



clean. abundant. natural.

Partnering for a Greener,
Sustainable & Reliable
Energy Future

2021 SUSTAINABILITY REPORT

CEO Intro



“We are a different kind of energy company...”



Mike John, President / CEO



When Northeast Natural Energy was founded in 2009, we did it with a vision for a different kind of energy company. We knew we had access to world-class employees right here in West Virginia, and we did our best to assemble that talent and allow it to flourish.

During the past 12 years, NNE has grown into one of the largest producers of natural gas in the state of West Virginia. We now produce nearly 400MM cubic feet of gas per day. We are proud of that growth, but we are even prouder of how we achieved it.

We were built by the ideas of our employees. These innovations were born through years of experience working in the Appalachian Basin. We are inherently focused on protecting our employees, our contractors and the communities we work and live in.

As our team prepared NNE’s first Environmental, Social and Governance Report, we were reminded that we were already focused on these elements long before the letters “ESG” were resonating in the marketplace.

Northeast Natural Energy’s team knows each day presents an opportunity to be better. That pursuit of excellence is why we have joined both the One Future Coalition and API’s Environmental Partnership. Both groups are comprised of energy producers committed to further reducing emissions and improving the industry’s environmental performance.

Our team is passionate about responsibly producing energy and leaving a legacy for the next generation. Starting in 2015 and continuing to this day, NNE’s work with the Marcellus Shale Energy and Environmental Laboratory (“MSEEL”) has provided a long-term, collaborative study of unconventional resource development. It is this type of work that will lead to innovation for decades to come.

In 2021, NNE partnered with the West Virginia Department of Environmental Protection and the USDA National Resources Conservation Service to construct and maintain an active treatment system on Deckers Creek in Monongalia County, West Virginia. The system will mitigate the damage from decades of acid mine drainage and return the creek to life. It’s our way of helping to clean up the past, while looking to the future.

As you read our ESG report, understand it is a living document. Our team’s relentless focus on improving our operations means as we change, it will change. The only constant is our commitment to living up to our initial founding principal: **to be a different kind of energy company.**

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Intro: upstream exploration / production



Northeast Natural Energy (“NNE”) is an upstream exploration and production company focused exclusively on Appalachian dry gas development. Our core assets are located in north/north central West Virginia.

NNE is proud to be a regional leader of an industry that produces reliable and affordable energy. NNE is committed to conducting operations in a safe and environmentally sound manner, reducing greenhouse gas emissions to ensure our natural gas provides a lower carbon solution that helps address climate change risk.

Since its founding in 2009, NNE has been forward-thinking in its approach to environmental issues,

has been a thought-leader in the methods that advance responsible development of natural gas and have shared that knowledge with our peers.

As an unconventional natural gas development company, we recognize the importance of water not only in our operations but also in the communities where we work. NNE is committed to pursuing a water neutral approach through conservation and water management, including recycling and reusing produced water in every practical instance.

Intro: upstream exploration / production

reducing methane emissions to < 1%

As a member of ONE Future—We have already hit our 2025 goal of <1%. (But we strive to do better!)



In 2021, NNE Joined the One Future coalition of energy producers committed to further reducing methane emissions. NNE's methane intensity levels are some of the lowest in the Appalachian region and significantly lower than U.S. oil and natural gas industry levels reported through the EPA. NNE will have validation of its methane intensity levels through both the ONE Future process and the API Environmental Partnership process later in 2021.

As this report demonstrates, NNE's commitment to transparency and sustainable energy development has been a foundational cornerstone of our company's growth the past 12 years. Affordable and reliable energy is paramount to job creation, economic growth, energy independence and national security, and the leading role Northeast Natural Energy takes every day is a testament to the team of home-grown talent we have leading the next generation in responsible energy development.

