

CORPORATE SOCIAL RESPONSIBILITY

2017





### ANTERO RESOURCES IS AN INDEPENDENT

exploration and production (E&P) company engaged in the development of natural gas, natural gas liquids (NGLs) and oil properties located in the Appalachian Basin. Headquartered in Denver, Colorado, we are focused on creating value through the development of our large portfolio of repeatable, low cost, liquids-rich drilling opportunities in two of the premier North American shale plays. We hold over 484,000 net acres in the southwestern core of the Marcellus Shale and over 137,000 net acres in the core of the Ohio Utica Shale.

### ANTERO RESOURCES (NYSE: AR)

was formed in 2002 by Paul Rady and Glen Warren following their success with Pennaco Energy.

### STRONG E&P PRESENCE

- Integrated natural gas, NGL & midstream business
- Unique E&P company with scale, attractive growth, and low financial leverage
- Top 3 U.S. NGL producer
- Leader in realized pricing and unit cash flow margins in Appalachia for the last 5 years
- A more than 20-year inventory of core, long-lateral drilling locations in the Appalachian basin
- Leader in freshwater delivery and wastewater treatment commitments

## FAST FACTS

FORMED IN



2002



HEADQUARTERED IN  
DENVER, CO

DISTRICT OFFICES IN



MARIETTA, OH

BRIDGEPORT, WV

608



EMPLOYEES

ALL OPERATIONS  
IN THE



OVER 620,000 NET ACRES





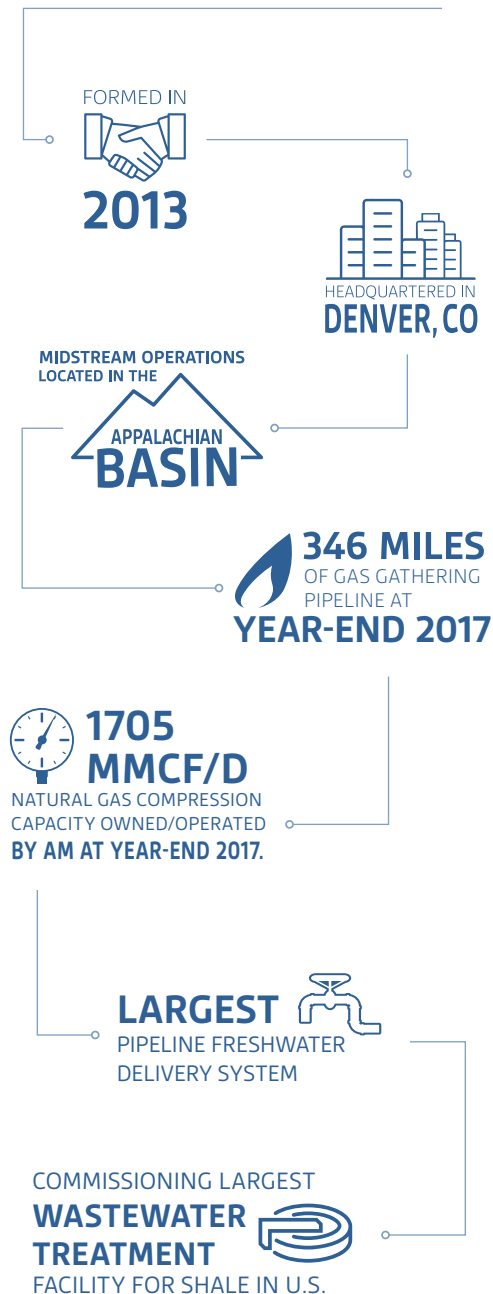
**ANTERO MIDSTREAM PARTNERS IS A** growth-oriented limited partnership headquartered in Denver, Colorado, formed by Antero Resources in 2013. We own, operate and develop midstream infrastructure assets to service Antero Resources' rapidly growing production. Our assets consist of gas gathering pipelines and compressor stations, gas processing and fractionation facilities, fresh water delivery, and wastewater treatment infrastructure. These assets are located in the rapidly-developing, liquids-rich southwestern core of the Marcellus Shale in northwest West Virginia and in the core of the Utica Shale in southeast Ohio. We provide midstream services under long-term, fixed-fee contracts. We invite you to review our impressive assets and learn more about our significant organic growth potential.

