

Learn more about our Supply Chain in the Environment section.

Stakeholder Engagement

We define stakeholders as all persons or organizations that are affected by the operations or practices of the company.

We routinely conduct internal analyses to identify stakeholders and have identified and defined the following stakeholders as groups we engage with regularly:

- **Internal stakeholders**, including employees, facility management, and corporate management, among others.
- **External stakeholders**, including the customers and suppliers with whom we do business; the end consumers of our products; federal, state, and local governments and regulatory entities; nongovernmental organizations; industry groups and trade organizations; and the communities in which our employees live and work.

In recent years, we have put particular emphasis on engaging with employees to acquire more input from them. We also have increased our efforts around proactive stakeholder engagement, reaching out to a variety of groups to talk about who we are, what we do, and how we might be more responsive to each other's needs. These groups include members of the media, opinion leaders on issues of food production, religious organizations, and student groups. One area we've focused on is sustainable food production—an increasingly urgent issue as the world's population continues to grow.

We engage with stakeholders in a number of ways and forums, and our communications vary depending on their respective needs. For example, we encourage suppliers to adopt practices that will reduce their impacts on the environment. We also make the most of the membership organizations to which we belong—communicating with third-party stakeholders, gaining perspective on important issues, and developing management tools others can use to improve performance. We engage with other stakeholders on an as-needed basis in response to particular issues that arise.

In addition, in order to meet our sustainability targets, we encourage our farms and facilities to meet with community stakeholders to highlight our programs and obtain input.

Other examples of engagement include the following:

- We funded research at the University of Minnesota's NorthStar Initiative for Sustainable Enterprise (NorthStar) to facilitate further research on Smithfield Foods' supply chain models. This work will provide us with valuable tools and insights to leverage in our sustainability program, including helping us achieve our industry-leading carbon reduction goal. This contribution will also support further data research and policy focused on sustainability, as well as production consumption systems that ensure consumer health and food security.
- We collaborate with the Environmental Defense Fund on several important projects, including our work to promote the adoption of farming practices that are both sustainable and reduce the cost of grain production, support the restoration and conservation of habitat for monarch butterflies, and quantify the contribution of certain initiatives toward our GHG reduction goal.
- The government is an important stakeholder, and Smithfield continues to explore innovative ways to collaborate with elected officials and governmental entities. For example, Smithfield and other industry stakeholders have been working closely with the U.S. Department of Agriculture and their State Veterinarians to prevent the introduction of animal diseases, such as African Swine Fever. In addition, Smithfield participated in a roundtable discussion led by the Environmental Protection Agency on how best to achieve nutrient reduction goals where there is a surplus of nitrogen and phosphorus in water bodies.
- Our chief sustainability officer sits on the board of directors of the Center for Food Integrity, a nonprofit organization that aims to increase transparency and understanding about modern food production to earn consumer trust. In 2018, Smithfield supported the Optimizing Sustainability Project which developed a framework for prioritizing and communicating sustainability commitments across our industry.
- In early 2018, our assistant vice president of environmental affairs was named chair of the Global Environmental Management Initiative (GEMI). Our collaboration with other GEMI members resulted in the 2018 publication of a Quick Guide that helps users collaborate with suppliers to enhance sustainability practices.
- Our chief sustainability officer, as well as our sales teams, regularly engage with our customers (e.g., the supermarkets and retail chains, restaurants, and foodservice companies that buy our products). They highlight the work we are doing to implement sustainable practices, including our GHG reduction goal and animal care targets, particularly around our commitments to sow housing and our industry-leading antibiotic policy and transparent disclosure of antibiotics use.
- We're engaging with our contract growers to provide guidance and advice on how they can convert to sow housing on their farms.
- Increasingly, our customers are hearing from their customers—the ultimate consumers—about issues of concern to them. We participate in supplier surveys and communicate directly with customers, including working with our customers to develop approaches to issues ranging from animal care to nutrition to environmental and health and safety practices. We are responding in numerous ways, including offering products with ingredients that are easier to understand and developing products that are produced with sustainability in mind. The sales force, which provides the primary customer point of contact, communicates our approach to sustainability, so various team members can interact knowledgeably with customers on these issues.
- Nearly 20 Smithfield employees participate in various positions and committees of the North American Meat Institute (NAMI), including the Board of Directors, Environmental Committee, Energy and Natural Resources Committee, and the International Trade Policy Committee. NAMI's annual conference promotes sharing of best practices in wastewater treatment, employee training, materiality assessment, chemical management, and other topics.