NNE drop in methane intensity 2017-2019



38%

NNE increase in production 2017-2019

110%



Summary of Operational Practices

As a dry gas production company, NNE is proud to claim one of the lowest methane intensity levels in the oil and gas industry. We have consistently focused on reducing methane intensity levels while significantly increasing production, as indicated in this report. However, our management and employees recognize the need for continual improvement across our operating platform. NNE is a member of both the ONE Future coalition of companies and the API Environmental Partnership.

Both associations allow for collaboration with peer companies who share the goal of further reducing or eliminating emissions from all aspects of the oil and gas industry.

NNE complies with all state and federal requirements to monitor and report emissions from drilling, completion and production activities. NNE achieved a 38% drop in methane intensity from 2017 through 2019 even while increasing production by 110%.

Methane Management

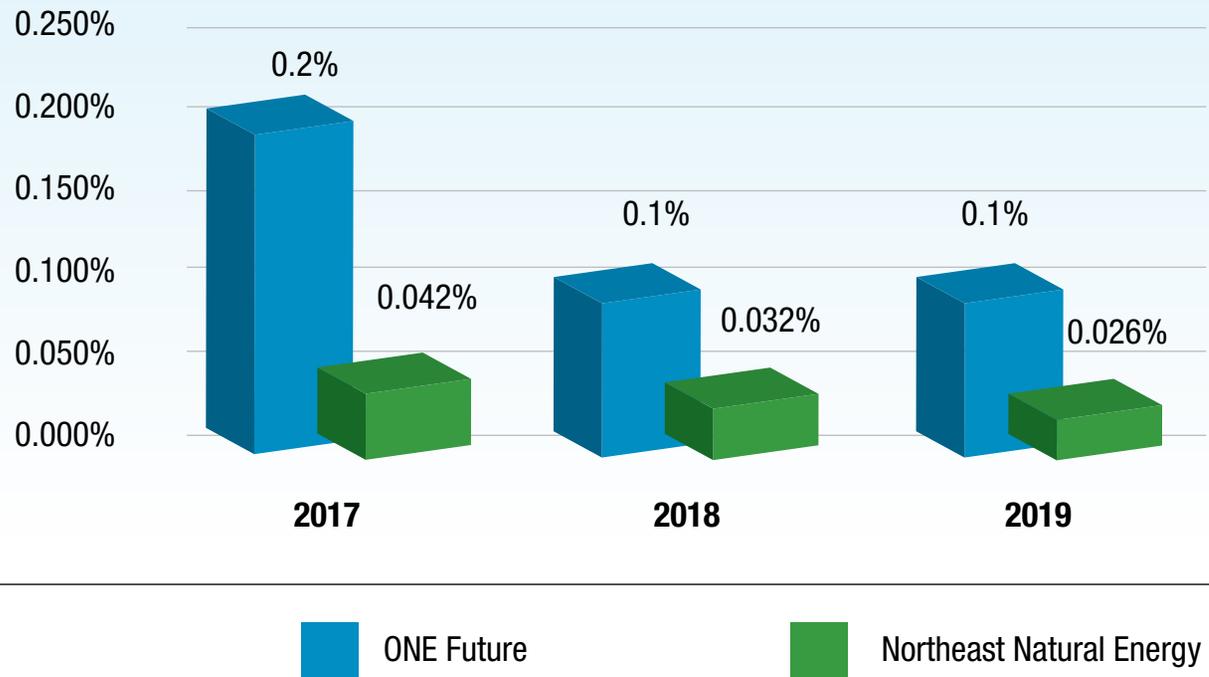
NNE has utilized low bleed or no bleed pneumatic controllers in its gas processing units since it began operations in 2011. In fact, NNE instituted our leak detection and repair program prior to the USEPA requirement under 0000 and 0000a.



LDAR

NNE conducts leak detection and repair on all its production facilities by utilizing a third-party consulting firm to conduct optical imaging surveys using forward looking infrared (FLIR) technology. In 2020 NNE surveyed 30,452 components and detected 9 minor leaks that were repaired immediately. The leak survey translates to a 0.029% leak rate. NNE's quarterly monitoring program exceeds required testing rates, and we are exploring new technology and certifications that will differentiate NNE's produced natural gas in the marketplace.