**ANTERO MIDSTREAM (NYSE:AM)** was formed in 2013 by Paul Rady and Glen Warren to support Antero Resources with midstream infrastructure.

#### LINKING EXPLORATION AND PRODUCTION

- Seamless and highly effective midstream network constructed to process and move natural gas and NGLs to market
- Primarily supports the production growth of Antero Resources with fresh water for completions and treatment of flowback and produced water
- Operates delivery systems that connect upstream natural gas, NGL and oil production to industrial and commercial end-users
- Located in Marcellus and Utica Shales

## FAST FACTS



# HEALTH, SAFETY AND ENVIRONMENT LETTER OF COMMITMENT

Antero's commitment to health, safety and the environment is a core value of our organization and a primary consideration in every endeavor we undertake. Unlike the balancing act between controlling costs and maximizing shareholder value, there is no balancing act with safety. The bar is set high and stays high, regardless of circumstances.

Our focus on the safety, health and preservation of the environment puts people and community first. This is the right thing to do—and it makes good business sense. A culture dedicated to safety and environmental stewardship reduces risk, enhances productivity, and elevates our reputation in the communities in which we operate. Thanks to continuous improvement in our safety performance, Antero is viewed as a safe and environmentally-responsible operator, making us an employer of choice for current and new employees.

A variety of programs and initiatives strengthen our company-wide culture of safety. The Antero Safety Management System guides our approach to achieving the ultimate goal of zero incidents. Our safety leadership model encourages people to speak up about safety concerns and to take responsibility for their actions through our Stop Work Authority program.



We invest heavily in safety training and coaching of our employees. We promote risk assessments and encourage visible safety leadership. We sponsor emergency preparedness programs. We conduct regular audits to assess our performance, and we celebrate our successes. At the annual Contractor Safety Conference, we acknowledge employees and contractors who have exhibited strong safety leadership throughout the year. Combined, these efforts reinforce Antero's commitment to safety and act as a positive influence within our contractor community.

Rhetoric and programs aside, our systems are only as good as the leadership, culture and commitment we demonstrate on the job. To ensure the health and safety of our employees and to protect the environment for future generations, each one of us must commit to our mission: to send every worker home safely, every day. Thanks for your dedication and support of Antero's efforts to keep our people and our communities healthy and safe.

Sincerely,

**PAUL M. RADY**  
Chairman and CEO  
Co-Founder

**GLEN C. WARREN, JR.**  
President, CFO and Director  
Co-Founder





## OVERVIEW

At Antero, we understand the importance of our role in meeting the growing demand for natural gas, NGLs and oil. We aim to meet this demand in a safe, reliable and socially-responsible way while minimizing our impact on the environment. We are committed to lowering our environmental footprint by reducing criteria pollutants (NOx, CO, VOC), and greenhouse gas (GHG) including methane (CH4) emissions from our midstream, production and drilling completion operations.

We strive for our day-to-day operations to meet our expectations as a responsible company and the expectations of our stakeholders, including regulatory agencies, the communities, landowners, employees and investors.

Antero's emission reduction efforts include:

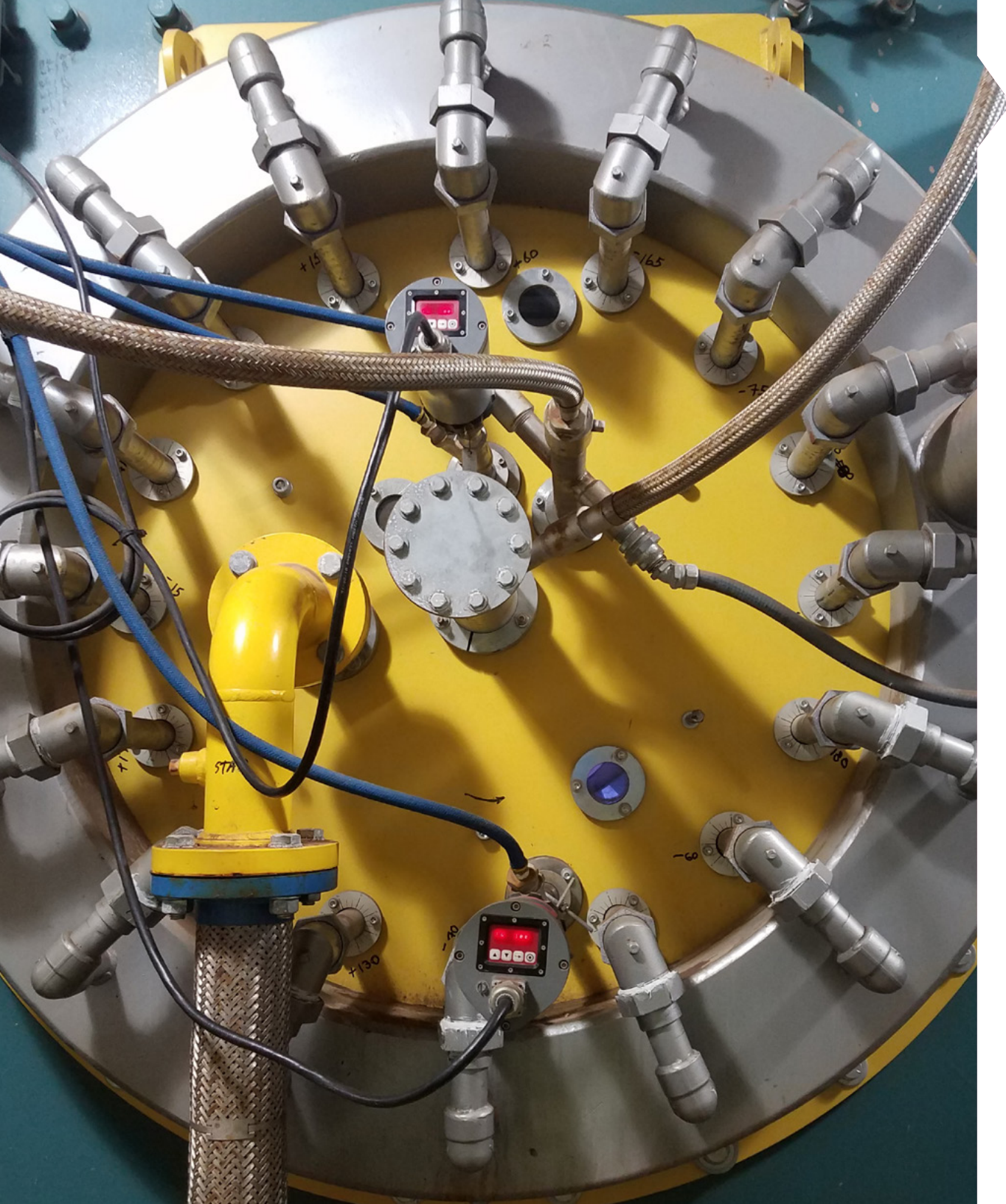
1. Following and implementing new and developing technologies and best management practices to increase efficiency of our operations and decrease emissions.
2. Participating in industry forums, within the community and in voluntary programs including EPA Natural Gas STAR and ONE Future.
3. Collaborating with and addressing stakeholder inquiries regarding the company's position on climate change and air quality matters.
4. Proactively monitoring and maintaining equipment to minimize leaks.
5. We responded to the Carbon Disclosure Project's Climate questionnaire for the first time in 2018.

