2019-20 CORPORATE RESPONSIBILITY REPORT

swn
Southwestern Energy®

CONTENTS

Note: This document includes the exact contents of our corporate responsibility webpages (www.swn.com/responsibility) in PDF form. Because footnotes are included at the end of each individual webpage online, they appear at the end of each subsection in this PDF.

Corporate Responsibility

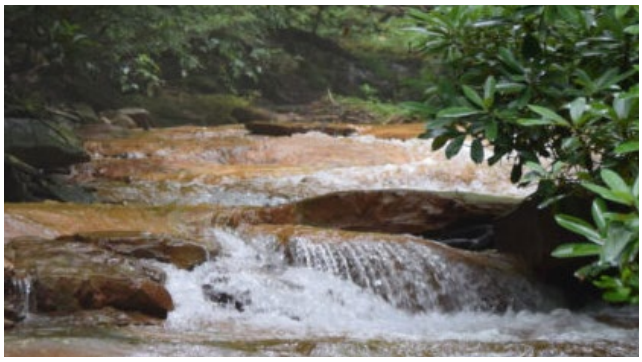
At Southwestern Energy, operating responsibly is part of who we are and is embedded in the Formula that guides everything we do. The goal of this Formula is to create Value+ for our stakeholders. This means that while we work to drive business and operational results, our focus on the Formula keeps our broader goal squarely in sight – to create long-term, sustainable value, including an unwavering commitment to protecting the health and safety of the environment and our employees, contractors and communities.

Approach

Our proactive approach to corporate responsibility is an integral part of our business strategy and decision-making. We believe that operating responsibly is the Right Thing to do, and it's good business.

Health and Safety

SWN employees work side by side with our contractors as ONE Team with one goal: zero safety incidents.



Environment

We are an industry leader in environmental protection by setting ambitious goals and leveraging our comprehensive environmental management system.

Communities

SWN has a track record of creating a positive impact and generating economic opportunities in the areas where we operate. We pay close attention to community feedback and respond quickly to address concerns.

Workforce

SWN values its employees and all who contribute to the work we do. Accordingly, providing a safe, healthy, and respectful and fair workplace is a core value and part of who we are.

Data

We report our year-over-year performance on a range of health and safety, environmental, workforce and community data.

2018 Key Highlights

0.56%

ONE Team Total Recordable Injury Rate in 2019, a record low

10%

improvement in contractor Total Recordable Injury Rate compared with 2018

0.055%

methane leak/loss rate[1]

10%

reduction in greenhouse gas emissions intensity compared with 2018

100%

of fresh water used is offset through recycling and conservation projects that return fresh water to the environment, maintaining our Fresh Water Neutral status for the fourth year in a row

$2.1 million

of produced water in Northeast Appalachia was recycled

Our Corporate Responsibility Reporting

The information in these Responsibility webpages provides insight into SWN's corporate responsibility (CR) strategy, goals, operations and performance in 2019 and serves as our annual corporate responsibility report. The content was prepared by our cross-disciplinary Corporate Responsibility reporting team, with assistance from subject matter experts from across the company. It was then reviewed and approved by SWN's executive leadership team and the Health, Safety, Environment and Corporate Responsibility Committee of the Board of Directors.

Since 2015, we have published an annual corporate responsibility report in accordance with Global Reporting Initiative (GRI) guidelines. Our reporting is also guided by the Sustainability Accounting Standards Board's standards for Oil and Gas Exploration and Production, the Task Force on Climate-Related Financial Disclosures and several other reporting frameworks and scorecards relevant for our industry. This report aligns with the GRI Standards requirements at the Core level. (A separate appendix contains the GRI index and reporting boundaries.)

We are pleased to share our latest programs and performance, and we welcome your feedback.

1. Methane intensity or methane leak/loss rate (mass percentage) is calculated by dividing the gigagrams of methane emissions by the oil and gas gross production (cubic feet converted to gigagrams).

Approach

APPROACH

Operating responsibly is a core value of SWN, anchored by our Formula. Further, it's just good business. This operating philosophy improves our performance in every aspect of our activities and operations, whether by reducing costs, minimizing risks to our business and – most importantly – safeguarding our employees, the environment and the communities where we operate. Consideration of corporate responsibility (CR) issues is an integral part of our business strategy and informs every decision we make, enabling us to deliver Value+ to all of our stakeholders.

Message from the CEO

In 2019, we continued to deliver operational results while never losing sight of key social responsibility objectives such as water conservation and responsible water management, demonstrating continued leadership in emissions performance, protecting human health and safety, and being a good neighbor in the communities where we operate.

Key Issues

We identify SWN's key corporate responsibility issues through direct engagement with affected internal and external stakeholders. We update this assessment annually.

Strategy and Governance

SWN's CR strategy is guided by our Formula and is rooted in a desire to conduct our activities responsibly. SWN's corporate governance structure and practices aim to ensure we have appropriate leadership from frontline management.

Stakeholders

Our CR strategy is informed by regular engagement with all SWN stakeholders, internal and external, who may have an interest in our operations.

Message from the CEO

Dear Stakeholders,

As one of the largest independent natural gas producers in the United States, Southwestern Energy Company is committed to achieving sustainable returns for our shareholders by delivering superior operational results in a manner guided by our Formula, which is being the Right People doing the Right Things. For us, this means pursuing responsible energy development while maintaining relentless focus on human health and safety, practicing good environmental stewardship and being a good neighbor and member of the communities where we work and live. This ethos also drives our public disclosure philosophy: We believe in transparency and demonstrate this through a robust disclosure program for environmental, social and corporate governance (ESG). We hope that as you review our 2019 Corporate Responsibility Report you can feel and understand our commitment to sustainable financial, operational and ESG performance.

At SWN, our success is achieved through our passionate, resilient and fully engaged people. We know that developing our human capital and growing and maintaining a diverse and inclusive workplace is just as vital to our success as developing our asset base. This is true regardless of the larger economic environment, but particularly in challenging times. In 2019, we focused our leadership development programs on inspiring our leaders across the organization to be "boundaryless" in thinking and action, shaking free from perceived constraints to deliver on new ideas. We focused our actions to ensure our people were engaged and have the necessary tools and skills to be highly successful. Last year, we checked on our progress through our bi-annual employee survey (92% response rate), which placed us in the top benchmarking for employee engagement and employee enablement in the industry and outside the industry. We also delivered high-level technical and business skills training, as well as various targeted programs on communication, handling critical conversations, leadership and influence management. And, these are simply a few examples of our passion for and focus on people.

SWN is a recognized leader in environmental stewardship and is particularly focused on emissions performance and returning fresh water to water systems in our operating basins in equivalent amounts to what we consume. In both a national and global sense, SWN is playing a vital role in providing clean-burning, low-carbon natural gas, which is replacing dirtier fuels and driving reduced local and global greenhouse gas emissions. SWN was one of the very first companies in our industry to commit to a science-based methane leak/loss rate target, and we have consistently outperformed that goal. Our leak/loss rate for 2019 was only 0.055%, further validating our position as a leader in emissions performance.

We are also grateful to have received recognition for a wide-range of efforts in the areas of environmental stewardship and community engagement.

- We have received numerous accolades for environmental performance, including honors from the West Virginia Department of Environmental Protection, as well as receiving the highest score among North America's 30 largest publicly traded oil and gas producers in "Disclosing the Facts 2019" for water and chemical disclosure and management.
- SWN is committed to the responsible use of water. In 2019, we reached an important milestone, having returned over 11 billion gallons of fresh water to the environment through our comprehensive approach to water usage optimization, water recycling and innovative water conservation projects that result in an effective return of fresh water to the environment. This enabled us to meet

our commitment to being Fresh Water Neutral for the fourth year in a row, meaning we restored at least as much fresh water to local watersheds via conservation projects as we used in our operations. To our knowledge, no other oil and gas operator has made – or

- achieved – a similar commitment.
- As part of our commitment to being Fresh Water Neutral, we worked with the West Virginia Department of Environmental Protection on the successful completion of the Cheat River's Muddy Creek watershed restoration project. This was a project that constructed a water treatment plant to clean up water quality in a tributary to the Cheat River that had been polluted for years by acid mine drainage from coal mining activities.
- In 2019, we conducted Leak Detection and Repair (LDAR) surveys on 100% of our operating facilities, and our methane intensity remains a fraction of the national average.
- Our focus on safety as a core value for SWN has reduced our Total Recordable Incident Rate (TRIR) 52% since 2014 to 0.56, and we strive to continue to improve, being committed to ensuring that anyone who works in service of our company goes home safely at the end of each day.

The achievements described above demonstrate SWN's commitment to corporate responsibility issues and to being the Right People doing the Right Things. Throughout this report, you will see that we have a lot to be proud of with respect to our performance in 2019.

As proud as I am of these accomplishments, nothing has illustrated the importance of SWN's core values like the 2020 challenge of responding to the COVID-19 global pandemic. As COVID-19 has swept the globe, ripping through communities and altering the very way we live and work, I have seen SWN employees demonstrate our values – protecting human health and safety, looking out for one another, being a good neighbor – again and again, in ways both big and small. In the coming months, we will issue a formal report describing all the actions we have taken in response to the pandemic that have enabled our communities and our company to weather this storm; look for it on our Corporate Responsibility page before the end of 2020.

Now more than ever, I could not be more proud to be part of the SWN team. I am thankful for all the individuals and teams that helped make 2019 a success. I know that SWN's core values and commitment to responsibly develop clean, low carbon energy and being a socially responsible operator will endure, leaving us well positioned for success in any environment.

Sincerely,

Bill Way

President and Chief Executive Officer

Key Issues[1]

At SWN, we focus our corporate responsibility (CR) efforts and reporting on priorities that are important to our stakeholders.

To identify these important CR priorities, we interview and consider the views of internal and external stakeholders, with respect to both SWN-specific activities and energy development generally. Based on this assessment, which we update annually, we identify key topics that can be grouped into the following six categories:

ECONOMIC PERFORMANCE

GOVERNANCE

HEALTH & SAFETY

ENVIRONMENT

COMMUNITIES

WORKFORCE

We use this methodology as a basis for selecting which Global Reporting Initiative (GRI) indicators to report, and we believe our process for determining report content meets the GRI principle requirements for defining report content, sustainability context, materiality, completeness and stakeholder inclusiveness.

1. Within each quadrant, the categories are listed in the order they are discussed in the report, not in order of importance. Also, the matrix includes only those issues found to be of high or medium impact on SWN and/or concern to stakeholders, with the issues of highest importance in the upper-right quadrant.

Strategy and Governance

Strategy

SWN's approach to corporate responsibility (CR) is integrated into our business strategy through our Formula, which guides how we operate every day.

Our cultural commitment to CR drives us to collaborate extensively with governmental, nongovernmental and industry stakeholders to move our business and our industry forward on corporate responsibility issues. Being proactive and transparent on the issues that matter most to our shareholders, customers and communities is the Right Thing to do and helps drive our business and operational success.

SWN's Corporate Responsibility Goals

The following goals provide a foundation for our CR strategy and drive our performance on key environmental and safety issues:

- **Aim for zero safety or environmental incidents for our workforce.** We recognize this is a challenging goal, but we believe it's possible. In 2019, we had no environmental incidents that resulted in fines. And we've reduced our safety incidents by 45 percent over the past four years, including reducing incidents among our contractors, a key focus of our ONE Team culture.
- **Maintain our commitment to being Fresh Water Neutral** by offsetting or replenishing every gallon of fresh water we use through water-quality improvement projects or treatment technologies that return fresh water to the environment in the same area as our operations. We have maintained this industry-first achievement every year since 2016.
- **Continue industry leadership on emissions performance.** In 2019, we achieved a methane leak/loss rate of 0.055 percent.1 For the sixth straight year, we also continued to surpass ONE Future's methane leak/loss goal of 0.36 percent; we helped develop this science-based goal as a cofounder of ONE Future, an industry coalition working to reduce methane emissions across our industry.2
- **Maximize our positive impacts on the communities where we operate.** We have removed 1.3 million truckloads from roads since we began operations in Appalachia in 2010 by investing $150 million in pipeline infrastructure instead of utilizing trucks to carry water, thereby reducing congestion and the possibility of accidents.

In addition to the goals described above, we are focused on improving our environmental performance by managing produced water responsibly, protecting water quality and minimizing negative impacts on the environment, ecosystems, infrastructure and communities.

Protecting the health and safety of our employees, contractors and communities is foundational to the success of our business. To help achieve our goal of zero safety incidents, we have comprehensive training and performance improvement programs. We also are actively reducing the number of vehicles on public roads by transporting water with pipelines rather than trucks.

SWN's workforce drives our business and performance, and critical to our success is a keen focus on employee

engagement and retention. We are committed to placing the right people in the right positions and providing them with the training and tools needed to be successful. We also value diversity, inclusion and fairness in opportunity and pay. We are focused on building a ONE Team culture among our employees and contractors to help us achieve our goal of zero health, safety or environmental incidents.

Being a good neighbor in the communities where we operate is a core value at SWN. We cultivate open and productive relationships with stakeholders in these communities (e.g., government officials and other leaders, businesses, nonprofit organizations, emergency responders, land/mineral owners and involved citizens) to help us be aware of and address local needs.

Corporate Governance

Strong corporate governance3 is a cornerstone of being a responsible corporate citizen. SWN follows many best practices in corporate governance, including regular shareholder engagement on key issues, an annual "say on pay" vote, the annual election of all Directors and no supermajority voting standards. We also seek Board members who bring a diversity of perspectives and backgrounds. As of May 2020, four of our eight Directors were diverse in gender, ethnicity or nationality. The average tenure of our Board members is less than five years, which we believe helps to ensure fresh thinking and awareness of emerging issues.

In 2019, SWN adopted a Human Rights Policy that formalizes and enhances our existing policies and commitments for labor rights, community and stakeholder engagement and protection of health, safety and the environment. The policy is consistent with international principles, including the Universal Declaration of Human Rights. It specifically includes prevention of discrimination and harassment, our support for fair wages and rights to freedom of association, prohibition of child or forced labor and human trafficking, protection of indigenous peoples and cultures, and complaint procedures and resolution processes, as well as providing further support for our health, safety and environmental and community engagement commitments.

Health, Safety and Environmental (HSE) Management

SWN's management and performance evaluation systems require that CR and HSE issues always be considered along with financial and/or operational matters. This commitment extends to our Board of Directors, which is actively involved in providing oversight and risk management of these issues through its Health, Safety, Environment and Corporate Responsibility Committee. This committee – which meets regularly to address issues related to climate, water resources, workforce safety and community concerns – holds senior management accountable for the company's HSE performance and assists the full Board in discharging its HSE-related responsibilities.

Our Vice President of HSE and Regulatory, who reports to our Chief Operating Officer, directly manages HSE issues and presents regularly to the Board. The responsibilities of the Vice President of HSE and Regulatory include overseeing SWN's dedicated HSE and Regulatory teams to ensure they develop effective policies and programs, monitor compliance, have the appropriate tools and implement training related to employee and contractor health, safety and environmental issues. While there is some overlap with respect to HSE and Regulatory responsibilities, generally speaking the HSE team is responsible for managing health and safety matters and assists with environmental issues, while Regulatory is primarily responsible for managing environmental matters as well as day-to-day operational compliance such as permitting. HSE and Regulatory (HSER) employees are embedded within each operating division to support day-to-day HSER activities at the site level and ensure that all employees comply with applicable safety and environmental standards as well as identify hazards and mitigate risks. We actively engage our third-party contractors in HSE management and require them to meet our HSE standards. But HSE performance is not the sole responsibility of dedicated HSER managers: Every SWN employee and contractor is accountable for safety, and HSER managers ensure they have the tools they need to contribute to a safe work environment.

To further integrate HSE management across our operations, our Vice President of HSE and Regulatory leads a corporate HSE steering committee – composed of management from all business units and relevant corporate functions – which guides the development and implementation of policies and procedures for compliance and continuous improvement. In addition, each operating division or business unit has its own HSE committee, made up of local management, HSER professionals and field operators, that reports to the corporate steering committee, implements programs and monitors HSER performance and activities within its division.

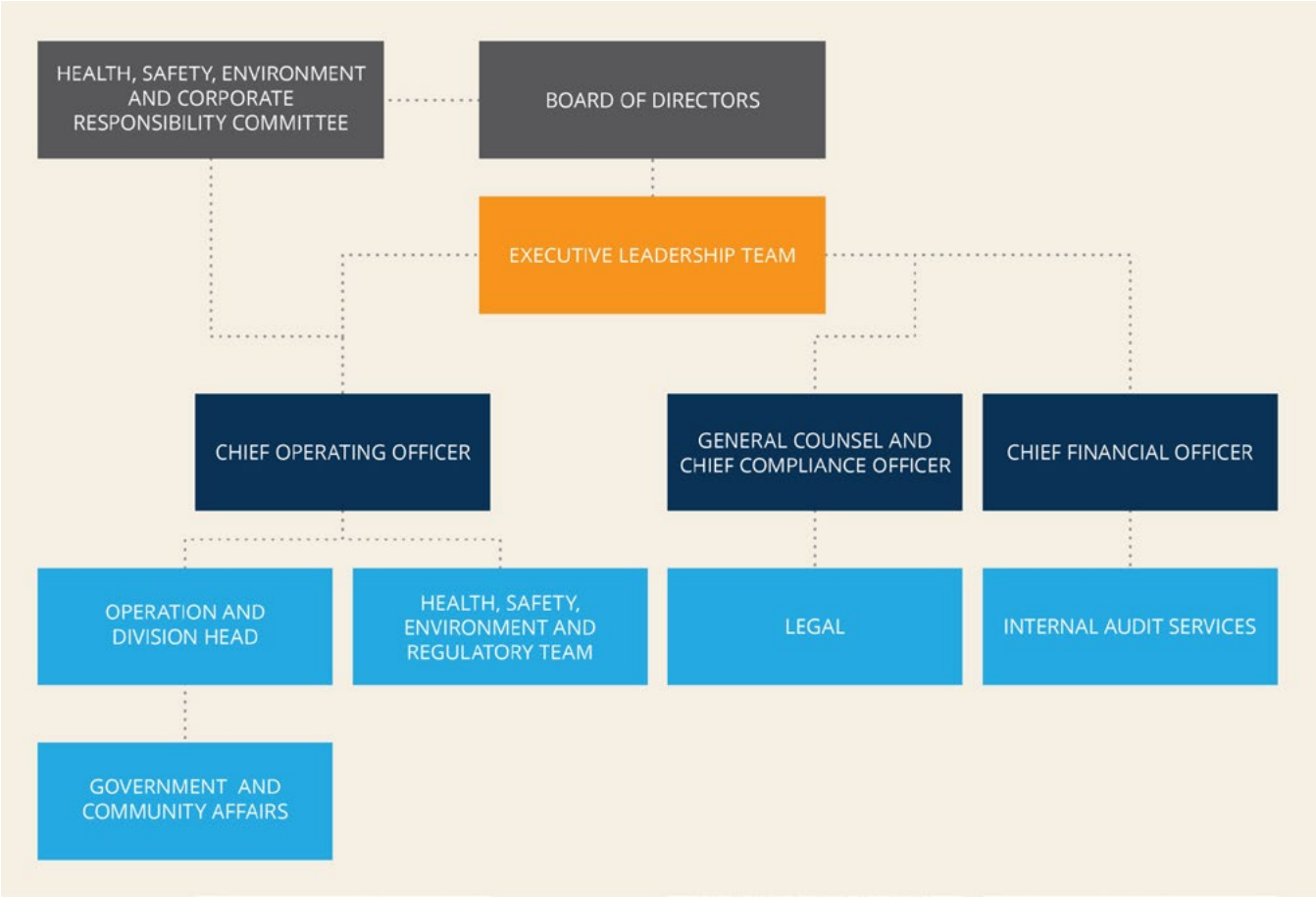
Health, Safety and Environmental (HSE) Management cont.

Our approach to managing HSE topics is governed by SWN's HSE policy, which underscores our commitment to protecting employees, contractors, communities and the environment in all areas where we conduct business. It is the responsibility of every SWN employee to deliver on our commitment to this policy and help achieve our ONE Team goal of zero incidents.

This commitment is supported by SWN's comprehensive HSE management system, which covers all SWN operating regions and divisions. The management system has integrated policies, programs, procedures, training and incentives to support HSER performance. It provides clear guidance on actions and processes for protecting health, safety and the environment and maintaining asset integrity. The management system requires recurring goal-setting, evaluation processes and performance metrics to drive improvements. It also requires regular audits of our own and contractors' operations, as well as the implementation of corrective actions when relevant, to ensure compliance with SWN requirements and relevant external regulations.

All SWN leaders – from senior executives to frontline managers – are evaluated on, and held accountable for, the HSER performance of their respective teams. We measure leadership engagement in HSE using a balanced scorecard, which includes both leading indicators (e.g., management participation in site visits) and lagging indicators (e.g., Total Recordable Injury Rate). In addition, safety and environmental performance are factors in the performance-based element of every SWN employee's annual bonus, which is established by the Board's Compensation Committee.

Corporate Responsibility Oversight



Enterprise Risk Management

Oversight of our enterprise risk management (ERM) process is led by a team directed by our Chief Financial Officer with input from leaders across our operating divisions and functions. This cross-functional group meets quarterly to identify strategic, enterprise-level risks that may impact our business over the following two years; assess the likelihood of occurrence, level of potential impact to the business and speed at which the risk may develop; and identify mitigating factors.

SWN's executive leadership team (ELT) meets at least quarterly with the cross-functional ERM group to review and assess the risks identified and the steps being taken to manage them. The ELT reviews ERM findings with the Audit Committee at least quarterly and with the full Board at least once a year.

A primary responsibility of SWN's Board of Directors is ensuring processes are in place to identify and properly manage risks to the company and its business. Each standing committee of the Board oversees and evaluates risks directly in its sphere – for example, the Compensation Committee reviews compensation and other human resources matters; the Health, Safety, Environment and Corporate Responsibility Committee reviews health, safety, environmental and public policy matters; and the Audit Committee reviews financial statements and reporting and overall risks to the enterprise. Each of these committees is composed entirely of independent Directors.

Ethics

SWN's General Counsel, who is also our Chief Compliance Officer, oversees issues relating to ethics and nonoperational compliance. The Chief Financial Officer oversees Internal Audit Services. To ensure that our employees and Board members conduct their work in an ethical manner and meet applicable laws and regulations, we established detailed business conduct guidelines and hold related employee training at least annually. The guidelines cover topics such as conflicts of interest, bribery and corruption, antitrust matters and insider trading.