Methane Emissions Intensity (Kg CO₂e/mcfe)

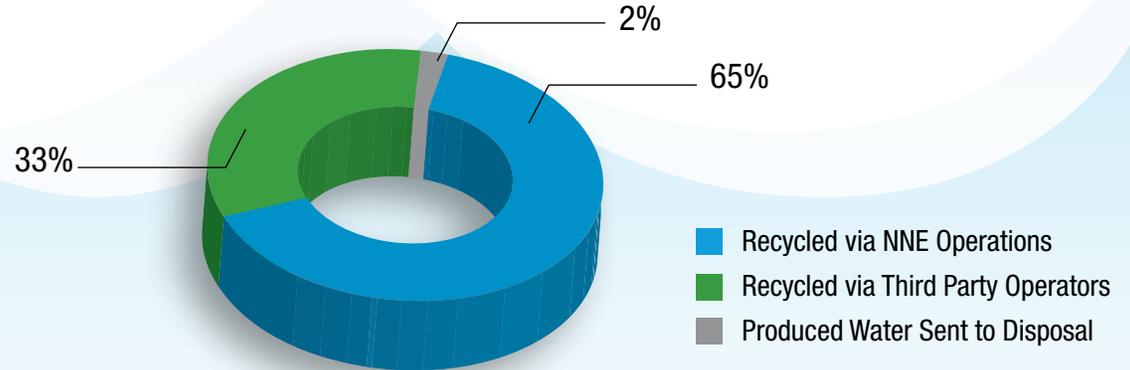




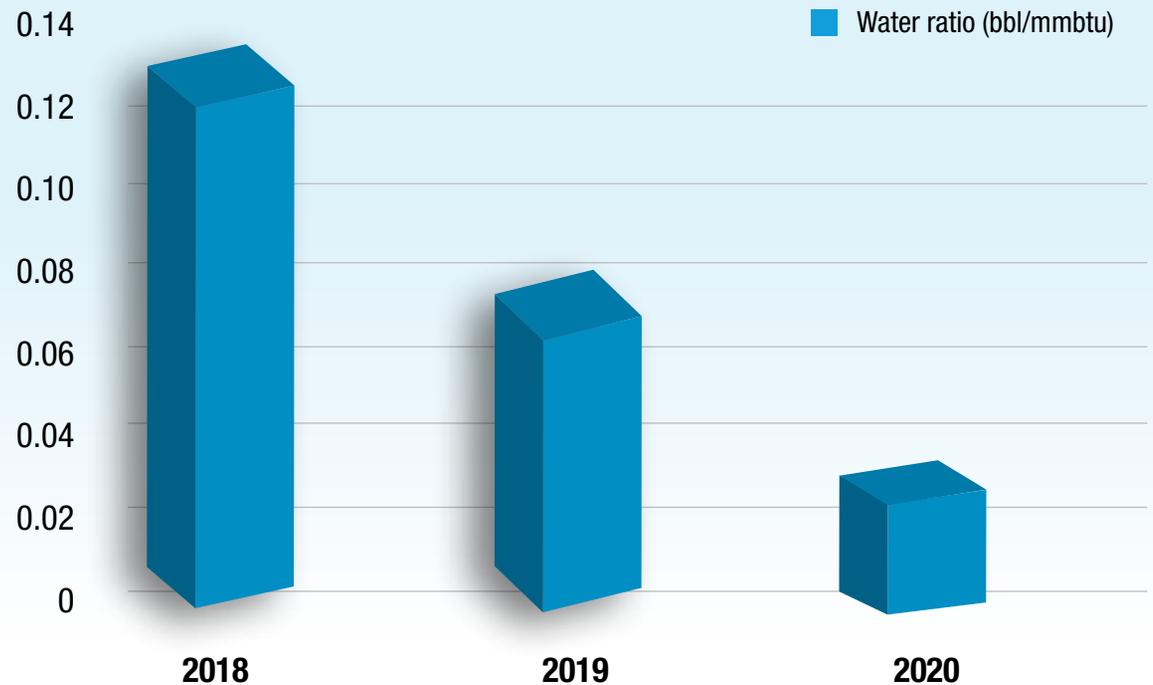
WATER

NNE strives to reuse or recycle 100% of its produced water either by utilizing the excess water in its own completion operations, or through water sharing agreements with other oil and gas drilling and production companies. In the rare instance there is no outlet for recycle or re-use, the produced water is safely transported to state and federally approved disposal facilities. A summary of total water produced, and the final disposition of all produced water is included in this report along with the total volume of fresh water used in completion operations.

Water Management



Water Per Unit of Energy



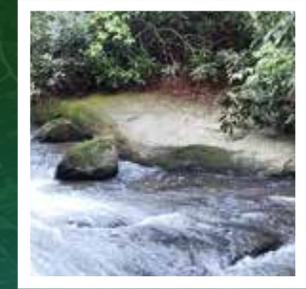
2020 Water Usage Statistics

In 2020 NNE recycled/re-used

97.7%

of the produced
water generated in
its operations

- Water withdrawn from surface streams:
3,525,318 bbls
- Water produced:
1,987,272 bbls
- Produced water recycled/re-used via NNE operations:
1,295,552 bbls. (65.2% of all water produced)
- Produced water recycled/re-used via third party operators:
645,803 bbls. (32.5% of all water produced)
- Produced water sent to approved disposal facilities:
43,982 bbls
(2.3% of all water produced)
- NNE's water utilization rate calculates to
.029 barrels per mmbtu
produced over the life of the well



Special Projects

At Northeast National Energy, our employees exhibit their passion for environmental improvement every day in our operations and in our community.



PROJECT:

Deckers Creek

Monongalia County

Restoring Aquatic Life

After 100 years of acid mine drainage—NNE is partnering with the WVDEP and the USDA to construct and maintain an active treatment system, bringing life back to Deckers Creek.