# HISTORY

Antero has been actively engaged in reducing methane emissions since March 2005. In Colorado, we asked local community groups for feedback about our activities in the Piceance Basin. The discussion included ways to minimize the impact of our operation's air emissions. Our process is to listen to our neighbors and stakeholders, then take meaningful action that precludes governmental mandates. In July 2011, Antero was among the first operators to implement green completions using equipment designed by Antero personnel. Green completions later became an EPA-mandated requirement, effective January 2015, as part of NSPS Quad O requirements. Reduced emission completions, or green completions, capture natural gas at the wellhead rather than release it into the atmosphere. These green systems use portable equipment to recover VOCs, gas, condensate and water. Recovered salable gas is directed to a pipeline and sold. Non-salable gas is flared.

After initial testing confirmed the viability and effectiveness of our Antero-designed units, we implemented the units in the Marcellus Shale play in Appalachia in 2012, and later in the Utica Shale play. In our ongoing search for methods to improve efficiency and manage emissions, we implemented the 100% balanced drill outs and then added the Superloop technology in 2017. The Superloop allows for the recovery of non-salable gas for combustion, thereby lowering VOC and methane emissions. We're proud of our long history of managing emissions, including our early adoption of green completions. As dedicated leaders in our field, we will continue to seek new, even more effective methods for improving efficiency and reducing methane emissions.





# EMISSION CONTROL TECHNOLOGY

When we permit a facility, we install air pollution control equipment that meets the requirements of the New Source Performance Standards (NSPS) and EPA Best Achievable Control Technology Standards (BACT). Antero's well pads are located near sales pipelines giving us the ability to capture a valuable resource that may be vented to the atmosphere otherwise. As a result, methane emissions are reduced through capture and sale of natural gas. We use low-bleed pneumatic controllers to minimize methane emissions. Our storage tank control equipment includes the use of Vapor Recovery Towers (VRTs) and single- and two-stage Vapor Recovery Units (VRUs).

*Our storage tank control equipment includes the use of Vapor Recovery Towers (VRTs) and single and two stage Vapor Recovery Units (VRUs).*

The VRTs and VRUs capture methane and VOC emissions and direct them to a sales line. Capturing emissions keeps the amount of gas flared from storage tanks to a minimum and allows us to recover a valuable product.

## LEAK DETECTION AND REPAIR

Our methane and air emission controls include a Leak Detection and Repair (LDAR) program. Any detected leaks found during periodic inspections are repaired promptly to minimize emissions. Our LDAR program meets or exceeds U.S. EPA NSPS Quad Oa, Ohio EPA and West Virginia Department of Environmental Protection requirements. The LDAR program inspections utilize a state-of-the-art Optical Gas Imaging (OGI) Forward Looking Infrared Radar (FLIR) camera to identify equipment leaks. We employ four full-time technicians to conduct and record the results of the LDAR inspections. These technicians have successfully completed FLIR camera training and are certified OGI camera operators. Inspections are conducted jointly by the LDAR inspectors and operations personnel. Any detected leaks are typically repaired during the inspection. LDAR inspections are conducted on a quarterly or semi-annual basis at the well pads and on a quarterly basis at the compressor stations. This schedule meets or exceeds federal and state frequency requirements. Every permitted Antero facility undergoes LDAR inspections.

Early in the program, LDAR inspections identified storage tank thief hatches as a common or potential source of leaks. An improved maintenance program including cleaning, greasing, and replacing thief hatch seals and worn equipment, has lowered the number of detected leaks, thereby reducing the volume of emissions. Antero operations personnel train with environmental personnel during LDAR leak inspections. Operations personnel also conduct biweekly Audio, Visual and Olfactory (AVO) leak inspections.





# STAR PROGRAM AND EMERGING TECHNOLOGY

By joining the EPA Natural Gas Star Program in 2017, Antero expanded our commitment to evaluating methane reduction opportunities by joining, implementing methane reduction projects where feasible, and reporting reductions of methane emissions per unit of production to the EPA every year. We also report our yearly greenhouse gas emissions as a rate per production and our methane leak rate. Our methane emissions are based on engineering calculations, modeling, and emission factors as specified by EPA Greenhouse Gas reporting.