All complaints received are forwarded to both Internal Audit and an investigations lead in the relevant department. The Audit Committee receives a summary of all complaints. Our Internal Audit group also assesses compliance with ethics requirements across departments on a regular basis.

We have an interactive, web-based ethics training course that tests employees on their knowledge of our ethics requirements and provides additional content on any questions that are missed to ensure employees are proficient on key topics. New employees are required to complete this training upon joining the company, and all employees must retake it annually.

A SWN ethics hotline enables employees to anonymously submit issues or concerns.

Also, our Supplier Code of Conduct requires that all suppliers meet our ethics standards. We review supplier performance against these standards before adding new suppliers, and we audit active suppliers' ethical performance regularly. See the Contractor Assessment and Selection section for more detail.

Public Policy Engagement

SWN's senior executives, along with our Regulatory and Government Affairs team, manage the company's engagement in the legislative and regulatory process. In several cases, we have worked proactively with policymakers and other stakeholders to craft recommendations for laws and regulations that will be effective and workable in practice. For example, SWN has voluntarily participated in a number of scientific studies with regulatory agencies, academia and nongovernmental organizations that have informed science-based regulations. Also, SWN is a founding member of the ONE Future coalition, which developed the methane reduction approach that has been endorsed by the U.S. Environmental Protection Agency and is now a component of their Natural Gas STAR Methane Challenge.

1. Methane intensity or methane leak/loss rate (mass percentage) is calculated by dividing the gigagrams of methane emissions by the oil and gas gross production (cubic feet converted to gigagrams). In accordance with U.S. Environmental Protection Agency greenhouse gas reporting requirements, assets that were divested in 2018 are not reported.

2. See www.ONEFuture.us for more information about the coalition and how the industry segment and company targets are being set.

3. The Corporate Governance and Investor Relations sections of our company website include a full list of current Board members and executive officers; copies of our corporate governance guidelines, business conduct guidelines and Board committee charters; many of our other policies, including those covering business ethics and anti-corruption; information about how stakeholders can contact our Board of Directors; and links to our annual report and proxy documents.

Stakeholders

Regular engagement with all stakeholders – both internal and external – who may have an interest in SWN's operations both informs and drives our corporate responsibility strategy. We are committed to transparency and openness with stakeholders, and we proactively seek out idea-generating, problem-solving dialogues and productive partnerships. The following are examples of our interaction with stakeholders. Frequency of engagement is ad hoc unless otherwise noted.

Investors

- Annual report, quarterly reports and earnings calls
- In-person meetings with institutional investors, including analyst conferences
- Meetings with investors who are specifically interested in environmental, social or governance issues
- Additional regular investor contact through our Investor Relations function
- Continuous monitoring of relevant and emerging ESG issues important to investors

Employees

- SWNet (intranet)
- Town hall meetings
- Support and networking groups, including diversity groups
- Safety training
- Performance management
- Wellness programs
- Connection (triennial employee newsletter)
- Engagement/satisfaction surveys
- Leadership and professional development programs
- Ethics hotline
- Day-to-day interactions
- Employee engagement surveys

See the Workforce section for more information.

Contractors

- ONE Team events and communications
- Safety Stand Down days and safety training
- Monthly safety meetings at SWN sites
- Special project meetings at SWN sites to address specific health, safety and environment issues and corrective actions
- Operational reviews by division management
- Vendor forums and audits
- SWNlink communications, including operational announcements and quarterly newsletters
- ISNetworld, a third-party service for hiring, communicating with and managing contractors
- Leader training for contractor management

See the Contractors page for more information.

Customers

- Regular contact through our Marketing group

Landowners and Holders of Mineral Rights

- Access via SWN.com website
- Direct conversations and negotiations – individually and in small groups
- Monthly payment statements to royalty owners
- Semiannual newsletters
- Landowner hotline

Local Communities (including residents, elected officials, community groups, chambers of commerce, emergency responders)

- Regular contact via SWN community liaisons
- Everyday Heroes events for first responders (annually in our operating areas)
- Employee volunteerism
- Feedback Hotlines
- Crisis drills

See the Communities section for more information.

State- and Federal-Level Government Officials

- Participation in select SWN health, safety and environment meetings
- Legislative and regulatory engagement

See the Strategy and Governance section for more information.

Environmental Organizations and Universities

- Participation in and funding of specific partnership projects
- Joint research projects
- Resources for technical assistance
- Direct communication with relevant SWN employees

See the Environment section for more information.

HEALTH AND SAFETY

At SWN, the most important thing we can achieve each day is for everyone associated with our activities to return home safely. This commitment to safeguarding our employees, contractors and the communities where we operate, as well as being a good steward of the environment, is a core value of SWN and underpins everything we do.

SWN leaders, including senior management, are evaluated on and held accountable for the health, safety and environmental (HSE) performance of their teams. We include HSE considerations in every business decision we make, and they are never secondary to commercial concerns.

HSE Programs and Training

In 2019, we enhanced our HSE programs in furtherance of our pursuit of zero safety incidents. Increased leadership training and leader field visits was a particular focus, as we sought to fortify and enhance our safety culture by allowing leaders to identify hazards, directly engage with field staff and better understand conditions in the field and the concerns of frontline personnel.

Health and Well-Being

Through our The Right You program, SWN promotes employee health and well-being in five focus areas: physical, mental, financial, social and community.

Metrics and Performance

We measure company HSE performance using numerous leading and lagging indicators, and all SWN employees and contractors are evaluated on and held accountable for HSE performance. In 2019, we implemented Process Safety Event Rate (PSER) goals for each of our operating divisions, focused on the design and engineering of our facilities.

Key Highlights

0.56

Total Recordable Injury Rate in 2019, a record low, and down from 0.64 in 2018

9,800+

HSE training hours in 2019, or approximately 14 hours per employee on average

HSE Programs and Training

SWN employs a range of health, safety and environmental (HSE) training and other programs to support our strong safety culture and drive HSE performance. See the Governance section for more on our approach the HSE management.

SWN Leadership Training

2019 witnessed SWN's rollout of a new hands-on Safety Leadership Training series. These hands-on sessions covered skills and keys for leaders in successfully driving HSE performance, targeting frontline field supervisors for over 300 employees in Drilling, Completions, Facilities and Technology and division operations. Specific topics covered included the importance of setting clear expectations, coaching, instilling accountability to employees and managing high risk activities. The result of these sessions was better preparedness of frontline leadership to drive and improve SWN's safety culture and performance.

Behavior Based Safety

Behavior-based safety[1] plays an important role in our efforts to continuously improve HSE performance. SWN's STOP® program[2] drives behavior by empowering every SWN employee and contractor to directly protect the safety of not only themselves, but also of their co-workers, workspaces and operational sites.

STOP® works by training individuals how to be observant and identify safe and unsafe behaviors and then gives them a mechanism – a "STOP® observation" – to engage immediately in critical conversations about the behaviors they observe. All SWN employees and contractors are engaged in STOP®. Vital to the program is that all observations are made in a spirit of mutual respect and founded in the moral and ethical responsibility that we have to care for one another's safety and well-being. Through STOP®, SWN employees and contractors address and report unsafe behaviors immediately – including through a mobile STOP® application – which initiates appropriate follow-up, including the implementation of identified process improvements. The program reinforces health and safety as a SWN core value and helps build a culture of HSE excellence by supporting safe behaviors and allowing for the correction of unsafe behaviors before an incident occurs.

STOP® achieves safety improvements through open communication, immediate behavior correction, and the integration of relevant safety-related observations and learnings into how our work is done.

In 2019, our STOP® program continued to mature and bear results. Employees are recognized for their participation in the STOP® program through our STOP® Card Recognition program, a way to recognize and reward those that go above and beyond to build, spread and maintain a superior safety culture at SWN. STOP® continues to help us proactively identify and effectively mitigate numerous risks, hazards and risky behaviors in order to protect human health and safety. SWN is using the information gained through STOP® to identify trends and behavior patterns, mitigate risks and prevent incidents before they happen.

Stop-Work Authority, JSEAs and Hazard Hunts

Every individual present at a SWN job site has full authority and discretion to immediately stop all work on the site – no questions asked – if a safety or environmental risk that has not been adequately mitigated is perceived. Once work is stopped, the risk must be assessed and either eliminated or mitigated. Also utilized at SWN sites to identify, mitigate and eliminate HSE risks are Job Safety and Environmental Analyses (JSEAs) and "hazard hunts."

- **JSEAs** are an assessment generally conducted for all operations in the field. They involve SWN employees and/or contractors collaboratively mapping out each step of the relevant work to identify any potential safety or environmental risks or hazards. These risks and/or hazards will then be eliminated or appropriately mitigated before work begins. Operations management periodically conducts JSEA reviews to identify areas for improvement, as well as help facilitate dialogue with employees and contractors to reinforce our ONE Team culture.
- **Hazard hunts** are periodic stop-work exercises we use to identify, document and eliminate or mitigate potential hazards in a given work area. All levels of SWN employees and contractors participate in hazard hunts, up to and including senior and executive management. In 2019, operations management set monthly targets with respect to High Impact Hazard Hunts. These hunts enforced our safety culture and led to the identification and mitigation or elimination of numerous risks that could have otherwise resulted in an incident.

Safety and Environmental Assurance Champions

SWN's Safety and Environmental Assurance Champion program rotates experienced safety professionals through our operational divisions and work sites. These Champions assess applicable risks and behaviors and then report back to SWN leadership to share learnings and develop ideas for improvement (e.g., process or equipment improvements or trainings).

In 2019, we continued the Champion program. Our champions continue to provide direct support in the field, coaching in real-time and focusing on higher-risk activities.

Assurance and Assesments

Our HSE assurance process requires regular assessments of SWN's own and our contractors' operations, as well as all third-party waste facilities, for both compliance and HSE quality-control purposes. The assurance assessments allow us to standardize and replicate best practices, as well as identify contractors with effective HSE systems. In 2019, we continued assurance assessments and also leveraged our existing software systems to perform an additional Review and Verification audit on 20 key contractors.

Incident Management

SWN uses a comprehensive incident management system to track, analyze, report and follow up on HSE incidents. Corrective measures are identified, implemented and shared to minimize recurrence.

Near hits are reported and analyzed for trends and potential corrective actions. As part of this process, all critical or "high-potential" near hits are designated for formal investigation and analysis to formulate corrective actions and prevent recurrence.

In 2019, we increased the efficiency and capability of our incident management system to allow for root cause analysis, as well as the ability to assign and track corrective actions, which ensures preventative measures are closed in a timely manner. We also expanded our system to include a mobile application, an inspection module and a customized reporting tool, which have the following benefits:

- The mobile application affords us the ability to capture real-time data associated with incidents and near hits, including photos and documentation, and notify leadership each time an event is submitted.
- Inspections are conducted daily on our locations, and if a potential hazard or issue is identified, it can be immediately integrated directly in the application, along with suggested action plans. This inspection information is sent with real-time notifications to leadership regarding the need and plan to take corrective action.
- Customized and automated reports and dashboards advance our analytics and forecasting capabilities.

We track and report on near hits, as well as actual incidents, as part of our proactive approach to improving HSE performance, and we share learnings across our own and our contractors' workforces.

Training

Training is integral to any successful HSE program. We take program execution and participation seriously; in 2019, greater than 95% of all company and job-specific training was completed on time. Some of SWN's key HSE training programs are as follows.

Training Assurance Program (TAP)

TAP is a required HSE training program for all SWN and contractor employees present in the field. See the ONE Team section for more on how we ensure that our contractors meet and uphold SWN's standards.

JSEA Workshops

SWN and contractor employees working in the field participate in JSEA training workshops to further improve and standardize the JSEA process and risk awareness, identification, mitigation and elimination.

Driver Safety Training

In 2019, SWN drivers logged approximately 7million miles on company business. All employees who operate a vehicle for company business must periodically take and pass a driver training course. In addition, SWN invested in an in-vehicle monitoring and real-time feedback system for all SWN-owned vehicles, which allows for immediate behavior modification and notifies SWN management of recurring problems.

Driver safety is an important focus at SWN, and we have some of the safest drivers in the industry, according to the American Exploration and Production Council.[3]

Short Service Employee Training and Mentoring

"Short service employees," or field employees who have had less than six months of service with the company or in their job function or role, can pose a disproportionate risk of incidents if not properly trained. Our Field Employee Competency program provides training and mentoring for short service SWN and contractor employees to help them understand SWN's HSE culture as well as the company's expectations and requirements for their role. Each individual in the Competency program is paired with a more experienced mentor trained in the same job function. At the end of the program the participant must pass a job-specific competency evaluation. Counter to industry trends, short service employees (those with less than one year in their job function) represent less than one-third of SWN's recordable injuries in 2019, indicating good training, mentoring and oversight.

TapRoot Training

SWN employees in our operating divisions participated in TapRoot Investigation Training, which provides tools and systems that improve incident investigations. This allows for better identification and understanding of the true root cause of a given incident (including near hits), allowing us to capture learnings that can be used to prevent incidents and mitigate or eliminate risks.

Asset Integrity

SWN has built a foundation of comprehensive engineering standards that guide our design and construction processes. Hazards are "designed out" where feasible, and robust controls are "designed in" where hazards cannot be eliminated. Our quality assurance process ensures that all new equipment meets our mechanical integrity and operational requirements and is installed correctly.

To maintain ongoing asset integrity, SWN employs a well-planned maintenance program and proactive risk-based inspections. Heightened focus is given to inspections of equipment or sites with higher risks for potential impact to human health and safety and/or the environment. We also use robust processes and administrative controls, such as Management of Change processes and well-documented Standard Operating Procedures.

Industrial Hygiene

SWN's industrial hygiene program seeks to anticipate, recognize, evaluate and eliminate and/or mitigate workplace health risks in the following focus areas.

Preventing Exposure to Silica Dust

We take the following measures to reduce or eliminate worker exposure to crystalline silica dust on SWN operational sites:

- Use of appropriate equipment, including respirators
- Engineering controls and best practices, which are refined and improved through ongoing evaluation
- New sand delivery methods using closed, mobile boxes that can be trucked directly to completion sites
- Use of sand storage silos with built-in dust control,

as well as automated sand hoppers, closed cab blenders and improved dust control on sand belts

In addition, we use a proactive medical surveillance program for employees with potential silica exposure that includes maintaining detailed work histories and performing physical examinations, chest x-rays and spirometry.

Managing Naturally Occurring Radioactive Materials

Naturally occurring radioactive materials (NORM) can be found in our operational areas. We have proactively addressed NORM in accordance with applicable federal and state regulations. Well locations at higher risk of accumulating NORM are identified, and detailed NORM management and control plans are developed as required by applicable law. Any services we use to remove or dispose of NORM-contaminated material are conducted by contractors and/or facilities that are properly vetted and approved in accordance with applicable law and the SWN HSE assurance process. See the Environment section for more on NORM.

Protection from Excessive Noise

SWN works to mitigate excessive noise from our operations, and we have stringent requirements for limiting noise exposure. Noise surveys are conducted at least annually to identify high exposure areas and determine employee exposure, and we develop noise protection plans and take other measures to understand and mitigate impacts on local residents. See the Communities section for more on how we mitigate compressor noise.

Emergency Preparedness and Response

SWN works with local emergency responders to develop preparedness, response and business resumption plans for all SWN-operated facilities. Crisis drills are conducted in all of our operating locations, involving local emergency responders as appropriate.

In 2019, all of our frontline leadership in our operational divisions completed NIMS ICS4 Training courses. Additionally, each of our operational divisions held two emergency response practice drills.

SWN's Emergency Mass Notification System gives us the ability to efficiently send and receive critical information through text messages, phone calls and emails. In the event of a potentially hazardous situation, targeted notifications are sent to personnel who could be affected. The system can also be used to assess and confirm the safety status of personnel. In 2019, the system was used to effectively distribute notifications to employees and contractors with important information regarding security, office closures and severe weather threats.

1. "Behavior-based safety" refers to the understanding that operational safety performance is dependent on individual behavior, as the vast majority of safety incidents are caused by behavior-based human error.

2. STOP® stands for Safety Training Observation Program. SWN's STOP® program is based on the renowned DuPont safety program of the same name.

3. American Exploration and Production Council, 2017 annual Safety Benchmarking Study (the most recent data available at time of publication in September 2019).

4. National Incident Management System, Incident Command System Training.

Metrics and Performance

We measure company health, safety and environmental (HSE) performance using a range of leading and lagging indicators. Leading indicators include metrics for training, leadership commitment, employee involvement and the quality of incident investigations. Lagging indicators include incidents, near misses and days away from work. Leading indicators help drive continuous improvement in our safety performance, while lagging indicators help us assess the success of our safety management efforts. All SWN employees and contractors are evaluated on and held accountable for HSE performance.

13%

improvement in contractor Total Recordable Injury Rate (TRIR) compared with 2018

11%

decrease in Total Recordable Environmental Rate (TRER) compared with 2018

50%

decrease in Tier 1 and Tier 2 Environmental incidents compared with 2018

13%

decrease in Days Away, Lost or Transferred (DART) combined rate for employees and contractors compared with 2018

In 2019, we achieved record safety performance for TRIR and DART and significantly improved TRER.

25%

reduction in driving safety incidents from backing compared to 2018

625+

Job Safety and Environmental Assessments reviews / audits held with contractors

2,530+

high impact hazard hunts

338

leadership site visits

See the data section for additional Health and Safety performance metrics.

Health and Well-Being

SWN encourages employees to live safe and be healthy, both on and off the job. To that end, we offer a complete range of employee benefits. Our health and well-being program focuses on four areas: physical, financial, social and community.

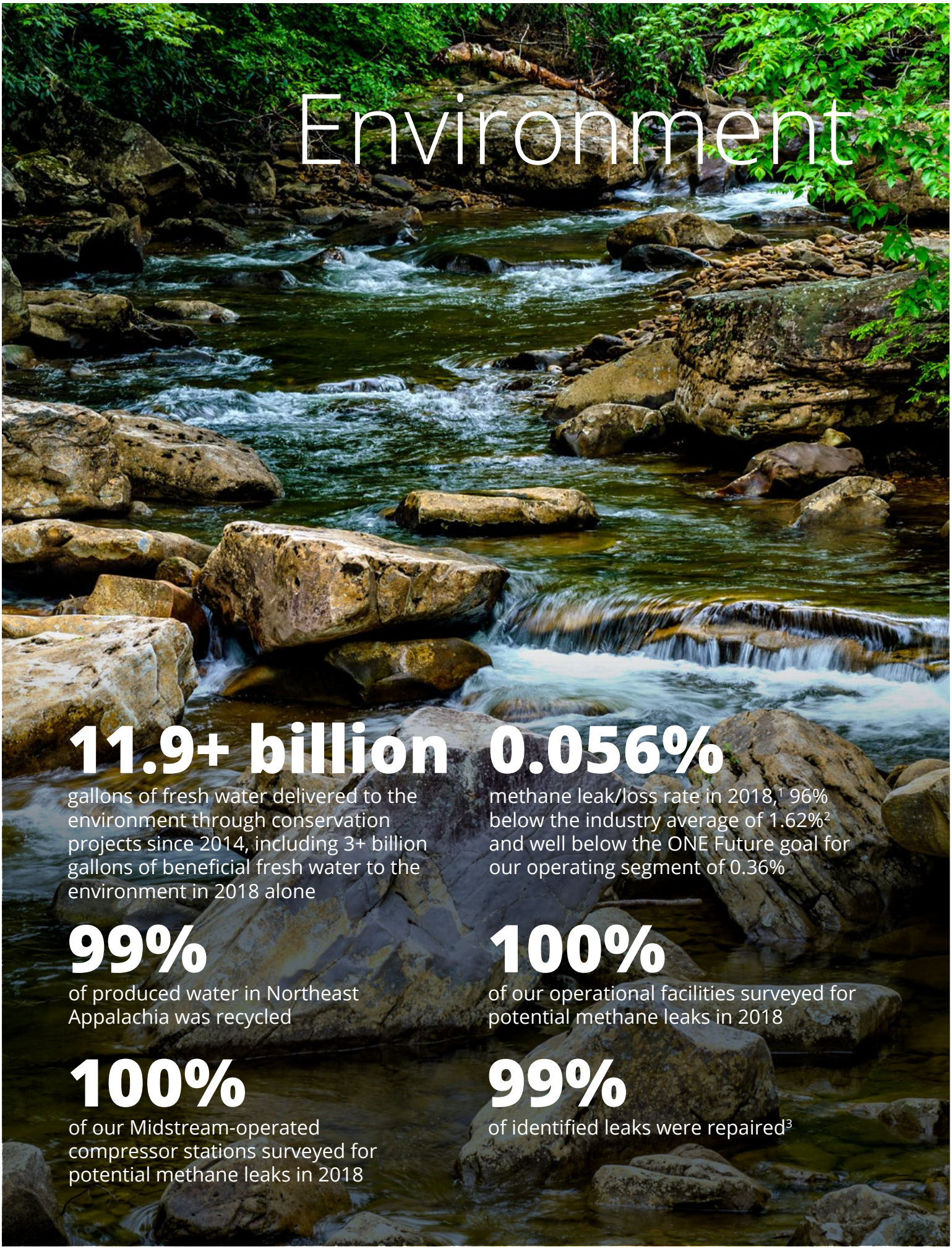
Health Resources

SWN employees receive a wide range of benefits that promote and protect health, including high-quality health insurance as well as vision and dental coverage. SWN employees can also utilize virtual physician visits where they can meet with a doctor any time of day or night via Skype or FaceTime. In-person and virtual wellness coaching is yet another health resources benefit offered by the company. For all work-related medical issues, employees have access to Priority Care 365, allowing them direct access to a bilingual Registered Nurse on a 24-hours-a-day, 365-days-a-year basis. For off-the-job urgent health issues, employees have access to similar real-time advice through a United Healthcare nurse line.

Well-Being Resources

SWN provides a range of support tools promoting general employee well-being. A few examples:

- SWN offers free flu shots to employees and spouses at all SWN office locations.
- Free, annual biometric and health screenings and follow-up services are offered at all SWN office locations. In addition to receiving screening results, participants are given information on the impacts of unaddressed health risks and key questions to ask their doctors.
- SWN continues to offer the weight management program that gives employees convenient and flexible tools to increase exercise and manage nutrition at home.
- Through our confidential Employee Assistance Services program, employees receive support for themselves and their family with access to a wide range of professionals on topics such as child or eldercare resources, financial planning assistance, legal services, help with their mental well-being and many other topics. This program allows five face-to-face visits for each employee and their family members.
- SWN offers employees services to help protect against identity theft, including educational resources and an identity theft monitoring program.