See the Environment section for information on how we're engaging with other companies to create energy and fertilizer from hog manure and processing wastewater.

Smithfield Association Membership

Our engagement with diverse stakeholders is reflected in the list of organizations in which we hold memberships.

Membership in National Organizations

- American Meat Science Association (AMSA)
- American-Romanian Business Council
- American Society for Microbiology (ASM)
- Animal Agriculture Alliance
- American Institute of Food Distribution (The Food Institute)
- Center for Food Integrity (CFI)
- Commodity Markets Council
- Corporate Environmental Enforcement Council
- Environmental Law Institute
- EPA (U.S. Environmental Protection Agency) Office Water Stakeholder Meeting Agriculture/Manufacturing
- Food Marketing Institute (FMI)
- Food and Beverage Environmental Conference
- Global Environmental Management Initiative (GEMI)
- Global Harvest Initiative
- Institute of Food Technologists
- International Association for Food Protection (IAFP)
- National Agriculture in the Classroom (NAITCO)
- National Association of Manufacturers (NAM)
- National Oilseed Processors Association
- National Pork Board (NPB)
- National Pork Producers Council (NPPC)
- National Renderers Association
- Network of Executive Women (NEW)
- North American Meat Institute (NAMI)
- Organization for International Investment (OFII)
- Safer Hauling and Infrastructure Protection (S.H.I.P. Coalition)
- U.S.–China Agriculture and Food Partnership

- U.S.–China Business Council
- U.S.–Mexico Business Coalition
- U.S.–Poland Business Council
- U.S. Meat Export Federation (USMEF)
- Washington Agribusiness Council
- Washington International Trade Association
- Women in Agriculture
- Women's Foodservice Forum

Membership in State and Regional Organizations

- Alliance for the Chesapeake Bay
- Bladen County Committee of 100 (North Carolina)
- Bladen County Livestock Association (North Carolina)
- California Chamber of Commerce
- Cape Fear River Assembly (North Carolina)
- Clinton 100 Committee (North Carolina)
- Duplin County Agribusiness Council (North Carolina)
- Isle of Wight Chamber of Commerce
- James River Association
- Missouri Agribusiness Association (MO–AG)
- Missouri-Kansas Forum
- Missouri Pork Producers Association
- North Carolina Chamber of Commerce
- North Carolina Forever
- North Carolina Foundation for Soil and Water Conservation
- North Carolina Meat Processors Association
- NC Pork Council
- Palmetto Agribusiness Council (South Carolina)
- Sampson County Friends of Agriculture (North Carolina)

- Virginia Agribusiness Council
- Virginia Chamber of Commerce
- VA Department of Health–Water Advisory Committee
- Virginia Pork Council
- VIRGINIAforever
- Wallace Committee of 100 (North Carolina)

These lists are not meant to be exhaustive and may not include every association of which we are members.

Public Policy

We participate in legislative and regulatory processes both as an individual company and through industry associations.

We believe that engagement in the political process is important in making our views heard on issues of significance to the business. Smithfield Foods has participated in many cross-industry boards and commissions at the national and state levels.

The following are among the most significant current public policy issues for our company and industry:

Trade Policy

Smithfield and the U.S. pork industry depend on free and open export markets to support our growing business. We are an American manufacturer, producing value-added food products that depend upon exports. Because of trade, the U.S. pork industry is an economic success story: U.S. exports of pork have increased 1,550 percent in value and nearly 1,300 percent in volume since 1989, the year the United States started opening international markets for value-added agriculture products. Today, of the 150 million pigs produced each year in the United States, one out of every four is exported. These same pigs are huge consumers of American corn and soybeans. For us, trade creates more manufacturing and agriculture jobs in the United States. We support the vigorous pursuit of new trade agreements with export partners, the removal of retaliatory tariffs, and the reduction of current tariff and non-tariff barriers in order to increase Smithfield's exports. We are also focused on preserving our access in existing free trade agreements, which have created tremendous opportunity for Smithfield.