*Antero's GHG emissions intensity dropped in 2016 from 2015 despite an increase in production. Antero's methane leak rate is well below the target standard of 1%.*

Our engineering, operations and environmental personnel are currently reviewing methane measurement techniques that can accurately determine pneumatic-controller emissions and leak rates. We switched to more durable Viton gaskets, which provide better sealing of thief hatches. We also implemented a pilot program to evaluate the use of sealed thief hatches with zero emissions. A summary of Antero's greenhouse gas emissions is shown in the table at the top of the page.

In 2018, Antero Resources became a member of ONE Future, an industry collective focused on reducing methane emissions across all facilities, equivalent to one percent (or less) of total natural gas production by 2025.

## GREENHOUSE GAS (GHG) EMISSIONS thousand metric tons CO<sub>2</sub>e

TOTAL GHG EMISSIONS <sup>1</sup>	2015	2016	2017
Production/drilling/completions (AR)	402	424	506
Midstream (AM)	N/A	420	751
GHG EMISSIONS INTENSITY <sup>2</sup> <small>kg CO<sub>2</sub>e/MMBTU gas produced</small>			
Production (AR)	0.65	0.56	0.56
Midstream (AM)	N/A	1.41	0.68
TOTAL METHANE EMISSIONS <sup>4</sup> <small>thousand metric tons</small>			
Production (AR)	4.015	5.336	6.574
Midstream (AM)	N/A	0.804	1.136
METHANE LEAK/LOSS RATE <sup>3</sup>			
% (production operations only)	0.04%	0.06%	0.06%

During 2017, Antero Resources and Antero Midstream completed or initiated the following methane emissions reduction activities:

1. We use burner management systems with three stages of pressure control to optimize combustor efficiency on storage tanks and to minimize methane emissions.
2. We tested pressure relief valves and repaired or replaced valves as necessary, reducing the amount of accidentally-released methane.
3. We switched to air-actuated pneumatic controllers at compressor stations to eliminate the methane emissions that occur with gas-operated controllers.
4. We replaced gas-operated compressor engine starters with air or electric starters to eliminate the methane emissions that occur with gas-operated starters.
5. We utilize hot taps and pipeline pressure reduction techniques to lower gas-line pressure before maintenance.

During 2018, Antero's methane emission reduction efforts include investigating the following methane reduction technologies:

1. Review emerging methane detection and quantification technologies applicable to E&P and midstream operations. The review will be conducted quarterly by Antero's GHG/Methane Reduction Team.
2. Develop a low emission plug and abandonment plan for older wells.
3. Review the option to replace existing gas-operated pneumatic controllers with air or electrically-operated controllers in all E&P operations.
4. Explore the reduction of methane emissions associated with rod-packing systems in VRU compressors.
5. Review options for recovering gas from midstream pigging operations.
6. Implement the injection of blow-down gas from midstream operations into the fuel system at all new stations.

1. Total GHG emissions are based on emissions reported to the EPA under Subpart W of the Greenhouse Gas Mandatory Reporting Rule (GHGMRR). The reporting requirements for Midstream changed in 2016 to be similar to those for production operations. Prior to 2016, only combustion emissions for Midstream were reported. Midstream emissions are not comparable prior to 2016. In 2015, we reported for only four stations that emitted over 25,000 metric tons of CO<sub>2</sub>e. In 2016, our Midstream operations grew substantially; we had 14 stations in operation 2. The GHG intensity ratio is calculated by dividing the kg of CO<sub>2</sub>e reported to the EPA under subpart W by billion cubic feet equivalent of oil and gas produced. We used a site specific gas analysis and a field wide average heating value of 1135 BTU/scf as applicable. 3. The methane leak/loss rate is calculated by dividing the gigagrams of methane emissions reported to the EPA under subpart W by the gas gross production (cubic feet converted to gigagrams). A gigagram is a thousand metric tons. 4. Total methane emissions are based on emissions reported to the EPA under Subpart W of the Greenhouse Gas Mandatory Reporting Rule (GHGMRR).

## CONTACT US



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 **Zero incidents**  
**Zero harm**  
**Zero compromise**  
Keeping **you healthy, safe and environmentally responsible**, every day at work!