Environment

11.9+ billion

gallons of fresh water delivered to the environment through conservation projects since 2014, including 3+ billion gallons of beneficial fresh water to the environment in 2018 alone

0.056%

methane leak/loss rate in 2018,[1] 96% below the industry average of 1.62%[2] and well below the ONE Future goal for our operating segment of 0.36%

99%

of produced water in Northeast Appalachia was recycled

100%

of our operational facilities surveyed for potential methane leaks in 2018

100%

of our Midstream-operated compressor stations surveyed for potential methane leaks in 2018

99%

of identified leaks were repaired[3]

Responsible environmental stewardship is a core value at SWN. We believe natural gas is an essential part of a lower-carbon energy future, and we are well-positioned to help deliver this future through responsible energy development.

Our operations are informed by the best current science and industry practices and guided by a commitment to be a model operator in environmental stewardship. Our comprehensive environmental management system helps to ensure that we operate consistently and at a high level across our operating regions. We maintain positive and productive relationships with federal and state regulatory agencies, and it is our practice to conform our operations to the spirit – not just the letter – of all environmental rules and regulations.

Air

In 2019, we reduced our methane leak/loss rate to 0.055 percent. SWN achieved and surpassed the voluntary ONE Future methane leak/loss goal for our sector of 0.36 percent six years ago, thanks to our early leadership in methane reduction.

Water

SWN has a comprehensive approach to protecting critical water resources. In 2019, for the fourth year in a row, we met our industry-first goal to maintain "Fresh Water Neutral" operations by replenishing every gallon of fresh water we use through conservation projects and treatment technologies that return beneficial fresh water to the environment.

Land

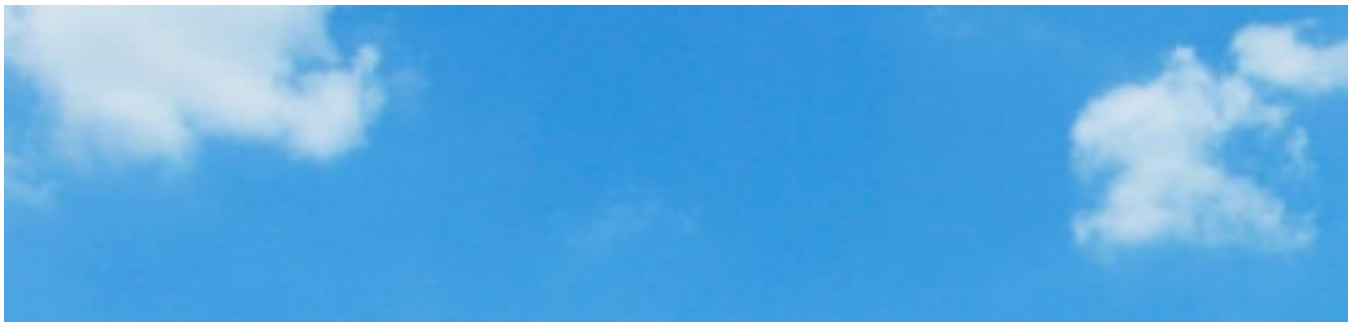
SWN's goal is to minimize surface impacts, prevent spills, reduce waste and protect biodiversity. In 2019, SWN voluntarily plugged two orphaned hydrocarbon wells drilled by other operators in Pennsylvania in an effort to support and assist the state Department of Environmental Protection.

Climate Change and Scenario Analysis

Our low-cost resource base means SWN is well-positioned to prosper under multiple 2°C scenarios. Our leadership in reducing greenhouse gas emissions enhances our ability to comply with new policies and practices, and our capital discipline prevents us from investing in assets that are unlikely to recover their costs.

1. More than 100% of produced water was recycled in the NE Appalachia Division due to other operators recycling SWN's water and SWN recycling produced water from other operators.

2. All methane leaks are ultimately repaired. However, less than 1 percent of leaks in 2019 were identified for delayed repair in accordance with regulation to prevent excess emissions as a result of immediate repair.



Air

Natural gas burns cleaner than other fossil fuels and is playing an important role in reducing greenhouse gas (GHG) emissions. Abundant and reliable natural gas is also helping to increase the feasibility of more widespread use of intermittent renewable energy sources, such as solar and wind. Minimizing methane emissions is a key goal for SWN, and doing so isn't just good environmental stewardship; since methane is ultimately our product, it is good business as well. Accountability for this goal goes all the way to the top of SWN's organization, since operating executives' evaluation scorecard includes methane performance metrics, and our Board of Directors regularly reviews methane emissions performance.

GHG Emissions

SWN has long been a leader in reducing GHG emissions from our operations and is achieving top-tier GHG emissions performance. In 2019, we assessed our GHG emissions intensity compared to our peers and found we were a top performer, with significantly lower GHG emissions intensity than most of our peers. In 2019, our GHG intensity was 0.52 (kilograms of carbon dioxide equivalents (CO_2e) per million British thermal units produced).

SWN also leads the industry in reducing methane emissions, an important GHG in our industry. In 2019, we achieved a methane leak/loss rate of 0.055 percent.[1]

SWN is a founding member of the Our Nation's Energy (ONE) Future coalition, a group of 16 companies working to reduce methane emissions across the natural gas value chain. Through peer-reviewed scientific analysis, ONE Future determined that – to ensure the climate benefits of natural gas over other fuels – the industry's methane intensity must not exceed 1 percent across the entire natural gas value chain.[2]

SWN achieved and surpassed our ONE Future target of 0.36 percent six years ago, and we have continued to reduce emissions since.

Our ability to continually exceed this aggressive target stems from our early leadership in implementing methane emission reduction technologies and from the ways we have integrated environmental stewardship – including a consistent focus on identifying and reducing sources of methane emissions – into our company culture and operations. We are committed to continuous improvement and are always seeking ways to further reduce our emissions, as well as encouraging others in the industry to do so.

We are members of The Environmental Partnership, a group of 83 companies that have committed to implement a range of emission reduction best practices. Further, we seek to improve and share our knowledge in this area by participating in scientific studies with regulatory agencies, academia and nongovernmental organizations. These scientific research efforts are resulting in significant advances in knowledge and technology across the industry, which are also driving performance improvements.

0.055%

methane leak/loss rate in 2019, well below the ONE Future goal for our operating segment of 0.36%

10%

reduction in GHG emissions intensity in 2019, from 0.57 kg CO2e/MMBTU gas produced in 2018 to 0.52 in 2019

Emission-Reduction Efforts

SWN has proactively implemented methane mitigation technologies – including reduced emission completions, pneumatic device replacement, liquids unloading mitigation, and leak detection and repair (LDAR) programs – well in advance of U.S. regulatory requirements. Current SWN facilities do not utilize high-bleed controllers, nor do we use them in new facility design or installation.

Our voluntary LDAR program, through which we find and fix methane leaks across our operations, is overseen at the highest levels of our company. The Health, Safety, Environment and Corporate Responsibility Committee of our Board of Directors reviews LDAR performance quarterly, and senior executives are accountable for LDAR performance as part of their balanced scorecard evaluations. SWN's Air Program Manager oversees day-to-day implementation of the program across the company, providing a single point of accountability and maintaining consistent implementation in all of our operating regions.

Our LDAR program goes beyond current regulatory requirements by including certain nonfugitive equipment sources – such as pneumatic controllers – and by addressing all potential sources, not just new ones. This program exceeds the standards of many SWN peers by covering all operational facilities, equipment and components. SWN LDAR personnel participate in both equipment start-up and maintenance activities to address potential leaks across the facility's lifecycle.

The elements of our LDAR program are as follows:

- **Conduct ongoing remote monitoring** of pressure, temperature and flow rate to identify any changes that may indicate methane leaks
- **Conduct frequent audio, visual and olfactory inspections** by field personnel to identify leaks
- **Complete leak detection surveys using optical gas imaging cameras** at least annually. New wells and new compressor stations are assessed within 60–180 days of commencing operation.
- **Make immediate repairs of leaking** components if practical and safe. Once repairs are completed, the component or equipment is re-surveyed to confirm the leak has been fixed.
- **Track and report data** on leak detection surveys to help ensure repairs are made effectively and to drive improvements in maintenance and repair practices

100%

of our operational production facilities surveyed for potential methane leaks in 2018

100%

of our Midstream-operated compressor stations surveyed for potential methane leaks in 2018

99%

of identified leaks were repaired[5]

Other things we do to reduce emissions include:

- Use preventative practices and design standards to eliminate otherwise high-emitting events
- Prevent and/or minimize emissions from venting, including during planned events such as liquid unloading and blowdowns
- Use the applicable U.S. Environmental Protection Agency Natural Gas STAR recommended technologies for minimizing methane venting
- Minimize flaring to the maximum extent feasible to do so (In our core operating areas, flare use is limited to stand-by for upsets in the early stages of the drilling process, emergency conditions or as otherwise required by federal or state regulations.)

Technologies/Practices SWN Uses to Minimize Emissions, by Operational Phase

Well Drilling
- Catalytic converters
- Low-sulfur diesel fuel
- Engines that run on a mixture of diesel and natural gas

Well Completions/Workovers
- Catalytic converters
- Low-sulfur diesel fuel
- Green (i.e., low-emission) completions and re-completions

Production Activities
- Maintenance practices
- Low NO_x burners
- Vapor recovery
- Leak detection, including use of infrared cameras to identify leaks
- Artificial lift systems
- Monitored manual liquids unloading
- Solar-powered instruments
- Flash tank vessels on glycol dehydration units

Gas Gathering/Treatment
- Lean burn engines
- Catalytic converters
- Leak detection, including use of infrared cameras to identify leaks
- Flash tank vessels on glycol dehydration units
- Electric glycol pump
- Air/fuel ratio controllers

Miscellaneous
- Conversion of fleet vehicles (field trucks) from gasoline/diesel to compressed natural gas

1. Methane intensity or methane leak/loss rate (mass percentage) is calculated by dividing the gigagrams of methane emissions by the oil and gas gross production (cubic feet converted to gigagrams). In accordance with U.S. Environmental Protection Agency greenhouse gas reporting requirements, assets that were divested in 2018 are not reported.

2. For more information on ONE Future and the target-setting process, please see: https://onefuture.us.

3. All leaks are ultimately repaired. However, less than 1 percent of leaks in 2019 were identified for delayed repair in accordance with regulation to prevent excess emissions as a result of immediate repair.

Water

SWN is committed to the responsible use of water, a vital resource to our operations as well as the world, and at all times seeks to minimize our company's impact on freshwater systems. The centerpiece of this approach is our goal to be "Fresh Water Neutral," [1] which we have achieved for the past four years. This commitment is unprecedented in the oil and gas industry. In addition, we are equally committed to responsible produced water management and the protection of groundwater.

SWN Tops Investor Scorecard for Leadership in Water and Chemicals Management

In March 2019, SWN received the highest score on an investor-led scorecard that assesses the 30 top-producing companies involved in hydraulic fracturing on their disclosure and performance on water and chemicals management best practices. This is the second year in a row that we topped this Disclosing the Facts scorecard, which is published by investor groups including As You Sow and Boston Common Asset Management. Our company was called out for several notable practices in the industry, including our industry-first Fresh Water Neutral goal, our detailed disclosures on water use and well integrity performance and our Right Products chemical assessment and management program.

Water Use

SWN in its operations optimizes water usage and reuses/recycles as much water as possible. Hydraulic fracturing requires more water than any other aspect of our operations, because we use it as the base for fracturing fluids. We also use fresh water to mix well cement and drilling mud, pressure-test pipelines, cool compressor stations and conduct other minor operational functions.

Our water needs vary basin-to-basin, and even pad-to-pad, due to differences in reservoir geology, well depth, lateral length and other operational factors. SWN's overall water use increased in 2019 from 2018. SWN's average water use per well also increased in both Northeast Appalachia and Southwest Appalachia, primarily attributable to increased lateral lengths and evolving fracturing fluid designs that require more water per well.

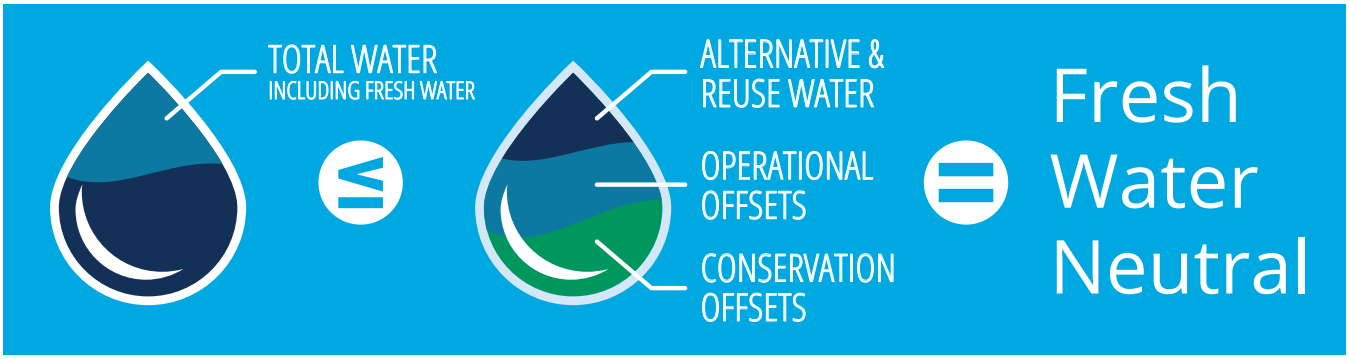
Average Water Demand per Well in 2018 *barrels (bbl)*

Improving Well Productivity and Water Use

We continuously seek ways to improve our operations to optimize well productivity. For example, we are conducting a variety of research efforts, both internally and in conjunction with private labs and universities, to better understand well dynamics, including efficient proppant transport, fluid/rock interactions and fracture conductivity. These efforts have the potential to reduce our water use and environmental footprint in the long term by reducing the number of wells we need to drill to effectively access the hydrocarbons present.

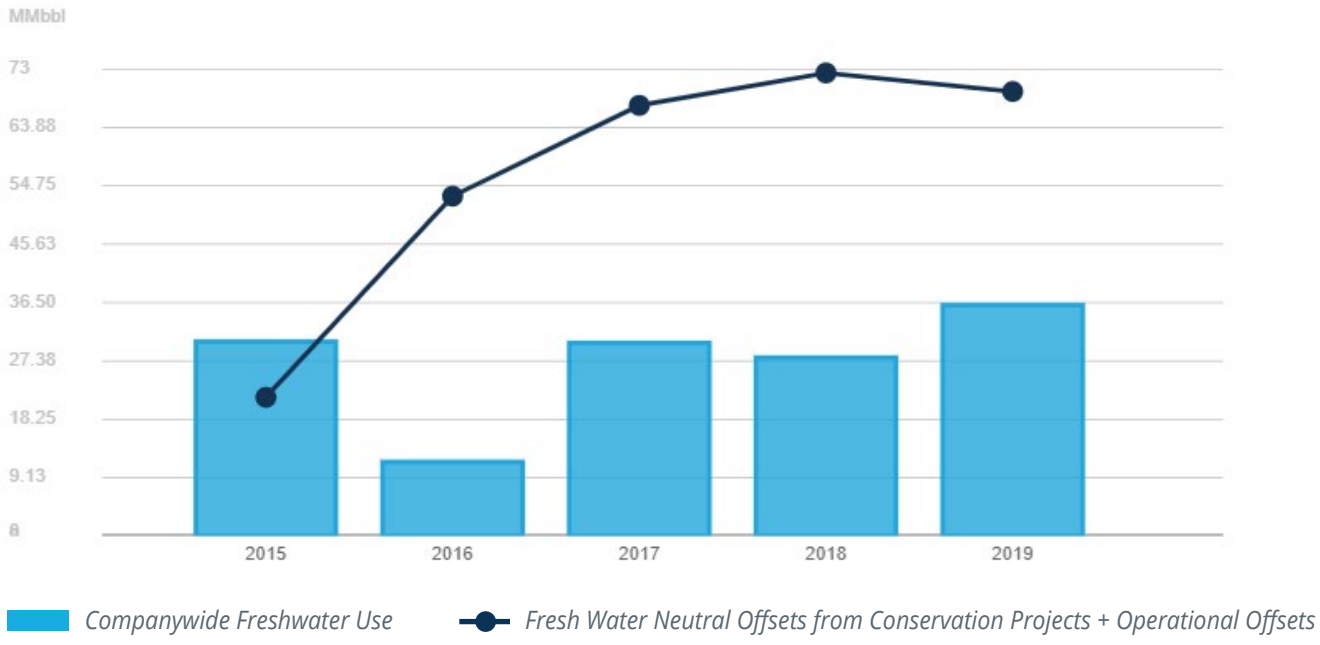
Fresh Water Neutral

SWN's commitment to being Fresh Water Neutral is a key part of meeting our goal to be a model operator and lead the way on responsible unconventional energy development. While we seek to minimize our use of fresh water as much as possible, primarily through water reuse and recycling, we know our operations will continue to need fresh water. That is why we have committed ourselves to achieve and maintain Fresh Water Neutral operations. We attained this goal in 2016, 2017, 2018 and 2019, and we believe we are the only oil and gas operator to achieve this benchmark.



When the **Total Water Used** in our operations is less than or equal to the sum of **Alternative & Reuse Water, Operational Offsets** and **Conservation Offsets** for each of our operating areas, we will have achieved **Fresh Water Neutral.**

Companywide Freshwater Use Compared to Fresh Water Neutral Offsets from Conservation Projects + Operational Offsets *millions of barrels (MMbbl)*



A key part of our Fresh Water Neutral commitment is undertaking conservation projects in our operational areas to provide the volumetric freshwater benefits that match or exceed our operational freshwater usage. We work with government agencies and nonprofit partners to restore wetlands and natural flow regimes, improve water quality and aquatic habitat and positively contribute to natural watershed functions, thereby protecting and increasing aquatic biodiversity. Most of the projects we have undertaken address legacy water pollution issues unrelated to oil and gas operations or activities and provide a positive, lasting benefit to local communities. "New" fresh water from these projects provides a net "credit" of fresh water returned to the environment, which we use in our Fresh Water Neutral program to offset freshwater usage in our operations.

10

major conservation projects completed since 2014 in Arkansas, Colorado, Pennsylvania and West Virginia

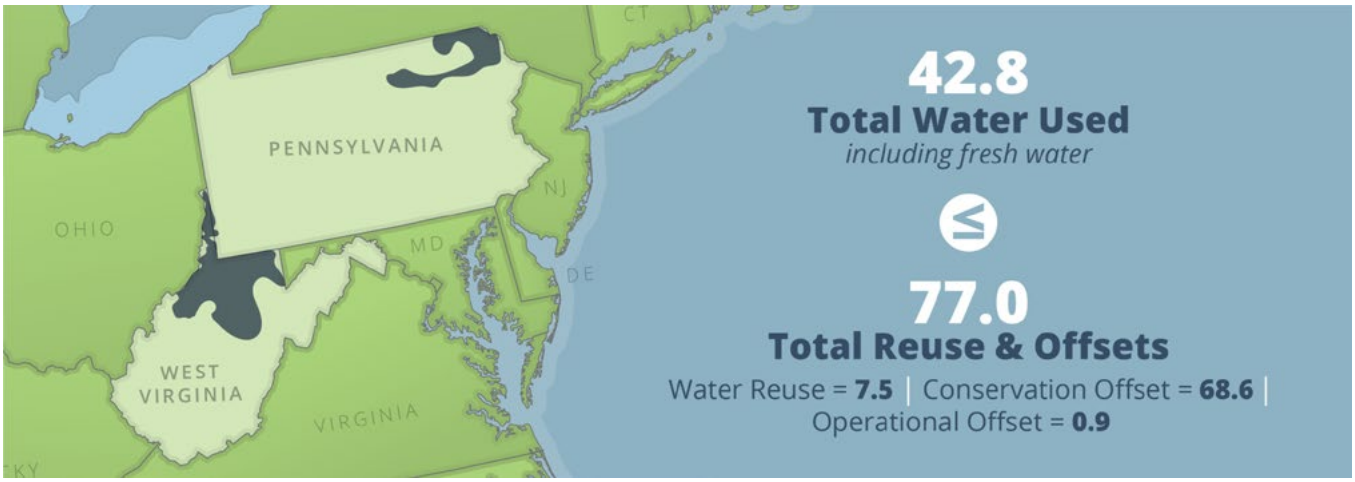
2.9

gallons of beneficial fresh water from our 9 active conservation projects in 2019

11.9

gallons of beneficial fresh water from our 10 conservation projects since launching the Fresh Water Neutral program in 2012

Freshwater Neutral by Division *millions of barrels (MMbbl)*



Responsible Produced Water Management

Typically, between 5 and 20 percent of the water we use downhole flows back out of the well after hydraulic fracturing and during production. We manage this produced water safely and responsibly through storage, treatment, reuse/recycling and, when necessary, disposal.

Recycling Produced Water

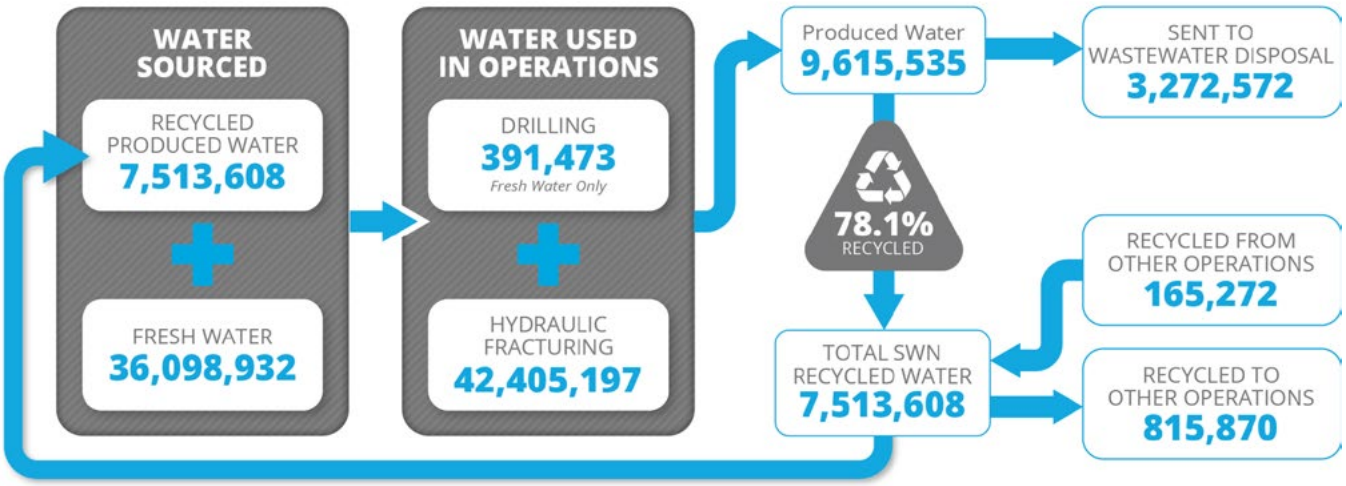
We recycle produced water back into our operations as much as feasible, which reduces our need for fresh water. We have increased produced water recycling rates across our operations through infrastructure investments, including pipelines and storage systems and improvements in our fracture fluid designs. Using pipelines instead of trucks to move water reduces a primary spill risk and significantly reduces truck traffic, further minimizing the environmental and community impacts of our business.