Emerging Animal Diseases Preparedness and Response

Emerging animal diseases have the potential to cause significant losses to the U.S. pork industry. Diseases like African Swine Fever are spreading throughout foreign counties threatening pork supplies internationally and domestically. We are working with the USDA/APHIS, associations, swine veterinarians, and state and local authorities to prepare for and respond to emerging disease.

Farm Bill

In 2018, a five-year Farm bill was signed into law, reauthorizing agriculture and nutrition programs until 2023. The Farm Bill provides certainty to farmers and ranchers as well as millions of those in need by authorizing important programs, such as crop insurance, farm credit, and school lunches. It also funds trade promotion programs that help support export markets for U.S. agricultural products. Important to the pork industry and Smithfield, the 2018 Farm Bill creates and funds a national vaccine bank for livestock diseases and provides funding for state efforts to prepare for animal disease outbreaks. An animal disease outbreak would be devastating to our livestock, farmers, industry, and food supply, so the creation and funding of the vaccine bank is an important milestone for animal disease prevention and preparedness in the United States.

Tax Reform

Smithfield Foods supports a pro-growth tax system that enables companies like ours to reinvest in local communities, create jobs, and spur economic growth. Prior to tax reform, the U.S. tax system put Smithfield and other U.S. exporters at a competitive disadvantage. As a domestic manufacturer, Smithfield paid a high effective tax rate. In 2017, Congress passed the Tax Cuts and Jobs Act, and the Administration began implementing the legislation in 2018. This monumental change to the tax code will enable Smithfield to be more competitive and invest savings derived from the reduction in the corporate tax rate back into the United States in the form of new facilities, equipment, and other job-creating investments. It will also enable Smithfield to invest more in our employees.

State Ballot Initiatives

States have passed ballot initiatives and are developing state regulations that undermine pork producer freedom to farm, introduce unwarranted costs, restrict marketplace access for conventional pork products and reduce consumer choice. We are working with a coalition of associations to find both legal and legislative solutions to state ballot initiatives that violate the dormant commerce clause and prohibit the sale of pork across state lines.

Grain Inspection, Packers and Stockyards Administration (GIPSA) Rules

In 2016, the U.S. Department of Agriculture's (USDA) GIPSA issued new regulations that would have exposed Smithfield and the meat industry to rampant, frivolous lawsuits, added costs, and lower profitability. These rules have long been opposed by both the packer industry as well as livestock producers. They would have fundamentally altered contracting and marketing practices between packers and producers across all species, limiting the ability for packers to reward superior producer performance and exposing packers to broad litigation risks. As a result of our collective efforts with the meat industry to oppose these rules, USDA announced in 2017 that it would effectively rescind the rules. In 2018, a petition was filed against the USDA for withdrawing the rules, but the U.S. Court of Appeals for the 8th Circuit sided with the USDA. USDA is expected to issue new GIPSA rules in 2019, and Smithfield will work to ensure the new rules provide clarity and adhere to the long-standing precedent followed by the USDA related to competition.

Renewable Fuel Standard (RFS) Reform

RFS, which requires huge volumes of corn to be processed into ethanol at ever-increasing volumes irrespective of market conditions, is a law we have worked for years to reform. The RFS diverts 40 percent of the nation's corn supply into fuel, artificially driving up demand, reducing supply, and increasing the cost of food. Smithfield supports the elimination of the federal mandate for corn ethanol, while preserving incentives for the development and commercialization of advanced ethanol.

Immigration

Since many valued employees are legal immigrants, we pay close attention to debates on immigration reform. This immigrant workforce brings a rich diversity to our operations and the communities in which we live. We support U.S. immigration reform that ensures we can maintain an adequate and stable workforce and provide opportunities for legitimate workers who seek employment at companies like ours. We believe the United States should protect legal immigrants and their employers.