In 2019, we recycled approximately 99 percent of our produced water in Northeast Appalachia and approximately 52 percent in Southwest Appalachia.

If we are not able to reuse water ourselves, we work to safely share it with other operators for use in their operations. In 2019, we shared a total of 815,870 barrels of our produced water with other operators, sparing it from disposal.

The graphic below illustrates our water sources, water recycling and water disposal by major operating region.

Water Used and Recycled by Division *barrels (bbl)*



When we dispose of produced water, we do so in approved salt water injection wells and through vetted third-party service companies, as discussed below. For a breakdown of our freshwater sources (i.e., surface water, groundwater and water utilities) by operating region, see the Appendix, p. 13; for more detail on water recycling by operating region, see the Appendix, p. 14; and for more detail on water disposal, see the Appendix, p. 16.

Produced Water Storage and Treatment

We store produced water to minimize any possible risk of leaks, spills or other impacts to local ecosystems. We use a range of options to store produced water, including aboveground storage tanks and impoundments. We consider multiple factors to determine the appropriate storage method – most importantly, the safety of personnel and the environment. Other key considerations include regulations and permitting, topography, surface footprint, subgrade suitability, the quantity of produced water we need to store, operational support services (i.e., trucking, pipelines, etc.), proximity to disposal, economics (capital and operating expenses), length of storage and closure requirements.

In West Virginia, we store produced water in aboveground tanks, with lined containment berms under the tanks, appropriately sized for spill containment. In Pennsylvania, we use a combination of aboveground tanks and permitted impoundments. The impoundments are double-lined and equipped with leak-detection monitoring zones between and under the two synthetic liners. We also use groundwater monitoring wells around the impoundments to identify and address any potential leaks or spills.

Reducing Fresh Water "Capture"

Inadvertent freshwater capture – or the collection of rainwater, surface water and groundwater in water storage impoundments, reuse/recycling, secondary containment systems, groundwater monitoring systems or other facilities – results in water loss from the natural water cycle; thus we try to limit this capture. For example, we try to limit our use of open produced water storage impoundments. We are also reassessing the size and design of secondary containment systems. We have developed and implemented a process to monitor, test and discharge uncontaminated groundwater rather than impound it with produced water.

Wastewater Disposal

When we are unable to recycle produced water, we dispose of it in accordance with applicable laws, regulations and best practices. For our operations in West Virginia, produced water is trucked to Ohio for injection, and we avoid areas of seismic concern in this region. In Pennsylvania, we transport produced water to vetted third-party facilities equipped and permitted to reuse it or treat and discharge it.

In all regions, we are mindful of concerns and the latest scientific knowledge about wastewater disposal. We also conduct thorough assessments of salt water disposal wells and operators, which guide our site and vendor selection. In 2019, 3.2 million barrels of wastewater were injected from our primary operating areas.

Protecting Water Resources

Hydraulic fracturing occurs thousands of feet below the surface, well below any freshwater aquifer zones and with layers of impermeable rock in between. Thus, the primary way we avoid impacts to surface water and groundwater supplies from our hydraulic fracturing is ensuring proper wellbore construction and integrity.

SWN uses industry best management practices (BMPs) for well construction, drilling, completion and maintenance to ensure the integrity and soundness of our wellbores. These BMPs meet or exceed applicable regulations and are updated regularly as new technologies, practices and information become available.

Examples of BMPs include baseline water-quality testing whenever possible; monitoring each phase of drilling, completion and production; and verifying the mechanical integrity of the steel casings.[2] When planning wells, we investigate historical drilling activity in the vicinity to ensure we avoid affecting nearby wells, including investigating public records of oil and gas and water wells and communicating with landowners about previous drilling.

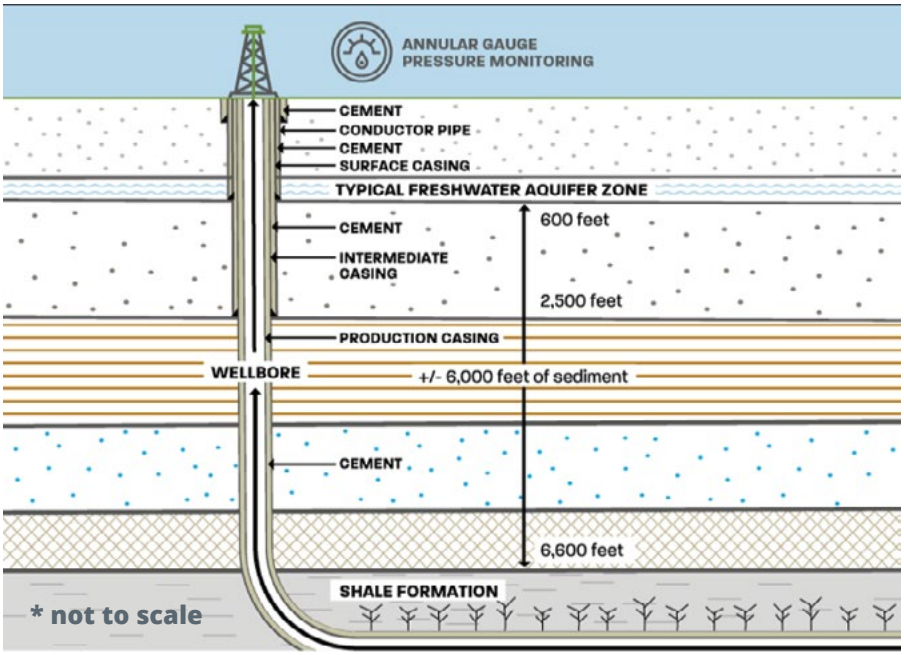
During the initial drilling and completion of our wells, we use cement bond logs whenever required by applicable regulations. In addition, we use cement bond logging tools to evaluate wellbore construction integrity whenever shortcomings in the cementing process of casings are considered possible. When using these logs, we rerun the testing/logging process with pressure on the casing to test for good bonding. In addition, we place pressure gauges on all wellbore annuli for the life of the well and monitor these gauges remotely and through daily human interface to ensure wellbore integrity at all times. This allows any wellbore integrity issues to be detected early in the life of an issue.

We are also certifying some of our wells through the Independent Energy Standards Corporation's TrustWell™ program.

In 2019 we received Platinum certification on 20 of our wells in NE Appalachia through this program. Not only were the Platinum certifications a first for SWN, these were the first, and to our knowledge only, wells to score Platinum with the TrustWell™ certification process.

In West Virginia, we test all water sources within 3,000 feet of the drilling location, which exceeds the regulatory requirement to test sources within 1,500 feet. In Pennsylvania, we test all water sources within 2,500 feet of drilling locations, which matches state regulatory standards. We perform post-drill testing in all areas in response to water well complaints, if requested by landowners, or in cases where it is written into a lease agreement.

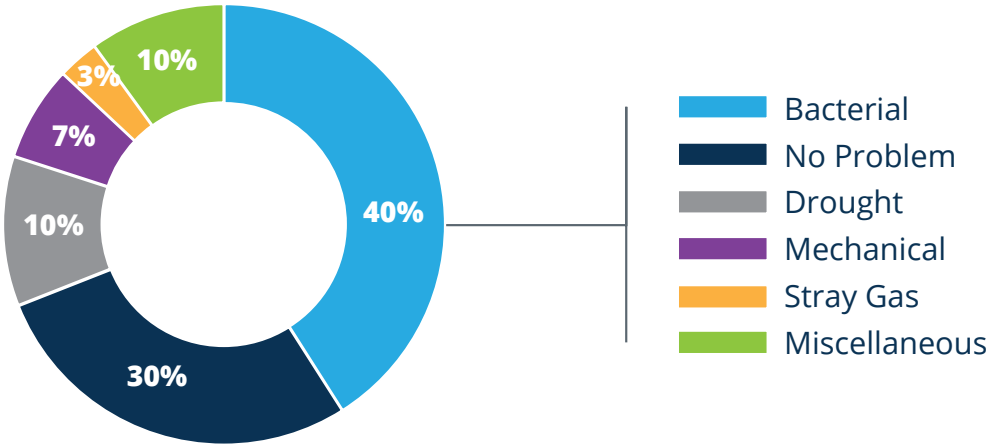
Ensuring Wellbore Integrity in a Typical Marcellus Shale Well



Our Record

SWN takes very seriously any landowner or community concerns about surface water and groundwater, and we investigate every source-specific issue brought to our attention. We drilled 105 unconventional wells during 2019, bringing our total number of unconventional wells drilled through year-end 2019 to 5,755. Since 2005, we have recorded 240 instances where individuals have voiced concerns regarding privately owned groundwater wells in relation to our exploration and production operations (each, a "claim"). Of those claims, 171 were in Arkansas,[3] 59 were in Pennsylvania, 9 were in West Virginia, and one was in Colorado. As the pie chart below illustrates, investigations ultimately revealed that in 30 percent of claims, no water quality problems were found at all.[4] Further, 60 percent of the claims were conclusively shown to be attributable to bacteria[5] (40 percent), drought (10 percent), stray gas[6] (3 percent) and mechanical failure[7] of the water well itself (7 percent). Note that scenarios where no diagnosis was possible (e.g., landowner permission was not granted for water well sampling/analysis) or where an investigation is still open or the claim is otherwise not yet resolved are classified as "Miscellaneous."[8]

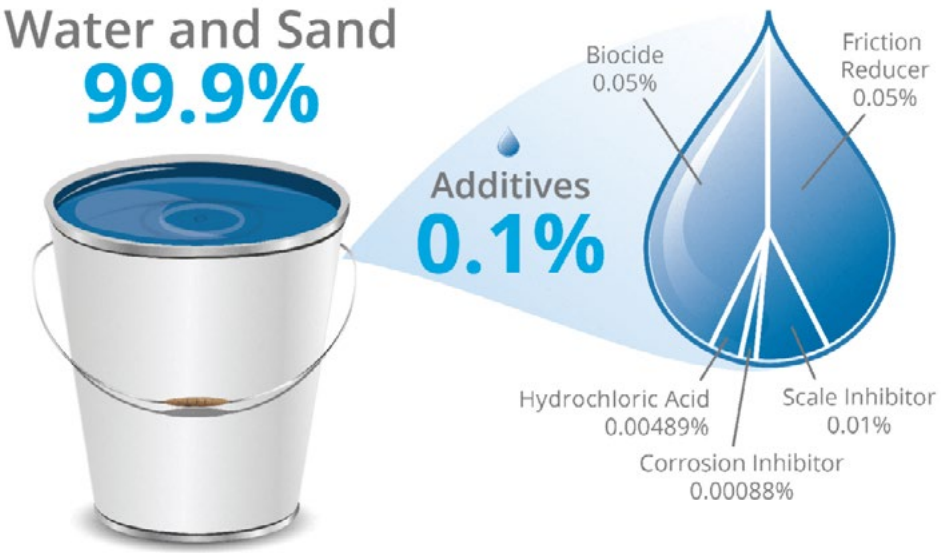
Well Water Impairment Claim Findings



SWN's Unique Approach to Fracturing Additives

The fracturing fluid used in SWN's operations is 99.9 percent water and sand. The remaining portion is made up of additives necessary for safe and effective completion operations and includes biocides, friction reducers, hydrochloric acid, scale inhibitors and corrosion inhibitors. These additives do not include benzene, toluene, ethylbenzene or xylenes (BTEX) or diesel.

Breakdown of 0.1% Fracturing Fluid Additives by Type



Source: Southwestern Energy, Ground Water Protection Council

SWN reports fracturing fluid composition for 100 percent of our hydraulically fractured wells to the voluntary FracFocus Chemical Disclosure Registry.[9]

To better understand and address any potential risks associated with fracture fluid additives, we employ our Right Products program. Through Right Products, each fracturing fluid chemical is assessed at the component level against key environmental and health hazards (e.g., toxicity, bioaccumulation potential, appearance on a regulatory list of chemicals of concern, developmental toxin, carcinogen). The program has enabled us to honor suppliers' right to protect proprietary information while allowing us to assess the profile of our fluid additives.

We utilize a third-party toxicologist to conduct Right Products hazard assessments, and each product is given a numerical score. The toxicologist works with our suppliers to ascertain details as to a product's chemical makeup, and SWN then receives the final score for the product and a corresponding summary report. Based on these results, SWN's "Chemical Advisory Board" deems the product as being either approved or denied for use in SWN operations or recommended for further evaluation. If a product receives a high hazard assessment score (implying potential concerns) and there's not a ready substitute, a more detailed risk assessment is conducted. Risk assessment findings are presented to SWN's Chemical Advisory Board for a decision and are elevated to senior leadership consideration as may be appropriate.

Right Products Program Scoring Results

318 products scored for 29 service companies

In 2017 and 2018, we conducted internal audits of the Right Products program to assess if any products were being used that had not been reviewed and scored through the program. The results suggest that the program is effective – we have a high level of control over the products being used in our fracturing operations – and there is a trend of increasing coverage over time. We also assessed the program by operating division, by contractor company and by the number of wells serviced by each contractor, to target opportunities for improvement. In 2019, we built upon our 97% coverage with a new data algorithm that interfaces directly with Completions' hydraulic fracturing designs and checks that all additive products in the fracturing design are approved for SWN usage per our Right Products program.

1. Fresh Water Neutral means that, for every gallon of fresh water we use, we offset or replenish that gallon through aquatic environmental conservation projects or treatment technologies that return beneficial fresh water to the environment.

2. Casing is hollow steel pipe. See a video that details our horizontal drilling and fracturing practices and how we seek to ensure wellbore integrity. (Flash plugin is required.)

3. We divested our Arkansas assets on December 3, 2018.

4. "No problem" includes situations where the complaint is only due to aesthetics (e.g., naturally occurring iron or manganese).

5. Naturally occurring bacteria in water wells is common in our areas of operation.

6. Naturally occurring stray gas or methane is common throughout our operational areas and can affect groundwater. The term "stray gas" is used herein without delineation between biogenic or thermogenic.

7. "Mechanical" refers to a mechanical or equipment problem with the given water well (e.g., a broken pump).

8. The "Miscellaneous" classification as used herein encompasses any claim not falling within another claim classification (e.g., brine contamination and diminution).

9. See http://www.fracfocus.org.

Land

At SWN, to ensure that we minimize our operational footprint, our commitment is to leave the land we impact better than how we found it. During our operations, we aim to minimize surface impacts, prevent spills, reduce waste and protect biodiversity. In addition, we use LEED building standards for our headquarters.

Surface Impacts

We minimize our surface footprint by drilling multiple wells on each well pad (up to 10 wells per pad), where technically feasible. In 2019, we continued to increase the underground lateral length of our wells, allowing us to drill fewer wells to produce the same amount of gas.

Once a well is drilled, completed and producing, we implement restoration best practices – which meet and in most cases exceed regulatory requirements – to address potential erosion, invasive species and other site impacts. We continue to use a technology we pioneered for erosion and sedimentation control using pre-vegetated, natural materials. This technology provides immediate and ongoing erosion control, helps revegetate the area and reduces the amount of earth disturbance needed for site restoration.

When the time comes to close the final well on a pad, we generally restore the location to its original condition, absent landowner requests that the pad be left in place. Because most of our wells will produce for decades to come, our well closures at present are mostly older conventional wells that have ceased producing and exploratory wells that prove noncommercial. We employ best practices that guide the development and ultimate closure of our well pad sites and ensure we comply with applicable regulations.

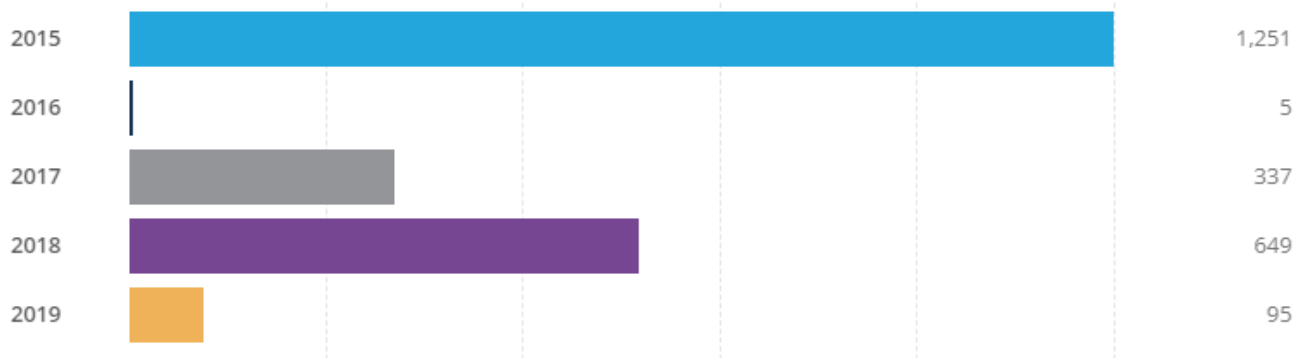
Preventing Spills

We handle a variety of liquids in our operations – including natural gas liquids, fracturing fluid, produced water, recycled water and condensate – and our operational practices help ensure these liquids stay off the ground and out of waterways. We have spill prevention controls and spill response plans in place throughout our operations, and we regularly conduct spill response drills. Containment under facilities and equipment and catch basins under drilling rigs are designed to contain fluid that may fall, and the base area around each rig is covered with a heavy polyethylene liner. Shutoff valves on rigs enable us to immediately stop any leak or rupture. We keep records of every spill – even those captured by containment – and record near hits, so we can learn from those events and put preventative measures in place.

SWN defines, classifies and tracks Tier 1 and Tier 2 spills,[1] portions of which are included as performance measures affecting our employees' compensation and bonuses.

In 2019, Tier 1 and Tier 2 spills totaled 95 barrels. Approximately 40% of these spills were due to inadvertent returns during horizontal directional drilling operations. The remainder of the spills were produced water. Produced water spilled was less than 0.005 percent of the total produced water we handled in 2019. All spills of all types were remediated following regulations. Liquids were mopped up, and impacted soils were removed to ensure no impact to the environment.

Volume of Tier 1 and Tier 2 spills *barrels (bbl)*



Solid Waste Management

SWN's primary waste stream is the mixture of rock cuttings and oil-based drilling mud that comes out of a well as it is being drilled. We have a companywide waste management policy and individual waste management plans for each operating region. We review the policy and plans annually to ensure we stay aligned with any changes in state or local regulations. We also provide waste management and other waste-related training for all relevant personnel.

Our operations use closed-loop systems to manage drilling mud, meaning all cuttings and associated fluids are captured and then separated.

After separation, the liquid mud is reused for drilling, and the solids are removed from the well pad in covered, lined trucks. This material is further processed and then either reused as road base or beneficial fill or disposed of in approved disposal sites. Before choosing a landfill, our Health, Safety and Environment team conducts a rigorous audit to ensure appropriate regulatory compliance and conformity with SWN standards; periodic follow-up audits are also conducted once a landfill is selected.

Naturally occurring radioactive material (NORM) can occur in very small concentrations in some rock formations. Our NORM management program specifies procedures for detecting, managing and disposing of NORM-affected materials. All remediation or decommissioning of NORM waste is conducted by a third-party company licensed for that purpose. See the Health and Safety section for more on how we protect our employees from NORM.

Protecting Biodiversity

In and around SWN facilities, we take care to protect ecosystems, plants and animals. In all of our operating areas, we survey for potentially threatened and endangered species before beginning any construction, and we meet or exceed all associated regulatory requirements. We continue to monitor and mitigate potential impacts on biodiversity throughout our operations, including the management of erosion and invasive species.

SWN's assets overlap with the habitat of several bat species, including three listed by the U.S. Fish and Wildlife Service as endangered or threatened. In 2018, we put 50 acres of land under conservation to provide habitat for threatened and endangered bats and installed bat boxes to encourage colonization of the area. In 2019, we began a monitoring program for bats in areas where we implemented conservation measures after operations in the area. Monitoring of the bat boxes began in 2019 and will continue for five years.

Several of the conservation efforts we've undertaken as part of our Fresh Water Neutral work have had the effect of restoring habitat for threatened or endangered species.

1. A Tier 1 spill is an unintentional release of a regulated or prohibited substance impacting a state/federal jurisdictional water body, an unintentional release of a regulated substance at or above its federal reportable quantity, or an unintentional air impact at or above a state/federal reporting threshold. A Tier 2 spill is an unintentional release of a regulated or prohibited substance impacting land off location or an unintentional air impact below a state/federal reporting threshold, to include only natural gas releases of 235 thousand cubic feet or more.

Climate Change and Scenario Analysis[1]

SWN is committed to – and recognized for – responsible energy development, and we recognize stakeholder concerns about climate change. We also understand that regulations and practices aimed at protecting the environment, and specifically reducing greenhouse gas (GHG) emissions, can affect our business. We examine and address these issues as part of our risk management process.

In addition to efforts to limit our own emissions, we consider the long-term consequences of new regulations and industry-leading practices aimed at limiting overall climate impact. We closely follow developments in policy and stakeholder sentiment through frequent engagement with local community members, government officials and investors. We also consider future price and demand projections, such as those from the Annual Energy Outlook published by the U.S. Energy Information Administration (EIA) and from the World Energy Outlook published annually by the International Energy Agency (IEA).

We are particularly interested in price and demand projections regarding low-carbon natural gas, which, along with natural gas liquids (NGLs), comprises essentially all of our production. We regularly undertake extensive analyses of our proved reserves development potential under a range of possible future regulatory and emissions scenarios, the results of which are presented here. We will continue to update this analysis in the future.

Our corporate responsibility reporting is aligned with recommendations from the Task Force on Climate-Related Financial Disclosures framework. See the report Appendix for more information.

Demand for Natural Gas Is Likely to Increase

Demand for natural gas and associated NGLs in the United States and around the world will grow through 2040 under a wide range of scenarios, according to the EIA. In its 2019 publication World Energy Outlook 2019, various scenarios indicate new gas resources must be developed. Under the Current Policies Scenario, energy demand rises by 1.3% each year to 2040, and even under the more restrictive Stated Policies Scenario, energy demand rises by 1% per year to 2040.[2] In this scenario, low-carbon sources supply more than half this growth, with natural gas demand driven in large part by rising liquified natural gas (LNG) exports; oil demand plateaus in the 2030s, and coal use reduces.

80% of [natural gas] growth has been concentrated in three key regions: the United States, where the shale gas revolution is in full swing; China, where economic expansion and air quality concerns have underpinned rapid growth; and the Middle East, where gas is a gateway to economic diversification from oil. Liquefied natural gas (LNG) is the key to more broad-based growth in future.

-IEA, World Energy Outlook 2017, Executive Summary, p. 4

While the impact of COVID-19 has temporarily reduced natural gas demand in power and industry applications, it is expected to progressively recover by 2021, with most post-2021 growth taking place in Asia, led by China and India where natural gas benefits from strong policy support.[3] With substantial low-cost reserves, SWN is also well-positioned to produce and deliver the natural gas and NGLs needed to meet this growing demand.

SWN's Proved Reserves Are Likely to Be Produced, Even Under Stricter Policies

SWN reported 12.7 trillion cubic feet of gas equivalent (Tcfe) of proved reserves as of year-end 2019. Proved reserves are a direct and commonly used measure of how much gas or oil a company will be able to produce profitably. We believe that substantially all of SWN's proved reserves as of year-end 2019 are likely to be produced even with heightened climate change policies and practices. The U.S. Securities and Exchange Commission (SEC) requires that energy companies report their reserves according to specified methodologies. Under these requirements:

> Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible – from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations – prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time.[4]

Thus, proved reserves must be economically producible or either economically producing or certain of starting production within a reasonable time. Importantly, any changes to regulations to combat climate change that impact production levels, methods, costs and/or demand for the commodities we produce would be reflected in the periodic reporting of reserves. If and when these measures arise, the transparency of reserve reporting assures that investors will quickly see their impact.

The following factors point toward SWN's ability to develop substantially all of our current proved reserves, even with stricter climate-related regulation and practices:

- LLike most energy companies, the vast majority of SWN's existing proved reserves are likely to be produced within 10–15 years.[5]
- As noted above, the IEA has concluded that gas demand will increase under its Current Policies Scenario, and that new gas resources must be developed even under its more stringent Stated Policies Scenario. Which reserves will be produced depends on supply and demand.
- Regulations or practices focused on mitigating climate change can affect demand by limiting the amount of natural gas that can be consumed or encouraging consumption as a substitute for higher-carbon fuels. As a simple matter of economics, should demand fall, the reserves with the lowest marginal cost of production are the most likely to continue producing.
- Currently producing reserves – reserves with wells in place and connected to pipelines, which comprise more than 50 percent of the reserves shown in SWN's year-end 2019 SEC filings – are likely to continue producing, because the marginal cost of producing from existing wells is small.
- SWN's core nonproducing reserves are in the Appalachian Basin, which, as the figure below shows, has some of the lowest break-even production costs in the United States, the only market where SWN operates.

Thus, even if prices fall due to higher production or lower demand, SWN's core assets are among the most likely to continue producing and to be developed.

> Scenario analyses consider and seek to understand the strength of an enterprise when stress tested. In the case of climate change, scenarios allow an organization to explore and develop an understanding of how the energy transition may affect the business over time. A critical aspect of scenario analysis is the selection of a set of scenarios that cover a reasonable variety of future outcomes. Scenarios are not intended to represent a full description of the future, but rather are hypothetical constructs highlighting central elements of a possible future and to draw attention to the key factors that will drive future developments.[6]

In the IEA's World Energy Outlook 2019, three scenarios were presented: "Current Policies," "Stated Policies" and "Sustainable Development."

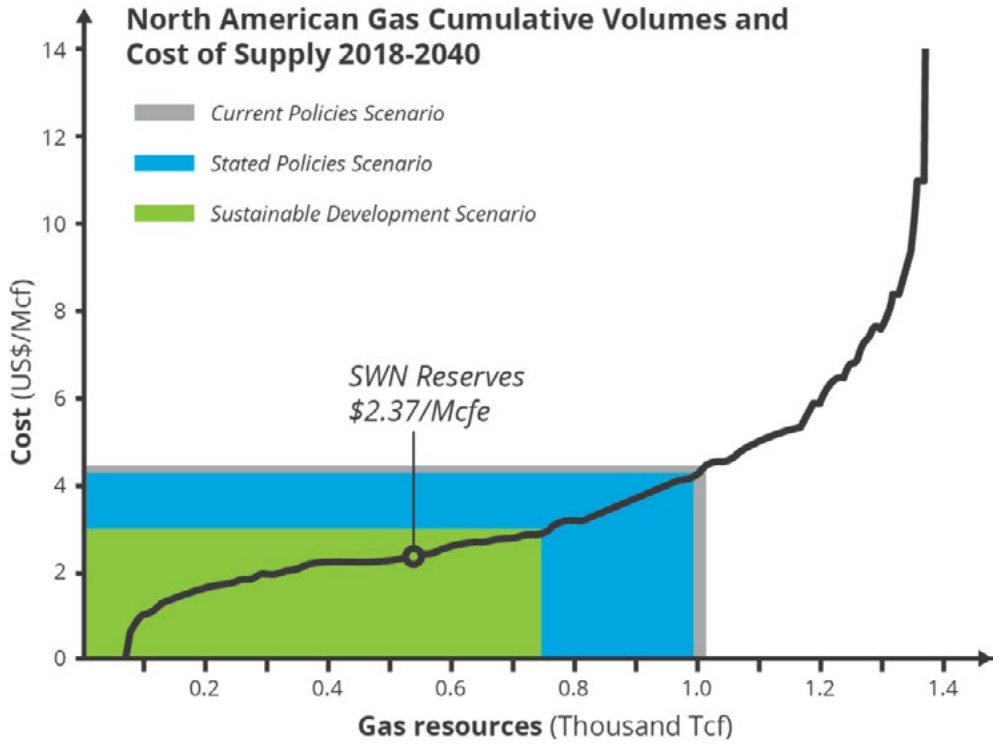
The Current Policies Scenario assumes there are no changes in current climate policy. The Stated Policies Scenario incorporates today's global policy intentions and targets, and the Sustainable Development Scenario (SDS) meets sustainable energy goals in full, requiring rapid and substantive changes across all parts of the energy system. This scenario proposes a path fully aligned with the Paris Agreement by holding the rise in global temperatures to below 2°C.

With respect to the Sustainable Development Scenario, the IEA reports:

... investment in both new and existing sources of natural gas supply is needed. Investment in current sources of production slows the natural decline rate to the annual loss of supply.... Investment in new fields is then also required to ensure a smooth balance between supply and demand.[7]

As indicated in the following chart, the weighted average cost of SWN's 2019 reserves are well within all scenarios, including the most stringent Sustainable Development Scenario, and thus they are likely to be produced.[7]

SWN Weighted Average Cost of Supply vs. U.S. Supply Curve in Various Scenarios



Notes:

1. *Cumulative North American supply volumes for the three different scenarios sourced from IEA World Energy Outlook 2019 Annex A: Fossil Fuel Production*
2. *Overlaying the three scenarios is a relative North American gas cost curve based upon Rystad Energy data.*
3. *SWN reserves in $/mcfe (dark blue circle lying on the cost curve) is based on the cost curve for North American gas supply potential only and is not reflected in the x axis volumes.*
4. *The SWN reserve break-even cost of $2.37 calculated using data contained in the SWN Form 10-Q for the quarterly period ended March 31 2020.*

SWN Is Not Likely to Spend Capital on Assets That Will Be "Stranded"

SWN has been an early adopter and innovator in reducing emissions from our operations and encourages downstream sectors to do the same. When making an investment in new wells or reserves, we consider whether we will be able to recover the capital we deploy, in light of a host of factors, including new regulations and policies such as those designed to limit climate change. Capital conceivably could become "stranded" if

policies shift after a company has made large capital investments that must be recovered over decades – for example, transportation and processing infrastructure or massive-scale projects requiring long lead times, such as large non-U.S. or offshore projects.

In accordance with SWN's Formula, we wisely invest within the cash flow that is generated by our underlying assets. Should policies and practices aimed at mitigating climate change alter demand for our commodities, costs of production or both, our planning practices take those modifications into account.

SWN practices capital discipline. In response to a dramatic fall in natural gas prices, SWN ceased drilling entirely in January 2016. We resumed drilling as prices stabilized later that year, but reduced our capital investments to $1.3 billion in 2017 and maintained a similar level of investment in 2018. As commodity prices continued to fall in 2019, our capital program was reduced to $1.1 billion. With a further reduction of commodity prices in 2020, the plan is to invest $860 – $940 million.

As regulations and norms change, SWN's business practice shows that we can adjust our capital expenditures to levels projected to generate an attractive return. SWN's low-cost resources are well positioned under multiple scenarios. Our industry leading performance in reducing GHG emissions further enhances our ability to comply with new policies and practices. Our capital discipline constrains us from investing in assets that are unlikely to recover their capital costs. Any impacts that do affect the ability to produce reserves would be reflected under SEC regulations governing the reporting of reserves.

The IEA pointed out that the risk of stranded assets to independent oil companies is small relative to other producers[8] and further noted that lower-cost resources, in terms of efficiency and cost discipline will naturally be favored, regardless of the demand outlook. SWN demonstrates capital discipline by adjusting its annual capital spend to align with the movement in discretionary cash flow from commodity prices. We will complete the use of Fayetteville sale proceeds ($600 million) at the end of 2020, and our plan is to continue to use discretionary cash from our assets to drive the capital program. We exhibit cost efficiency through operational execution and completion design optimization; well costs were $824/CLAT for a 10,000' lateral in 2019 and are expected to be $730/CLAT for a 12,000' lateral in 2020.

Further, the IEA states:

> Natural gas fares better…most energy transition outlooks, including the SDS. The profitability of gas supply is often more challenging than oil, but in recent years many companies have sought to increase the level of natural gas in their project portfolio. This is partly because of the greater number of development opportunities for natural gas, but is also a response to the better prospects for gas demand.[9]

The IEA goes on to say "oil and natural gas with lower emissions intensities will be better positioned than higher-emitting sources, and would likely be increasingly preferred for development. Actions to reduce emissions from oil and gas operations include…tackling methane emissions."[10] SWN is a recognized leader in emissions performance, with a methane intensity of 0.055% in 2019.

Conclusion

SWN's low-cost resources are well positioned under multiple 2°C scenarios. Our leadership in minimizing GHG emissions further enhances our ability to comply with new policies and practices. Our capital discipline prevents us from investing in assets that are unlikely to recover their capital costs. Any impacts that do affect the ability to produce reserves would be reflected under SEC regulations governing the reporting of reserves.

1. *Previously known as the "New Policies Scenario."*
2. *Global Energy Review 2020 IEA and Gas 2020 June 2020 IEA.*
3. *17 CFR § 210.4-10(a)(22) (emphasis added). Undrilled locations must have a development plan with drilling scheduled within five years. 17 CFR § 210.4-10(a)(31)(ii).*
4. *IHS Markit, Do Investments in Oil and Gas Constitute Systemic Risk?*
5. *Technical Supplement: The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities, Task Force on Climate Related Disclosures.*
6. *IEA, The Oil and Gas Industry in Energy Transitions, p. 84.*
7. *Scenario analysis prepared for SWN by GaffneyCline, an independent, international oil and gas consultancy providing technical, commercial, and strategic advisory services.*
8. *IIbid., p. 99.*
9. *https://www.iea.org/reports/world-energy-investment-2020/fuel-supply*
10. *Ibid.*

Communities

$470 million

paid in local and state taxes[1] and payroll in our primary operating areas of Arkansas,[2] Pennsylvania and West Virginia over the past five years

$732,000

contributed in 2019 in charitable donations to local communities

$137,000

contributed to support petroleum technology and STEM education in 2019

3,377

hours volunteered by SWN employees in 2019

At SWN being a good neighbor is how we do business, and we have a long track record of having a positive impact in the communities where we work and live. We become part of the community by proactively engaging with and listening to residents and local leaders, which enables us to effectively provide support and address local concerns. These efforts are vital to our success.

Engagement

Regular engagement with community members enables us to keep residents informed about our activities and helps us find opportunities to add value to communities as well as understand and respond to local concerns.

Addressing Concerns

Being accessible and responsive is central to being a good neighbor. We have a 24-hour community concern hotline and use a companywide routing and tracking system to ensure we respond promptly and effectively.

Economic Impacts

SWN's operations have generated billions of dollars in direct and indirect economic benefits for the communities where we operate. We hire locally and support education in petroleum technology and the STEM fields (science, technology, engineering and math) to develop the local workforce.

Giving and Volunteering

We have a passion for philanthropy that supports our communities. Through our Social Energy strategy, we take an integrated approach to meeting local needs across six focus areas: education, well-being, emergency response, clean environment, family focus and support of military service members.

1. "Taxes" include state income taxes, payroll withholding taxes, severance fees, property taxes, franchise taxes, and sales and use taxes. Sales and use tax amounts included in the tax totals are exclusive of refund and audit payments.

2. We divested our Fayetteville Shale assets in Arkansas in December 2018. As such, tax dollars associated with that asset are not included in the five-year total.

Engagement

Everywhere SWN operates, we engage proactively with local officials, citizens, businesses, nonprofit organizations, emergency responders and land and mineral owners during all phases of our operations. Every community is unique, so we tailor our community engagement efforts based on what is important locally. However, some key elements remain the same. We share information openly, seek community feedback, and work to understand, anticipate and resolve community concerns.

We inform local residents about our company's culture and operations, so they know who we are and what they can expect from our presence and activities. More importantly, we listen and seek to attain a true understanding of the local community, its people and the values and issues that matter to them. We strive to add value, whether by building a local workforce, engaging with schools and community groups, supporting emergency responders or via other means.

Because of our commitment to hire locally, most SWN employees are members of the communities where we operate, and community engagement is a responsibility and an obligation that we share. The ties we build together help us be responsive to local concerns and strengthen our standing in each community.

SWN senior leadership and dedicated local community engagement staff engage directly with community leaders and residents to understand local concerns and determine how we can address them.

Protecting Cultural Resources and Engaging with Tribes

SWN is mindful of protecting historic, cultural and archaeological resources. Our approach is guided by our Human Rights Policy, which is consistent with international principles including the Universal Declaration of Human Rights.

We are sensitive to the protection of tribal sites, and we engage Native American nations where our activities may impact their lands. A SWN representative serves on the board of Leaders in Energy and Preservation (LEAP), a coalition of energy companies and historic preservation experts that aims to avoid or mitigate impacts to archeological and historic sites of importance. We are currently working with LEAP members to improve the tools available to help companies like SWN screen for potential heritage sites when making development plans. We consider such screenings an important part of operating as a responsible energy producer.

Addressing Concerns

SWN's regional community relations staff works proactively to develop effective solutions to potential community issues. We also actively seek community feedback and respond quickly to input received.

Responding to Community Concerns

Road safety, road maintenance, traffic issues, noise and environmental impacts are some of the most common concerns local residents raise about our operations. We work with communities to address these and other issues in a mutually beneficial way.

Lightening the Load on Roads and Communities

Given that steep, narrow and winding roads are commonplace throughout our operational areas, managing road-related issues is key for SWN. In early 2019, we launched the "Lighten the Load" program, aimed at reducing impacts associated with truck traffic.

The Lighten the Load program has four pillars:

- **Reducing truck traffic through more efficient water transportation:** To reduce water-related truck trips, we are building extensive water pipelines to serve our operations. We have removed 1.3 million truckloads from roads since we began operations in Appalachia in 2010 by investing $150 million in pipeline infrastructure to carry water instead of utilizing trucks for transportation of water. In 2019, we continued to eliminate truck traffic by transporting 97 percent of our fresh water by pipeline, including 100 percent of our freshwater transport in our Southwest Appalachia division.
- **Smart planning of work areas and transportation logistics:** Prior to operations in a given area, we determine the safest and most efficient routes in light of expected use and other traffic and develop detailed transportation control plans. During operations, our logistics teams optimize routes, monitoring road use from a 24/7 dispatch center and adjusting plans as needed to minimize vehicles on the road and maximize safety.
- **Investing in road repairs, upgrades and maintenance:** In many cases, we collaborate with state and local authorities to fund road upgrades. Other road maintenance and improvement efforts include working to improve road bonding and maintenance programs.
- **Hiring trucking companies with local drivers who share our commitment to safety:** We hire local transportation providers as much as possible and work with vendors to design dedicated routes (route familiarity improves safety). We seek long-term relationships with transportation contractors rooted in trust and shared values, including community safety.

Safe Driving Practices

Doing our part to ensure safe roads is a vital part of being a good neighbor and a top priority for SWN. To that end, we have developed safe driving training and monitoring programs and we are continuing our trend of improving driver safety.

In West Virginia and Pennsylvania, where roads are often narrow, winding and/or steep, we have taken a number of additional measures to help ensure road safety, including:

- Prohibiting large truck loads on local roads during school pickup and drop-off hours
- Avoiding times and roads important to residents' daily work commutes
- Analyzing roads to identify unsuitable or unsafe sections for heavy trucks on the road
- Using escort vehicles and flaggers in places with limited sight lines, limited communication, steep drop-offs and/or narrow, winding roadways and other hazards

Traffic

We are committed to limiting the traffic associated with our operations. We help reduce the number of trucks on local roads through three primary practices:

- **Multiple-Well Drilling Pads:** We can sometimes drill up to 10 wells on one pad, sliding the rig to a new location on the pad without using roads.
- **Pipeline Systems for Water Transport:** Moving water to and from operational sites can result in an increase in truck traffic. To limit this, we aim to move fresh water via underground and surface pipelines, in lieu of trucks; we are continually building up our pipeline system in Pennsylvania and West Virginia for this purpose. Thanks to these water pipelines, we completely eliminated the need to truck fresh water to our work sites in our Southwest Appalachia Division in 2019. We continue to expand both freshwater and produced water pipelines in an effort to continue to eliminate the need for trucking water. We also use pipelines to share water with other operators nearby, further reducing truck traffic, road impairment and pollution while ensuring steady access to water resources.
- **Centralized Logistics Operations Center:** When trucking is needed, our Logistics Operations Center actively manages our operations to minimize traffic, road impacts and vehicle emissions by planning efficient routes that avoid high-traffic periods as well as bridges and roads not built for heavy truck traffic.

650

truckloads of construction equipment and material eliminated with each new well drilled on a multi-well drilling pad

100%

of fresh water carried by pipelines in our Southwest Appalachia division in 2019

97%

of fresh water carried by pipelines in our Appalachian region in 2019

1.3 million

truckloads off the roads since 2010, due to use of water pipelines in Appalachia

Road Maintenance

Each year, SWN and the natural gas industry pay millions of dollars in state taxes, impact fees and maintenance fees, which are often used to restore and maintain highways and secondary roads. We also work with local road departments to help support road maintenance with our own equipment.

We use several methods to reduce dust generated by vehicles traveling on gravel or dirt roads. Some methods can minimize dust for months, even during high-volume activity. We encourage all local residents and SWN personnel to report areas in need of dust control through our 24-hour call center.

Compressor Noise

Compressors pressurize natural gas so it can be transported through pipelines. Because compressors can be noisy, we design our compressor facilities to bring the noise level below – usually well below – applicable limits.

Methods we use to control noise levels in our operations depend on location and system requirements, and include:

- Situating compressors away from homes and occupied buildings, sites that draw people, and areas of environmental concern
- Operating nonstandard compressor exhaust systems with extra sound-reduction capabilities
- Using high-efficiency coolers with fans that run at slower speeds to reduce noise
- Installing larger piping to reduce gas velocity and reduce high-pitched sounds
- Constructing buildings or sound walls around compressor equipment

Environmental Concerns

Community members want to know how our operations will impact the environment, including water resources, air quality, land, parks and ecosystems. As described in the Environment section, we have developed industry-leading programs to preserve water resources, protect water quality, and reduce air emissions from our operations. We are also working hard to minimize the surface impacts of our operations, including minimizing our land-based footprint, preventing spills and protecting biodiversity.

How We Handle Feedback

Proactively anticipating and being responsive to local concerns about our operations is core to how we operate. When issues arise, we work with the community to address them immediately. Our 24-hour feedback hotline connects callers with SWN personnel who have the knowledge and authority to address and resolve issues, and we follow up as needed to keep callers informed. We respond to all calls within 24 hours, and most much sooner.

We also utilize a companywide routing and tracking system for community feedback that documents comments received, including the subject, where the feedback was received and how it was addressed. We track and analyze data from this system to capture learnings, spot trends and proactively coordinate solutions with communities.

Economic Impacts

Energy development brings communities significant economic benefits. SWN creates jobs with higher-than-average wages and makes direct payments to local landowners through mineral leases and royalties. Through taxes and impact fees, we fund important government services, including schools, as well as infrastructure improvements, emergency preparedness, public safety and affordable housing. In West Virginia, approximately 75 percent of our property taxes goes to local schools. In Pennsylvania, the impact fees assessed on our wells are used to offset the statewide impact of drilling and to fund the Marcellus Legacy Fund, which in turn provides grants to Pennsylvania counties for highway, road and bridge improvements; environmental stewardship; water and storm water systems; and emergency response. We also make direct contributions to schools, nonprofits and community groups through our charitable giving.

Commodity prices may change over time, but SWN is steadfast in its support of long-term economic stability in the communities where we operate.

Northeast Appalachia

$81.54 million paid by SWN in state and local taxes[1] since 2015

$810 million paid by SWN in royalty and working interest payments since 2015

$92.3 million paid by SWN in total payroll since 2015

Southwest Appalachia

$194.96 million paid by SWN in state and local taxes[1] since 2015

$606.8 million paid by SWN in royalty and working interest payments since 2015

$111.4 million paid by SWN in total payroll since 2015

Developing a Local Workforce

SWN becomes part of the communities in which we operate, and core to this is our commitment to hire locally. By doing so, SWN is able to obtain valuable insight and perspective on local needs and concerns. Thus, when we enter a new area, developing and maintaining a local workforce is an important part of our community engagement efforts.

To expand access to the opportunities provided by our operations and build local pools of qualified candidates, we develop and sponsor programs that generate interest in the oil and gas industry and provide educational opportunities for those who wish to pursue careers in the industry.

Supporting Higher Education in Petroleum Technology

SWN supports and develops petroleum technology training programs in our primary operating areas. We have established scholarship funds, helped develop new courses, served as guest lecturers and provided real-world field experiences on SWN sites. In addition, we offer summer internships for students in programs at local colleges such as Lackawanna College School of Petroleum and Natural Gas in Pennsylvania. In West Virginia, we also donated $250,000 each to Pierpont Community and Technical College and West Virginia Northern Community College to endow scholarships for students in petroleum technology degree programs, awarding 22 scholarships to date. (See the Data section for consolidated contributions data.)

Supporting STEM Education

SWN works with a number of organizations to enhance schools and provide opportunities for students. We promote science, technology, engineering and math (STEM) programs because they help students to develop talents that map to the high-skill, high-wage jobs in our industry; these programs also help SWN source a pipeline of future talent for our own operations. Some of our key efforts in this area include the following.

Science and Engineering Fairs

In Pennsylvania, SWN sponsors and helps to implement the annual Envirothon, a statewide science competition for high school students that brings together the winners of county-level competitions from all over the state. In 2019, we sponsored the county-level Envirothons in Bradford County and Susquehanna County.

Mobile Oilfield Learning Unit

SWN joined with five other oil and gas operators in Pennsylvania to develop the first Appalachia-specific mobile oilfield learning unit (MOL-U), building on our support of a similar, non-region-specific unit in 2017. The Appalachian MOL-U is a traveling educational exhibit that includes hands-on activities covering important elements of oil and gas exploration and production that teach key math and science concepts. The MOL-U visited five schools throughout Ohio and Marshall counties in West Virginia in 2019, with SWN personnel taking the lead in engaging local students.

High School Internships

At our headquarters near Houston, SWN participates in several high school internship programs that give local students an opportunity to work with SWN employees on real-world STEM projects in our industry. Depending on the program, students may visit SWN sites for a single day or work with us for up to three months. As a part of these programs, students learn about the oil and gas value chain and participate in mock projects to develop innovative ways to create value for the company.

High School STEM Grants

In 2018 and 2019, in partnership with the Community Foundation for the Ohio Valley, SWN gave $10,000 per year in grants to support K–12 STEM activities at schools in the West Virginia counties in which we operate. Since 2008, SWN has provided grants to high schools in Arkansas to fund equipment and assistance for programs that support science, math and technology, contributing more than $525,000 in the last 10 years.

Comp-U-Dopt

Since 2013, SWN has participated in Comp-U-Dopt, a Houston-based nonprofit committed to delivering technology access and education to underserved youth. bThis program recycles and refurbishes computers and other information technology equipment no longer needed by local corporations and provides programs and donations to local schools. SWN has contributed $170,000 to the program to date, and SWN employees have given 886 hours of volunteer time.

$2.1+ million
contributed to support petroleum technology and STEM education since 2008

$626,400
donated to Junior Achievement since 2007

9,300+
hours volunteered with Junior Achievement since 2007

15,256
students reached through Junior Achievement since 2007

1. "Taxes" include state income taxes, payroll withholding taxes, severance fees, property taxes, franchise taxes, and sales and use taxes. Sales and use tax amounts included in the tax totals are exclusive of refund and audit payments.

Giving and Volunteering

Philanthropy, giving back and volunteering are part of our culture and business strategy. This approach, which we call Social Energy, is coordinated to maximize impact across our focus areas – education, well-being, emergency response, clean air and water, family focus and support of military service members – while incorporating local needs. Social Energy includes company-funded charitable contributions, coordination and encouragement of employee volunteering, and matching gifts for SWN employees' own charitable giving. We leverage team members' passion to serve by coordinating donations and volunteering efforts. For example, we match SWN leaders with the boards of local nonprofits to extend the benefits of our financial contributions. We also match employee donations to eligible charities of their choosing up to $15,000 per year.[1]

$732,000
in total charitable giving in 2019[2]

$362,000
in matching gifts from SWN employees in 2019

$11 million
contributed over the past five years to protect and restore waterways as part of our Fresh Water Neutral conservation initiative

$58,000
and hundreds of volunteer hours contributed in 2019 to food banks and other organizations working to reduce hunger

3,377
hours volunteered by SWN employees in 2019

1. *Matching requires a minimum $100 donation from SWN employees.*
2. *Charitable contributions do not include industry association fees or political contributions.*

Workforce

923
employees

25%
female

8%
with military or veteran status

13%
minority

Note: Data are as of year-end 2019.

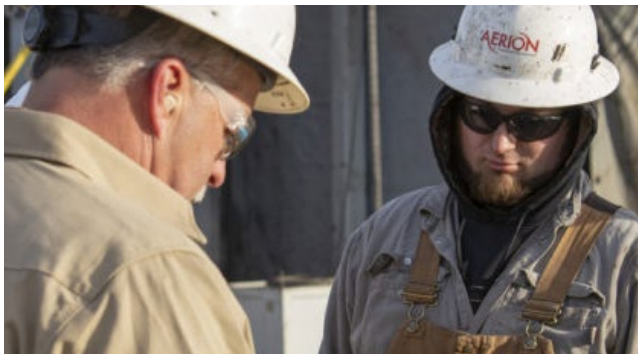
SWN values its employees and all who contribute to the work we do. Accordingly, providing a safe, healthy, respectful and fair workplace is a core value and part of who we are. Our Human Rights Policy – which is consistent with the International Labour Organization's Declaration on Fundamental Principles and Rights at Work – underscores our commitment to our workforce and extends to vendors, contractors and others with whom we work to ensure we all share the same commitment to human rights.

Talent Acquisition and Development

SWN's talent acquisition and employee development efforts seek to ensure that we invest in the Right People and give them all the knowledge, skills and resources needed to excel.

Diversity and Workplace Respect

At SWN, we strive to ensure that every person is treated fairly and with respect because we know that a diverse workforce helps us thrive and succeed.



ONE Team Culture

A vital part of SWN's operating philosophy is fostering our ONE Team culture, which is based on the principle that everyone who does work for or on behalf of SWN – whether employee or contractor – must function as a team, working side by side to achieve the same goals.

Contractor Assessment and Selection

As part of SWN's contractor selection and assurance process, we rigorously screen and assess all of our contractors, holding them accountable to the high standards we demand.

Talent Acquisition and Development

SWN believes in treating every employee with respect, dignity and fairness, and this belief guides our approach to workforce policies and programs – from recruiting and integrating new employees to supporting employees' career development.

Recruitment and Onboarding

We believe in selecting individuals driven to collaborate, who help deliver results as a team and who demonstrate a genuine care for others and a desire to do the Right Thing at all times. To us these qualities are just as important, if not more so, than simply having good technical abilities or functional job skills. Further, SWN actively recruits and seeks candidates in our areas of operation as part of a commitment to hiring locally and expanding economic opportunity in our communities. We also recruit through a range of channels to attract candidates to increase our diversity of our workforce.

In most years, SWN offers summer internships to college-level candidates and preferentially hires participants into full-time positions upon graduation. Similarly, many new hires who join SWN directly out of college, particularly in technical fields, begin their careers in a mentor-guided rotational program, during which they cycle through different roles within the company before being placed in a longer-term position.

Sharing the SWN culture with new employees is a key focus of our employee onboarding process.

All new employees participate in the R^2 (Right People doing the Right Things) workshop, which provides a comprehensive look at who we are as a company and the importance of our culture.

Training and Development

Our employee development programs aim to provide SWN employees with the right tools, training and resources to be successful. We offer a range of development solutions targeted at meeting individual employees' needs. In 2019, for example, we focused our leadership development programs on inspiring leaders to be "boundaryless" in thinking and action, recognizing and breaking through constraints to enable them to elevate to higher-level thinking and enterprise-level solutions.

In 2019, we conducted a comprehensive employee engagement survey that helped us better understand the degree to which employees are aligned with the company's strategy and feel empowered to perform, grow and be innovative. SWN's highly engaged workforce demonstrated once again the importance of everyone contributing to the success of the company, with 90 percent participation in the survey and results that exceeded both industry and high-performing company norms.

SWN invests significantly in high-level technical training programs to ensure our employees have the necessary technical knowledge and skills our business demands. We also offer various programs aimed at building non-technical skills such as communicating with and influencing others. In addition, our numerous health, safety and environmental trainings provide opportunities to bolster employees' skills and careers.

Diversity and Workplace Respect

Sound, collaborative and respectful relationships among SWN employees are essential to achieving and maintaining a high level of productivity and ethical business conduct. Basic to these relationships is our recognition that every person should be treated fairly and with dignity and respect and that every employment-related decision should be based on merits and qualifications for a particular job, including capability, performance and reflection of our corporate mission and values.

All SWN decisions regarding recruiting, hiring, training, evaluation, assignment, advancement and termination of employment are made without unlawful discrimination on the basis of race, color, national origin, ancestry, citizenship, sex, sexual orientation, gender identity or expression, religion, age, pregnancy, disability, present military status or veteran status, genetic information, marital status or any other factor that the law protects from employment discrimination.

SWN's policies specifically state that the company will not tolerate any form of harassment, discrimination or retaliation in the workplace against any of its employees or contractors by anyone, including but not limited to officers, supervisors, employees and nonemployees of SWN. Any form of harassment, discrimination or retaliation directed at any employee or nonemployee of SWN is strictly prohibited as a matter of SWN company policy. We ask every individual who is a victim of harassment, discrimination and/or retaliation in the SWN workplace to report such conduct immediately. All such reports and subsequent investigations will be handled in as confidential a manner as is reasonably possible, consistent with SWN's obligations under local, state and federal law as well as any applicable company policies and internal procedures.

We are committed to respect in the workplace. In 2019, all employees participated in a program addressing workplace behavior and respect.

> ***We understand the value of gender balance in our workforce, and we insist on fairness as it relates to opportunity and pay***

Pay at SWN is based on several primary factors, including but not limited to:

- performance
- skills
- years of experience
- time in position
- market data

100% average women's salaries at SWN compared to average men's salaries at SWN in 2019

Through our SWomeN initiatives, we actively seek to retain and develop SWN's female talent. As part of this program, women at SWN have built an internal network and participate in professional development activities, including external conferences. SWN is also a corporate sponsor of the Women's Energy Network and Pink Petro.

To expand the diversity of our workforce, we actively recruit with key diversity organizations, such as the Asian Business Student Associations, Black Business Student Associations, Hispanic Business Student Associations and National Association of Black Accountants. We are also working to build a diverse and local talent pool by encouraging diversity in science, technology, engineering and math education.

See the Data page for our complete workforce diversity data.

Our Workforce[1]

21%
over age 50

65%
aged 30-50

14%
under age 30

8%
with military or veteran status

13%
minority

25%
female

1. As of year-end 2019.

ONE Team Culture

Due to the type of work we do, SWN's success depends on the contractors who work alongside our employees every day. A vital part of our operating philosophy is fostering a true "ONE Team" culture in which everyone doing work for SWN is held to the same high standards and understands that our respective success depends on working together.

The Origins of ONE Team

In 2017, thanks to our strong culture of safety and our comprehensive health, safety and environmental (HSE) management system, SWN employees had record safety performance. But contractor safety performance had not kept pace. This led to a realization that our contractors needed a better understanding of our culture, standards and expectations. Since then, we have focused our contractor engagement and management efforts around building a culture and environment for our employees and contractors based on open and honest communication, collaboration and shared accountability for results.

> ***"We believe we need to have ONE Team and one culture to achieve the ultimate goal of incident-free operations. We want our contractors as well as employees to know how much we care about their safety. We're all in this together, we all care about each other equally, and we all want to get home safely to our loved ones."***
>
> *Clay Carrel, SWN Chief Operating Officer*

Strengthening Our ONE Team Culture

SWN's culture is one in which employees are empowered, encouraged and expected to collaborate and give honest input on all issues related to and affecting their work, including operational and HSE issues. SWN employees are expected to "own" their job duties and their workspaces, as well as the obligations they have to one another to work safely and make sure everyone goes home without incident. Ensuring that SWN contractors share our expectations and obligations is the essence of our ONE Team culture.

In 2019, we reinforced our commitment to a ONE Team culture by ensuring that all SWN contractors have the training, tools and help they need to achieve desired operational and HSE results.

In 2019, we strengthened SWN's ONE Team culture by continuing to hold ONE Team events, meetings and open forums across all of our operating areas. Through these events, we directly interfaced with contractor companies to discuss shared strategy and goals, our vision for a ONE Team culture and how we can achieve better alignment with SWN contractors.

These events featured SWN and contractor involvement and engagement at all levels – from employees driving our operations in the field to senior leadership. We sup-

plement and reinforce these official ONE Team events with dedicated contractor onboarding and one-on-one SWN–contractor meetings throughout the year that foster improved collaboration.

In addition, to ensure employee and contractor alignment on HSE issues, we continue to hold joint employee–contractor HSE meetings and other joint on-site meetings focused on specific safety topics. At all times, we reinforce our See Something, Say Something ethos, in which every individual performing work for SWN – regardless of role or status – is obliged to speak up regarding unsafe conditions or behaviors. Included in this effort is making sure every person performing work on any SWN site realizes that they are empowered to exercise stop-work authority any time if they see any safety or environmental risks.[1]

We integrate SWN contractors into the same HSE trainings and programs as SWN employees, including our required Training Assurance Program, and we offer them other safety training resources. See the Health and Safety section for more information on these and other HSE efforts.

Tangible Results

SWN is realizing positive results from our ONE Team culture and has observed an increased willingness to identify and discuss risks, hazards and other issues and develop solutions collaboratively. This led to numerous performance improvements in 2019 compared to 2018. For example:

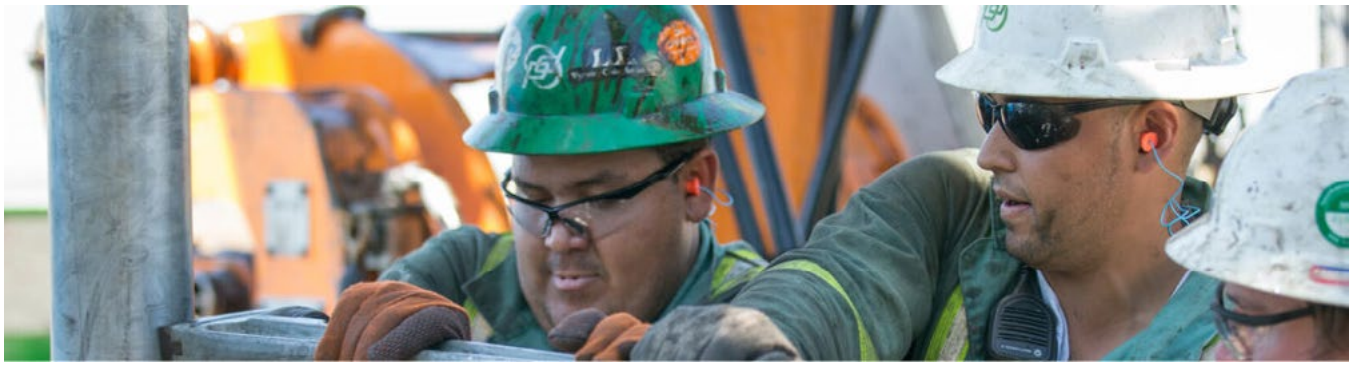
- Contractors' Total Recordable Injury Rate decreased by 10.7 percent
- Environmental incident rate decreased by 10.7 percent
- Northeast Appalachia decreased the DART rate for SWN Employees and contractors by 100 percent, with Zero Days Away/Restricted Transfer cases
- In Northeast Appalachia, we had zero safety incidents for 9 out of the 12 months
- In Southwest Appalachia, the environmental incident rate decreased by 35 percent
- SWN Drilling and Completions decreased recordable injury rate by 26 percent
- SWN Drilling and Completions decreased environmental incidents by 60 percent
- SWN Drilling and Completions decreased employee safety incidents by 75 percent

Achieving a ONE Team Culture

The following commitments provide the foundation for our corporate responsibility strategy and drive our performance on key environmental and zero incident safety goals:

- Encourage open dialogue and sharing of concerns, ideas and best practices
- Engage with contractors by establishing a shared vision
- Promote continuous improvement with training, educational resources and useful tools
- Enhance communication and collaboration to mutually engage with our employees and contractors
- Commit to more frequent SWN and contractor leadership engagement with field personnel
- Evaluate our progress and identify areas to improve by facilitating ongoing SWN and contractor leadership discussions
- Hold ourselves and our contractors accountable
- Publicize, reward and recognize good ONE Team HSE performance

1. "Stop-work authority" is the authority imbued in every person on a SWN job site – whether employee or contractor – to stop all operations at the job site upon the identification of safety and/or environmental risk(s), such that the risk(s) may be eliminated and/or mitigated.



Contractor Assessment and Selection

As is common and often necessary in our industry, SWN uses a number of different contractors to provide a wide range of services, particularly at field sites. True to our Formula and our ONE Team approach, we seek to work with contractors that strive to be the Right People doing the Right Things and who will meet the same high standards and expectations we have for SWN employees.

SWN maintains stringent requirements and processes for selecting, training and evaluating contractors. We follow a five-step process:Prequalification assessment of all contractors. We follow a five-step process:

- Prequalification assessment of all contractors
- Project preparation
- Pre-job activity, including the Training Assurance program
- Job oversight, including daily safety meetings
- Performance assessments

We use a third-party analysis and management system to coordinate evaluation of contractors on health, safety and environmental (HSE) issues and other issues.

As part of our HSE assurance process, we perform our own contractor assessments to hold contractors accountable for following the same HSE expectations and standards to which we hold our own employees.

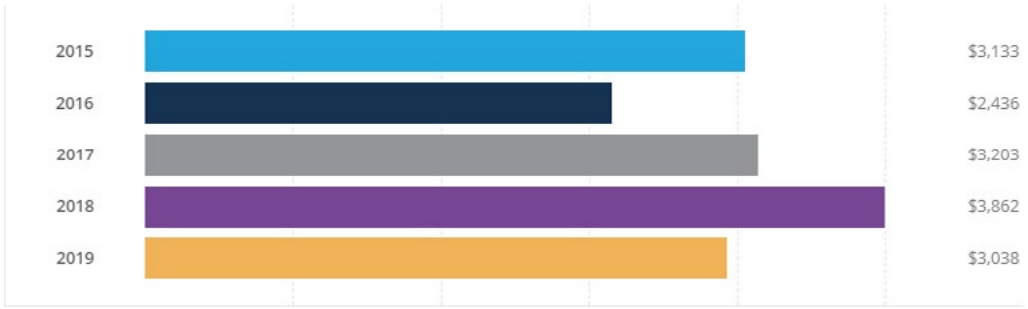
Any concerns or deficiencies identified in a contractor's assessment must be addressed within 30 to 90 days, depending on the circumstances. We provide oversight and support as needed during this period and ensure that any required corrective actions are completed.

In 2019, we finalized the implementation of a new HSE data management system to support our commitment to continuous improvement. One enhancement of this system is facilitating better accountability and tracking of corrective actions arising from both contractor and SWN operational assessments.

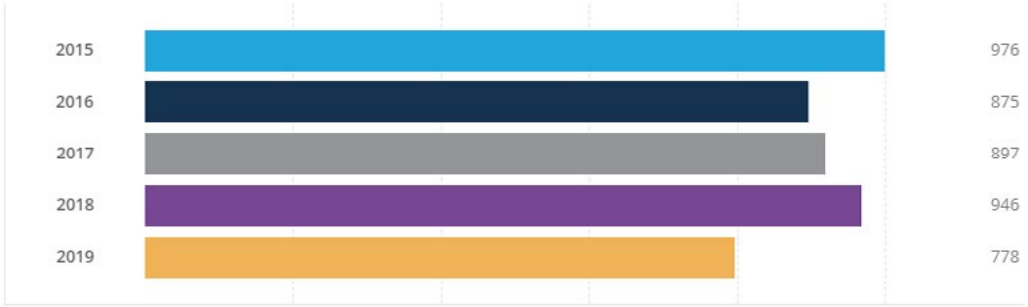
Data

Key Data Summary[1,2]

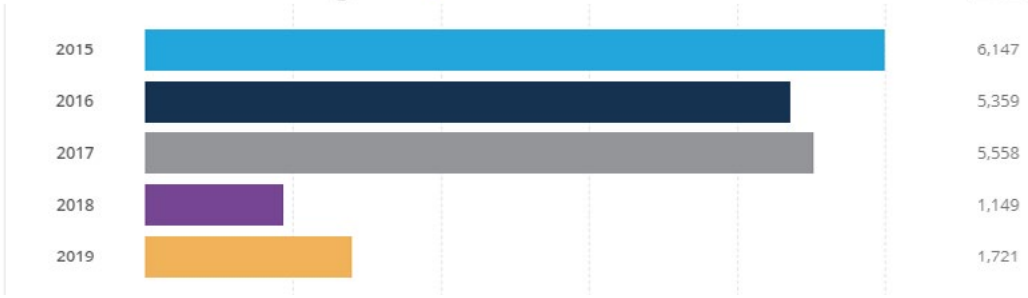
Operating Revenues *millions of U.S. dollars*



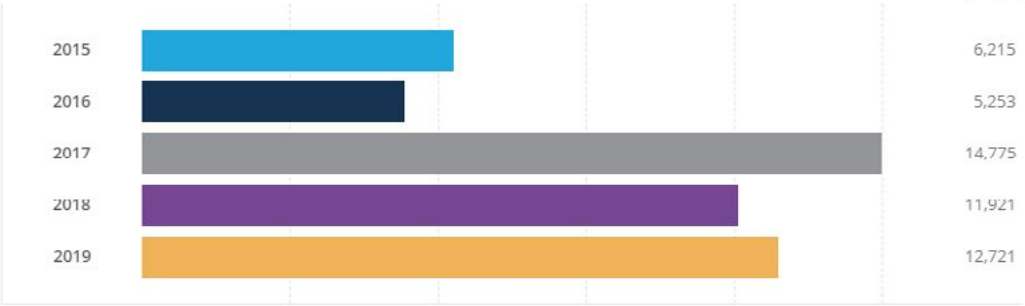
Net Gas Production *billion cubic feet equivalent (Bcfe)*



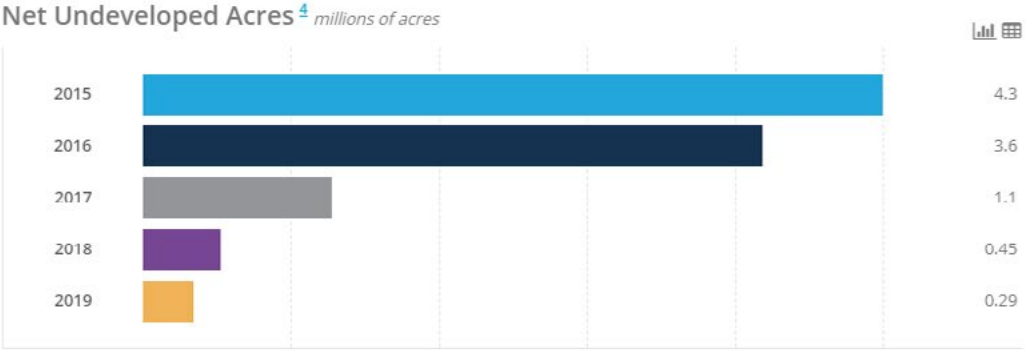
Number of Gross Producing Wells[4]



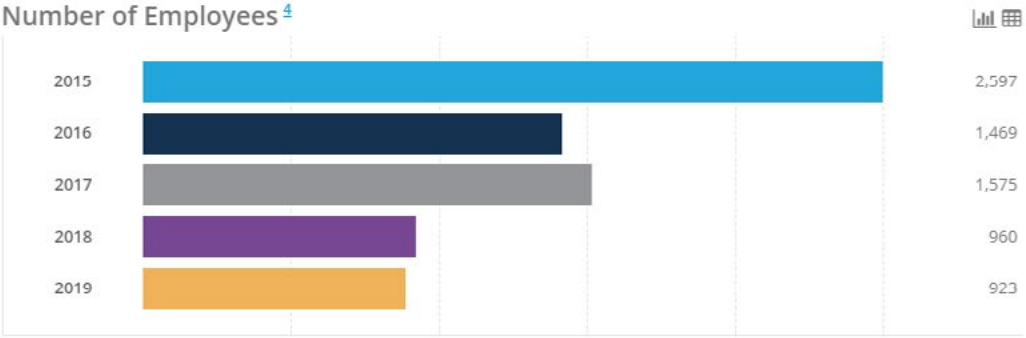
Estimated Proved Oil and Gas Reserves [4] *Bcfe*



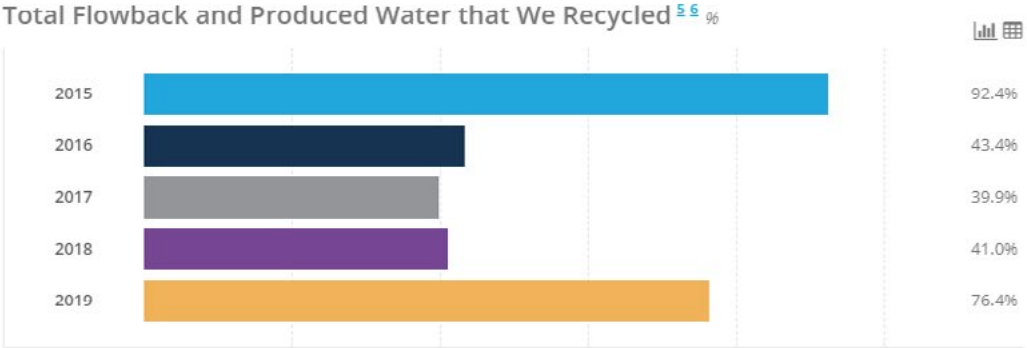
Net Undeveloped Acres [4] *millions of acres*



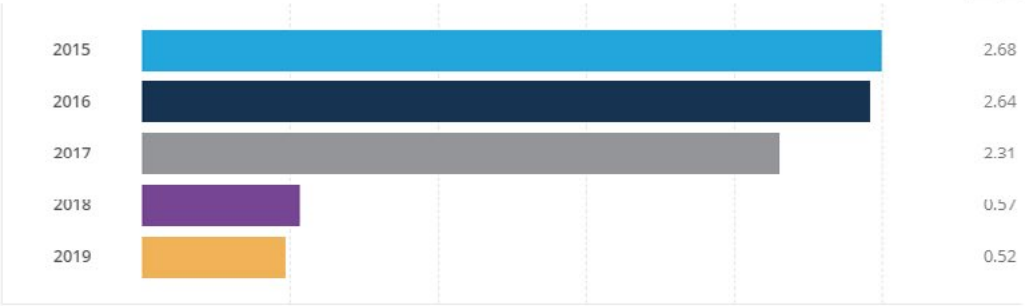
Number of Employees [4]



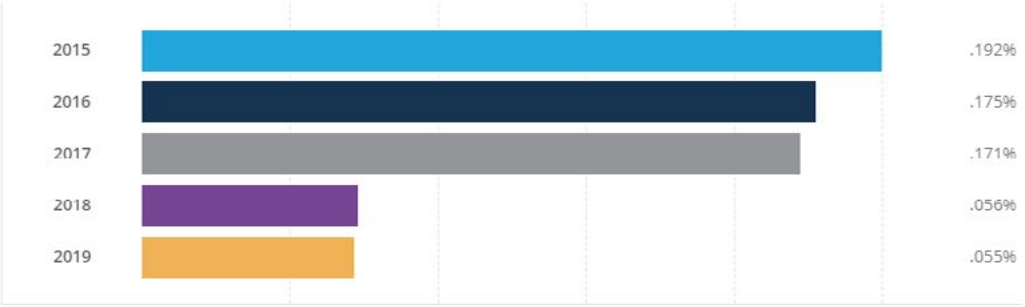
Total Flowback and Produced Water that We Recycled [5] [6] %



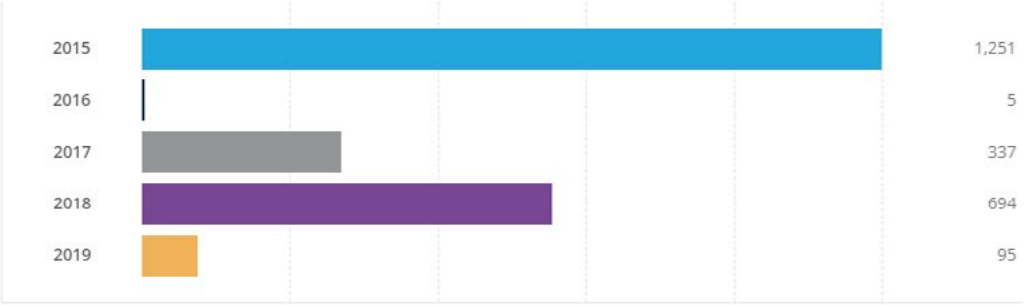
Greenhouse Gas Emissions Intensity [7] *Kg of CO_2e/million BTUs of gas produced*



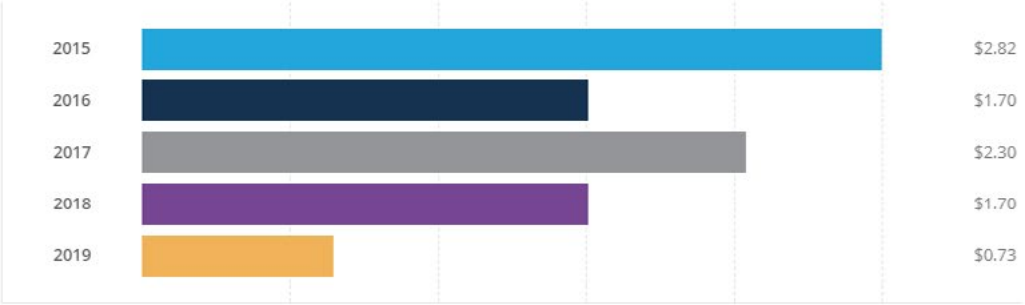
Methane Leak/Loss Rate [7] *% (SWN production operations only)*



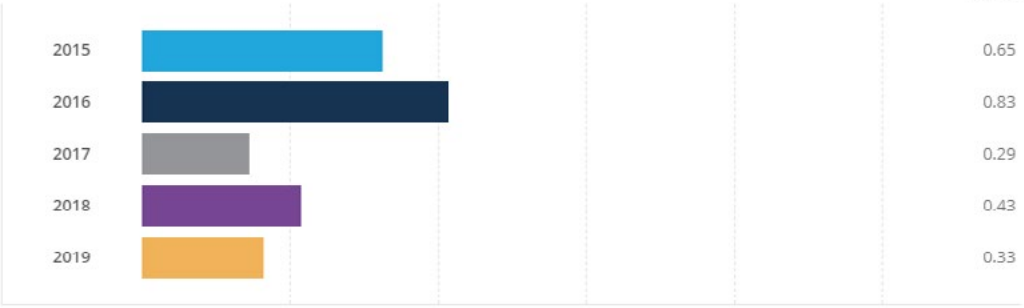
Volume of Tier 1 and 2 Unplanned Discharges *barrels*



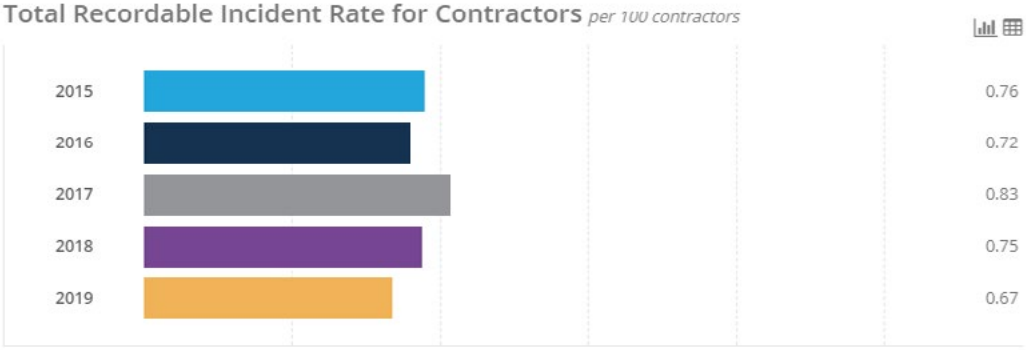
Charitable Giving *millions of U.S. dollars*



Total Recordable Incident Rate for Employees *per 100 employees*



Total Recordable Incident Rate for Contractors *per 100 contractors*



1. Data provided prior to the data for the year 2019 includes data from the Fayetteville Shale Division. Data provided for 2019 does not include any data from Fayetteville Shale, because the assets were divested. As such, 2019 data is not comparable to previous years' data.

2. This report includes 2019 data as well as prior years' data and context around our most material issues; unless otherwise noted, the data cover all of SWN's assets and operations owned that particular year.

3. See the relevant subpages of this Data section for notes to the data and explanations of restatements.

4. As of December 31, 2019.

5. 2015-2018 data includes Fayetteville, which had low activity levels and few recycling opportunities in 2016, 2017 and 2018.

6. Volume recycled includes SWN reuse of SWN produced water, SWN reuse of produced water from other operators, and reuse of SWN produced water by other operators.

7. Methane intensity or methane leak/loss rate (mass percentage) is calculated by dividing the gigagrams of methane emissions by the oil and gas gross production (cubic feet converted to gigagrams). In accordance with U.S. Environmental Protection Agency greenhouse gas reporting requirements, assets that were divested in 2018 are not reported.

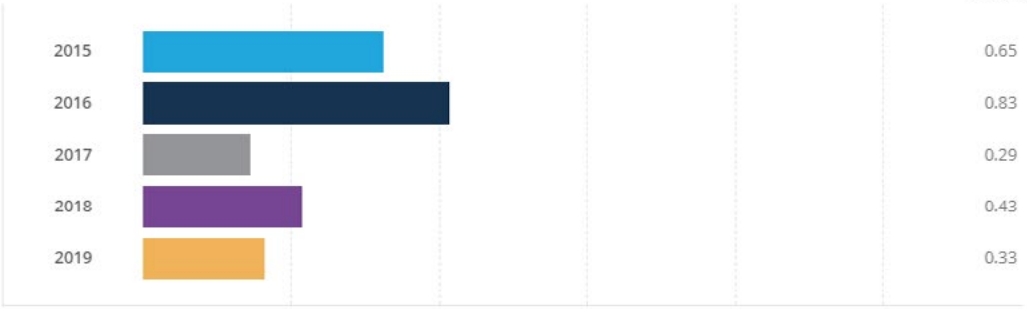
Health and Safety

SWN is committed to safeguarding employees, contractors and neighbors who work at and live near our operations. To deliver on this commitment, we integrate responsible health and safety management into our business decisions, with a focus on prevention. Employees work side by side with our contractors as ONE Team with one goal: zero safety incidents.

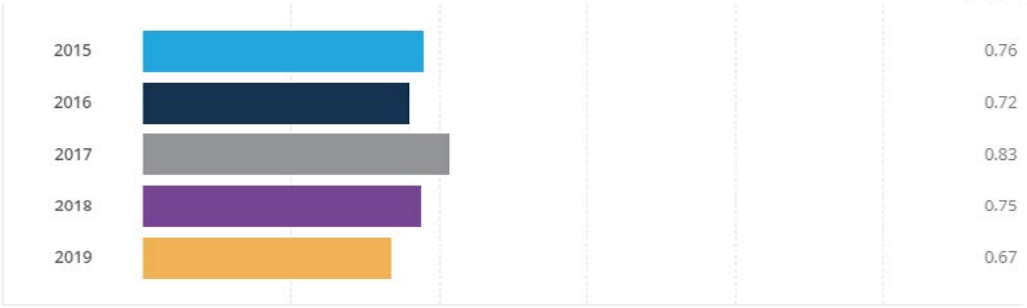
Health and Safety Data[1]

Occupational Health and Safety Administration (OSHA) Total Recordable Injury Rate (TRIR) – SWN Employees [2]

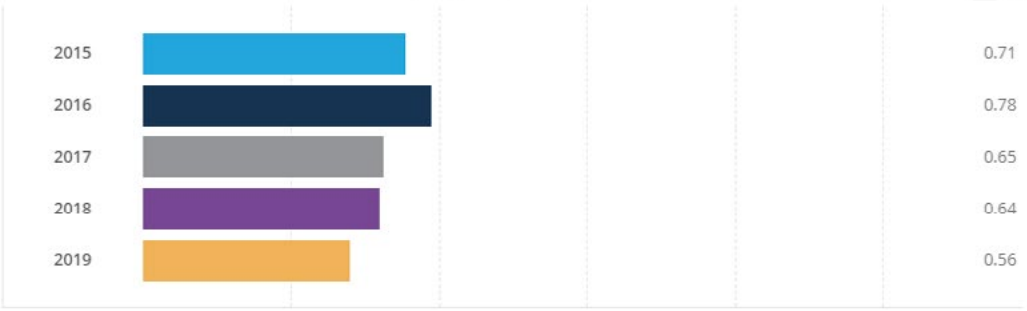
per 100 employees



OSHA TRIR – Contractors *per 100 employees*



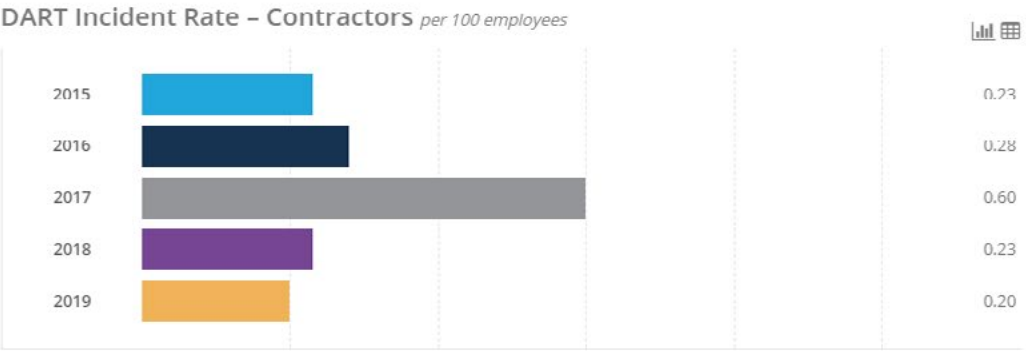
OSHA TRIR – ONE Team (SWN Employees plus Contractors) *per 100 employees*



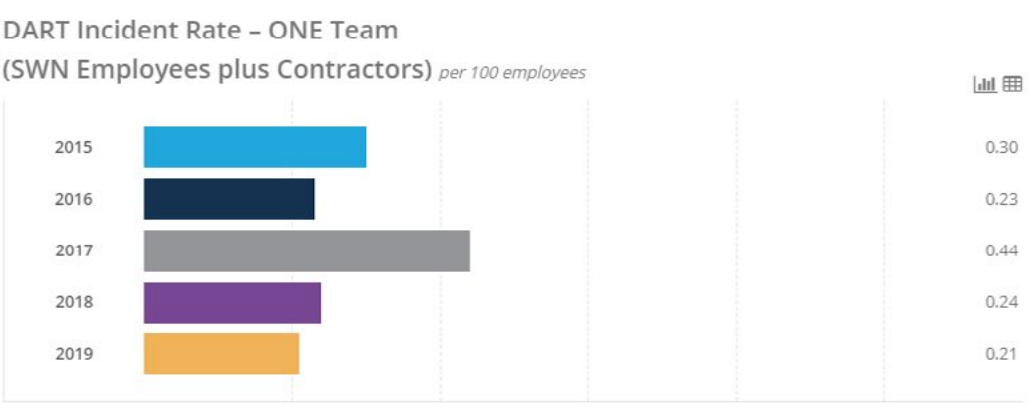
Severity Rate (Person-Hour Method)[3] *per 100 employees*

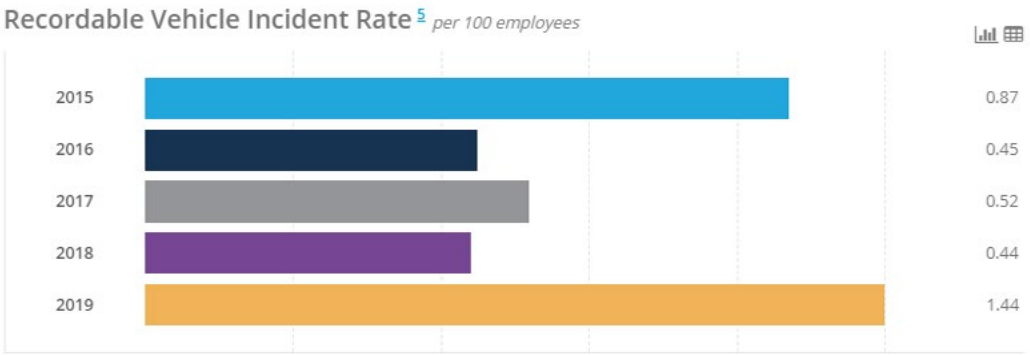
DART Incident Rate – SWN Employees[4] *per 100 employees*

DART Incident Rate – Contractors *per 100 employees*



DART Incident Rate – ONE Team (SWN Employees plus Contractors) *per 100 employees*





1. These metrics are standard for our industry and reported voluntarily to the American Exploration and Production Council each year as part of their annual safety benchmarking survey. All rates are based on 100 employees working 200,000 hours (full time for one year) according to OSHA standard methodology (see https://www.bls.gov/iif/osheval.htm) – except for the Recordable Vehicle Incident Rate, which measures total preventable vehicle incidents multiplied by 1 million and divided by total mileage.

*2. An injury is considered recordable if it results in death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, loss of consciousness or other significant injury or illness diagnosed by a physician or other licensed health care professional. * No injuries recorded in this table constitute fatalities of any SWN employee or contractor, because none occurred during the years reported.*

3. The person-hour method calculates severity by total number of person-hours.

4. The DART Incident Rate measures days away from work and days of restricted duty or job transfer.

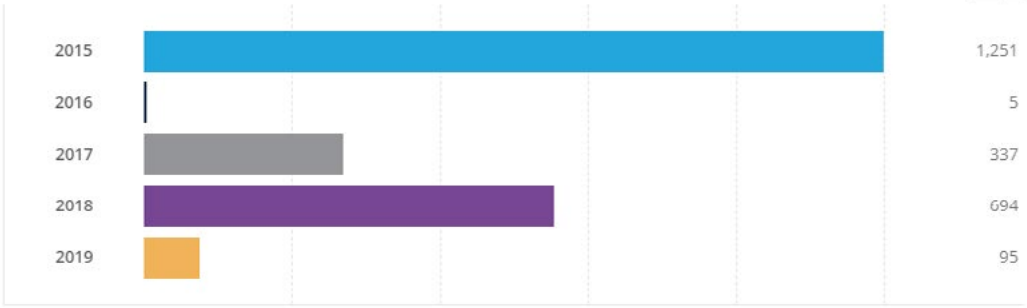
5. We consider vehicle incidents recordable if the driver did not exercise every reasonable effort to prevent an incident that results in medical treatment beyond first aid or vehicle/property damage of $500 or more associated with the event.

Environment

Protecting natural resources is not only the right thing to do, it is good business. SWN operates responsibly and strives to reduce emissions and improve energy efficiency. Our vision is for the safe and responsible development of America's abundant supply of natural gas to remain an essential part of the mix in a lower-carbon energy future. We take a science-based approach to achieving this vision, actively participating in academic and industry research to develop innovative environmental solutions. We maintain positive and productive relationships with federal and state regulatory agencies, and it is our practice to conform our operations to the spirit – not just the letter – of environmental regulations.

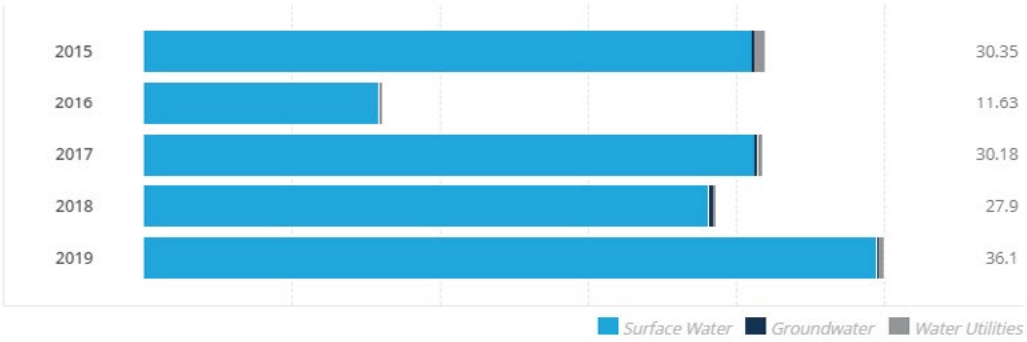
Environmental Data

Tier 1 and 2 Unplanned Discharges (Spills)[1] *total volume in barrels*

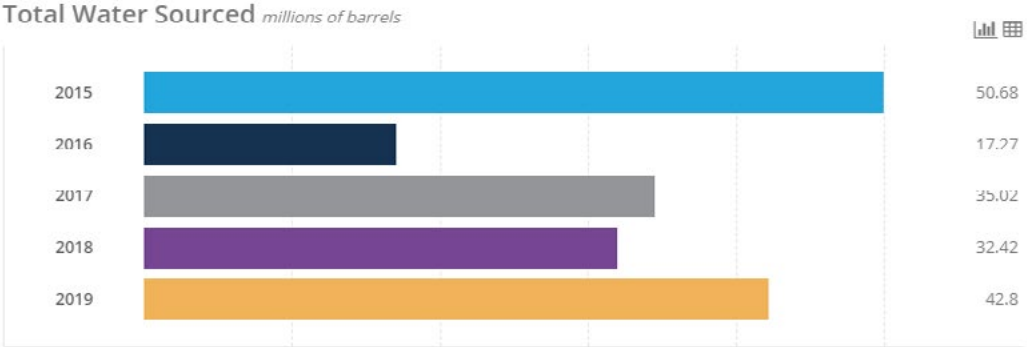


Water Use and Recycling Data[2]

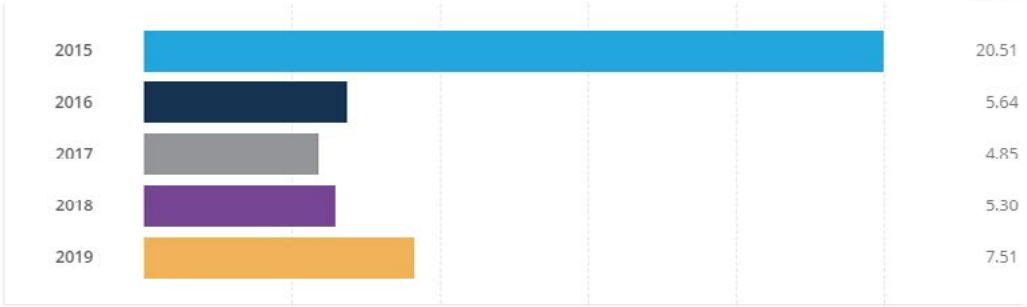
Fresh Water Withdrawal by Source[3] *millions of barrels*



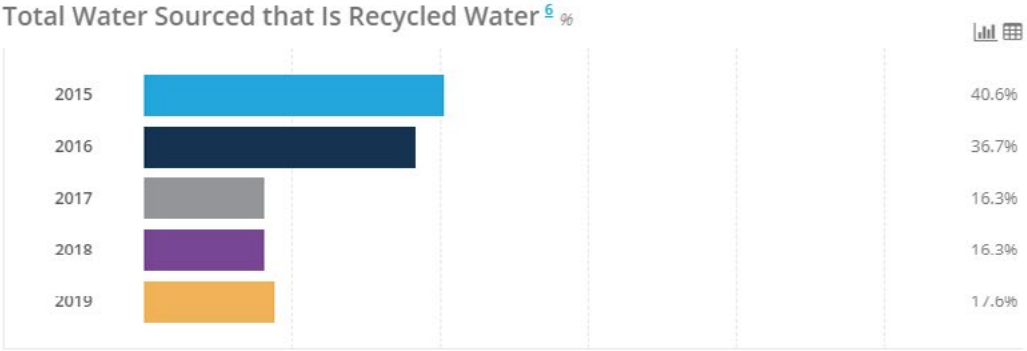
Total Water Sourced *millions of barrels*



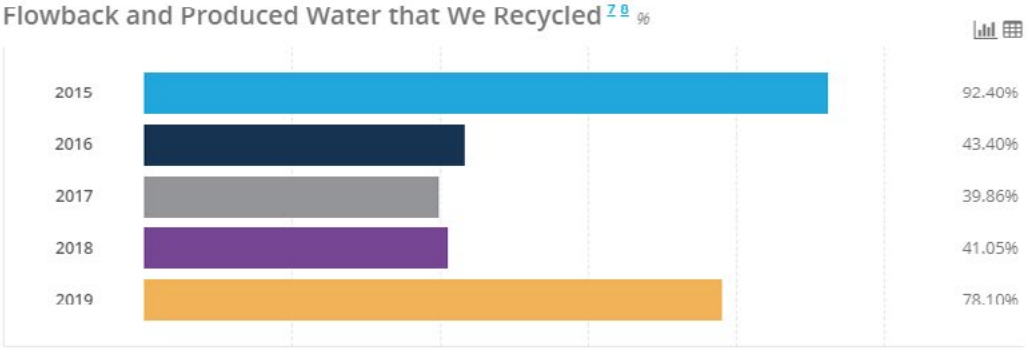
Total Volume that Is Recycled or Reused Downhole [4] [5] *millions of barrels*



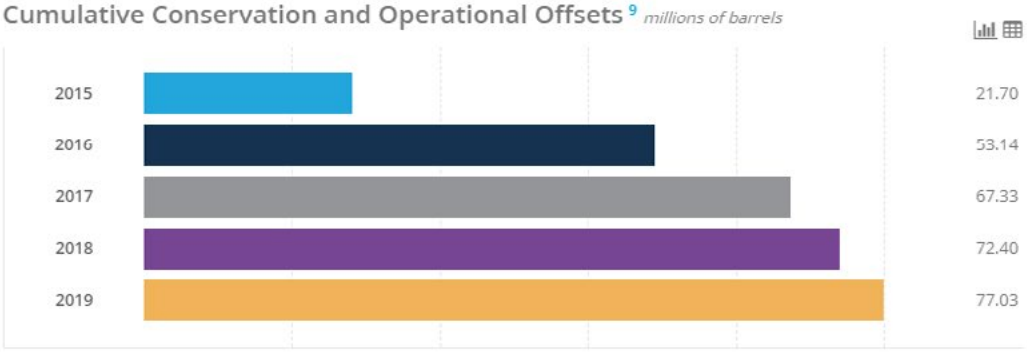
Total Water Sourced that Is Recycled Water [6] %



Flowback and Produced Water that We Recycled [7] [8] %

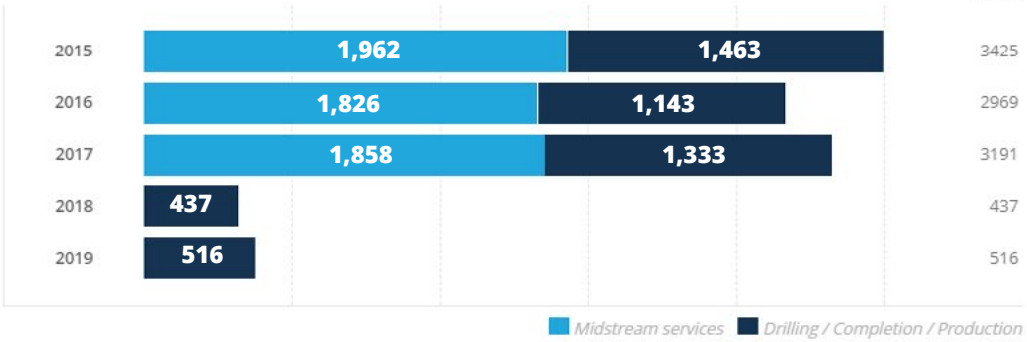


Cumulative Conservation and Operational Offsets [9] *millions of barrels*

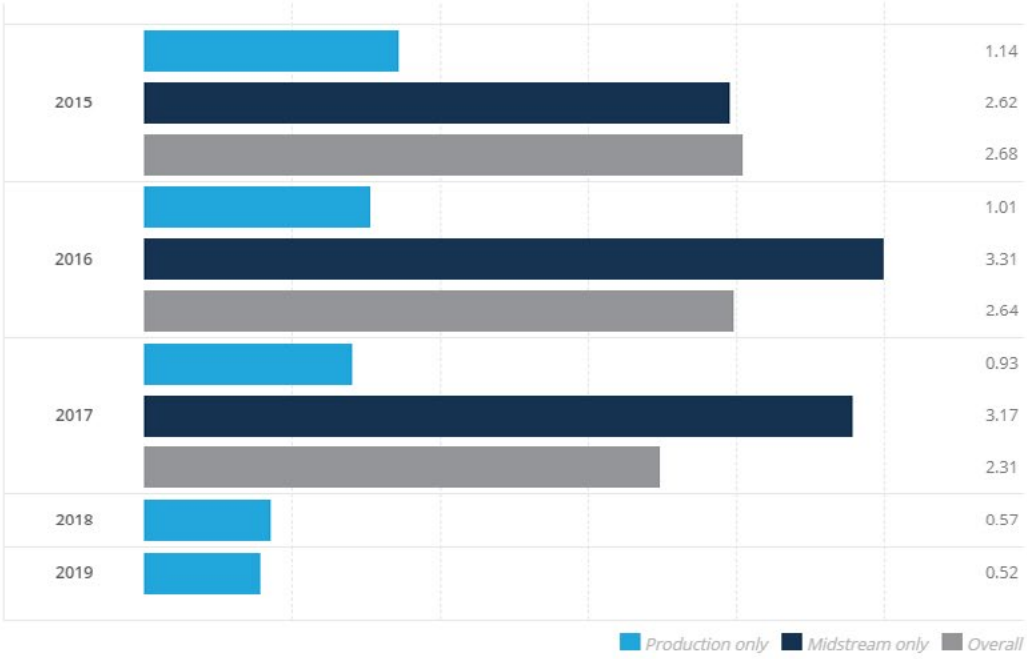


Air Data [10]

Absolute Greenhouse Gas (GHG) Emissions [11] *thousand metric tons CO_2e*

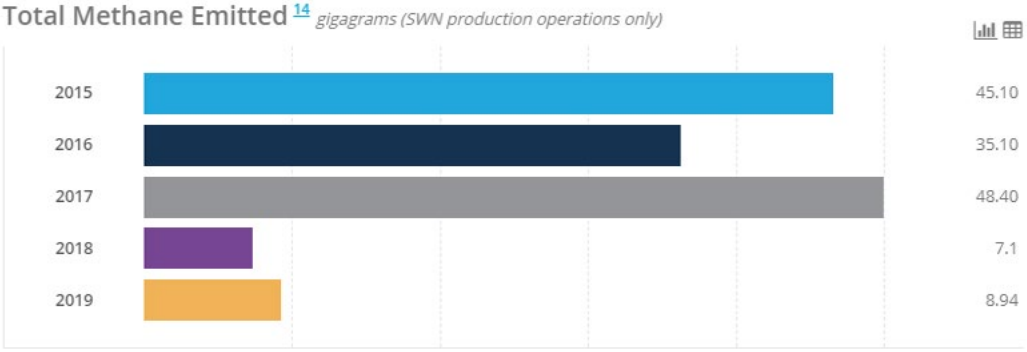


GHG Emissions Intensity [12] *kg CO_2e/MMBTU gas produced*



Methane Leak/Loss Rate [13] *% (SWN production operations only)*

Total Methane Emitted [14] *gigagrams (SWN production operations only)*



1. A Tier 1 spill is an unintentional release of a regulated or prohibited substance impacting a state/federal jurisdictional water body, an unintentional release of a regulated substance at or above its federal reportable quantity, or an unintentional air impact at or above a state/federal reporting threshold. A Tier 2 spill is an unintentional release of a regulated or prohibited substance impacting land off location or an unintentional air impact below a state/federal reporting threshold, to include only natural gas releases of 235 thousand cubic feet (Mcf) or more. See the Land page for further discussion.

2. The water use, water recycling and water disposal data in this section cover our drilling, completions, production and midstream services. The 2014 data include water used at the assets we purchased in Pennsylvania and West Virginia in late 2014 for the short period at the end of the year when we owned them. The 2015 data includes those assets as well as additional Pennsylvania and West Virginia assets we purchased in early 2015. None of the data includes our sand plant. All water used at our sand plant (except for drinking water) is sourced on location from the facility's lake and four groundwater wells. This water is recirculated for reuse or, for a small portion, returned to the environment via evaporation. Finally, numbers in the tables may not sum, due to rounding.

3. Water data collection depends on records maintained for internal benchmarking or reporting to regulatory agencies. Volumes purchased from commercial, third-party water suppliers are included under "water utilities" unless greater water source granularity is available. "Surface water" can include natural ponds, lakes, rivers and freshwater impoundments. No water was pulled from isolated wetlands or oceans for the years in scope.

4. These volumes include flowback and produced water, encountered water during drilling, and rainwater naturally captured in facility containments. Reuse water can include volumes generated during drilling that have been treated off-site and returned for additional use. Also includes recycled flowback and produced water that is supplied to other operators for their downhole hydraulic fracturing operations and recycled flowback and produced water from other operators that was used by SWN in hydraulic fracturing operations.

5. This volume includes SWN's reuse of SWN produced water, reuse of produced water from other operators reuse of SWN produced water by other operators.

6. The percentage in 2019 includes flowback and produced water provided from other operators to SWN and used in SWN's hydraulic fracturing operations.

7. This data includes the Sandwash Basin in Colorado, which had no activity and no recycling opportunities in 2019.

8. This percentage includes the volume of water reused by SWN that SWN generates, the volume of SWN generated water that is reused by other operators and the volume of water generated by other operators that is reused by SWN.

9. Operational offsets include rainwater naturally captured in facility containment that is returned to the environment and surface water held in freshwater impoundments that are returned to the environment.

10. The emissions intensity and leak/loss rate data are based on gross operated production. The GHG calculations – reported in carbon dioxide equivalents, or CO2e – include CO2, CH4 (methane) and N2O (nitrous oxide). Certain GHG emissions are based on U.S. Environmental Protection Agency (EPA) emissions factors. The production CO2e emissions reflect emissions reported to the EPA under Subpart W of the Greenhouse Gas Mandatory Reporting Rule (GHGMRR). Approximately 99 percent of our production and midstream operations are subject to reporting under Subpart W. In 2015, 2016 and 2017 we have also included GHG emissions for our Sandwash (Colorado) operations (which are not subject to the GHGMRR) based on Subpart W emissions factors. In accordance with EPA greenhouse gas reporting requirements, assets that were divested in 2018 are not reported.

11. Midstream assets are not included for the data in year 2018 and 2019 due to divestiture of the assets in 2018.

12. The metric used to calculate the intensity ratio is millions of standard cubic feet (MMscf) of gas. We assumed a 1,000 BTU/scf heating value of natural gas for emissions intensity. The GHG emissions included in the intensity ratio are all direct (Scope 1).

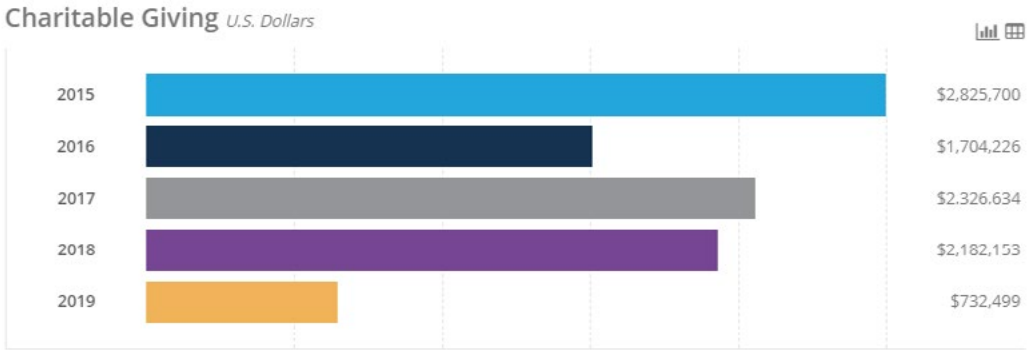
13. The methane leak/loss rate (mass percentage) is calculated by dividing the gigagrams of methane emissions by the oil and gas gross production (cubic feet converted to gigagrams).

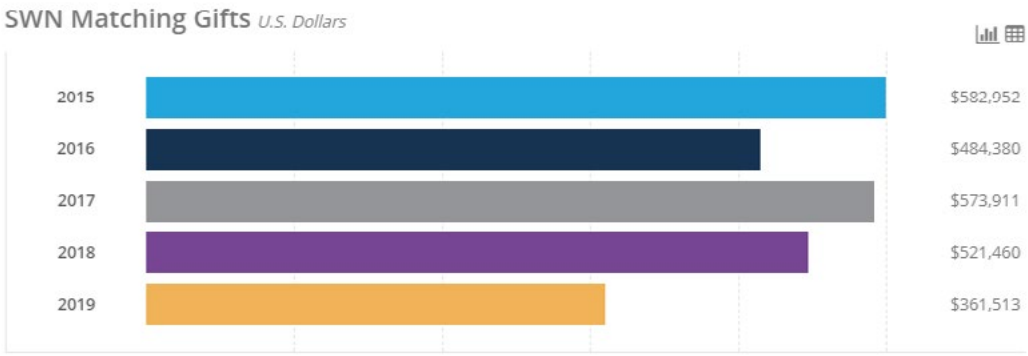
14. The gigagrams of methane emitted reflect the Subpart W reported emissions revised (reduced) to reflect actual fugitive equipment leaks observed as a result of our leak detection and repair program. A gigagram is equivalent to a thousand metric tons.

Communities

Where we work is where we live, and being a good neighbor is how we do business. SWN has a long and successful track record of creating a positive impact and generating economic opportunities in the areas where we operate. Through proactive, open dialogue with residents and community leaders, we seek to understand and address community concerns. We aim to have a positive impact by hiring locally, operating responsibly and supporting local health, environmental, education, emergency response and family-focused programs.

Community Data

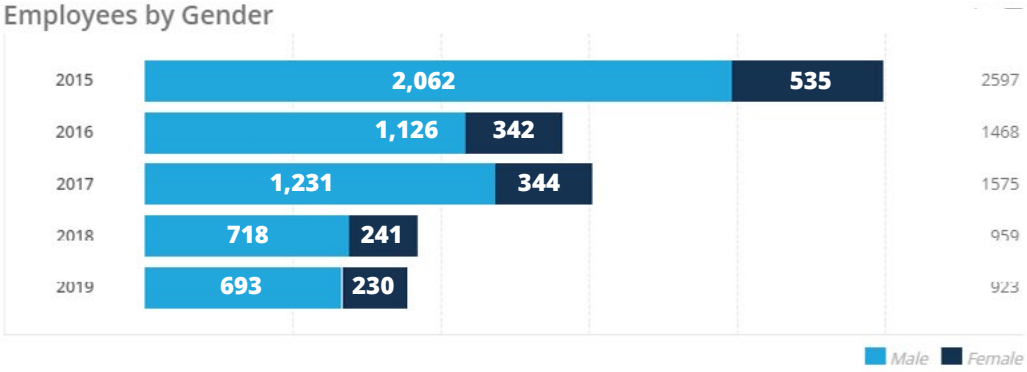




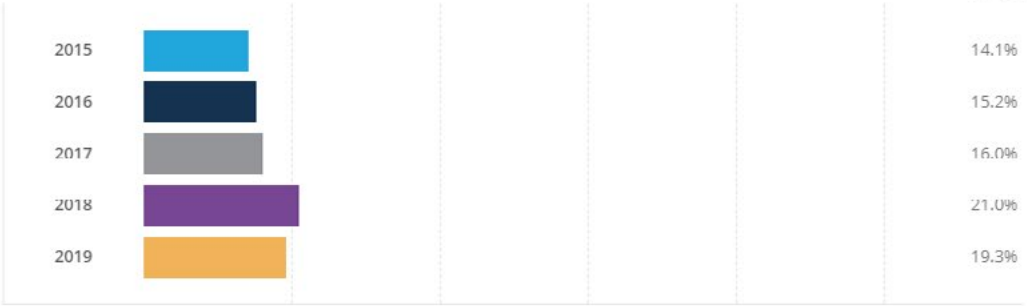
Workforce

A fundamental measurement of any company's performance is the work environment the company creates for its employees. SWN's corporate culture fosters a safe, healthy, respectful and fair workplace with opportunities for career advancement. Our contractors and business partners are an essential part of our workforce, and we aim to collaborate as ONE Team with a shared vision for one goal: zero safety and environmental incidents.

Workforce Data[1]

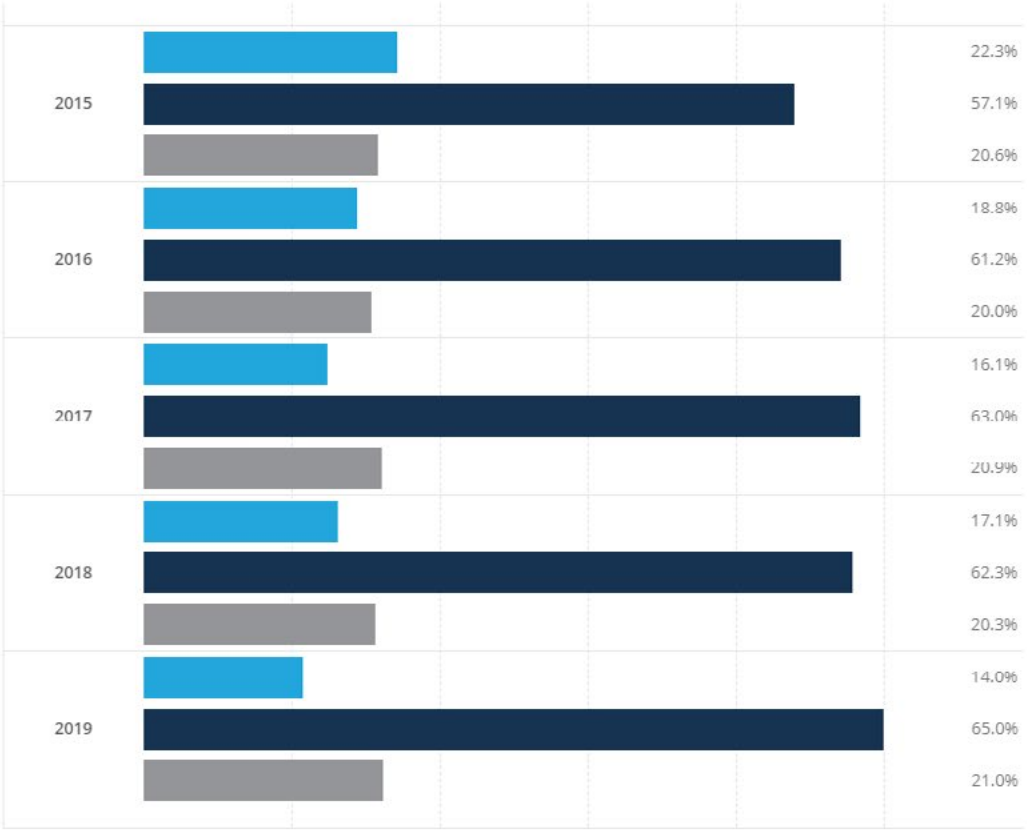


Women as Percent of Management [2] %



Minorities as Percent of Management [2] %

Employees by Age %



1. All data as of year end.

2. The definition of "management" is based on U.S. Equal Opportunity Office categories Executive/Senior Level Officials and Managers and First/Mid-Level Officials and Managers.