NNE recently partnered with the West Virginia Department of Environmental Protection and the USDA Natural Resources Conservation Service to construct and maintain an active treatment system on Deckers Creek in Monongalia County, West Virginia.

Deckers Creek, a tributary of the Monongahela River, has been degraded by more than 100 years of acid mine drainage due to underground coal mining. While active coal mining ceased in

the Deckers Creek drainage area in the 1950's, acid mine drainage has continued to impact Deckers Creek to the point where aquatic life is practically non-existent. By installing a treatment system located outside of Morgantown, WV, the impacted section of Deckers Creek will be restored to a point where aquatic life can thrive.

PROJECT:
**Deckers
Creek**

Monongalia County



“Our partnership
will bring life back
to this creek— that’s
a big deal.”

– **Brett Loflin**, Vice President
Regulatory Affairs

1.2 Billion Barrels of Water Per Year*

NNE will help treat and maintain the systems that will clean harmful metals from 1.2 billion barrels of water per year.

Using a sophisticated engineering process, water from the creek will be diverted to a treatment system that utilizes high calcium content hydrated lime to create a slurry, which will be added to the acid mine degraded water. After mixing, the metals will separate from the water in one or multiple clarifiers. The resulting sludge (precipitated metals) will then be pumped and injected into a below drainage area of the abandoned underground mine. The clean water will then be discharged back into Deckers Creek.

The average discharge rate (flow rate) of Deckers Creek is 216 cubic feet per second according to United States Geologic Survey statistics. 216 cubic feet per second calculates to more than 1.2 billion barrels of water per year.



In contrast NNE utilizes on average 6.4 million barrels of surface water per year.

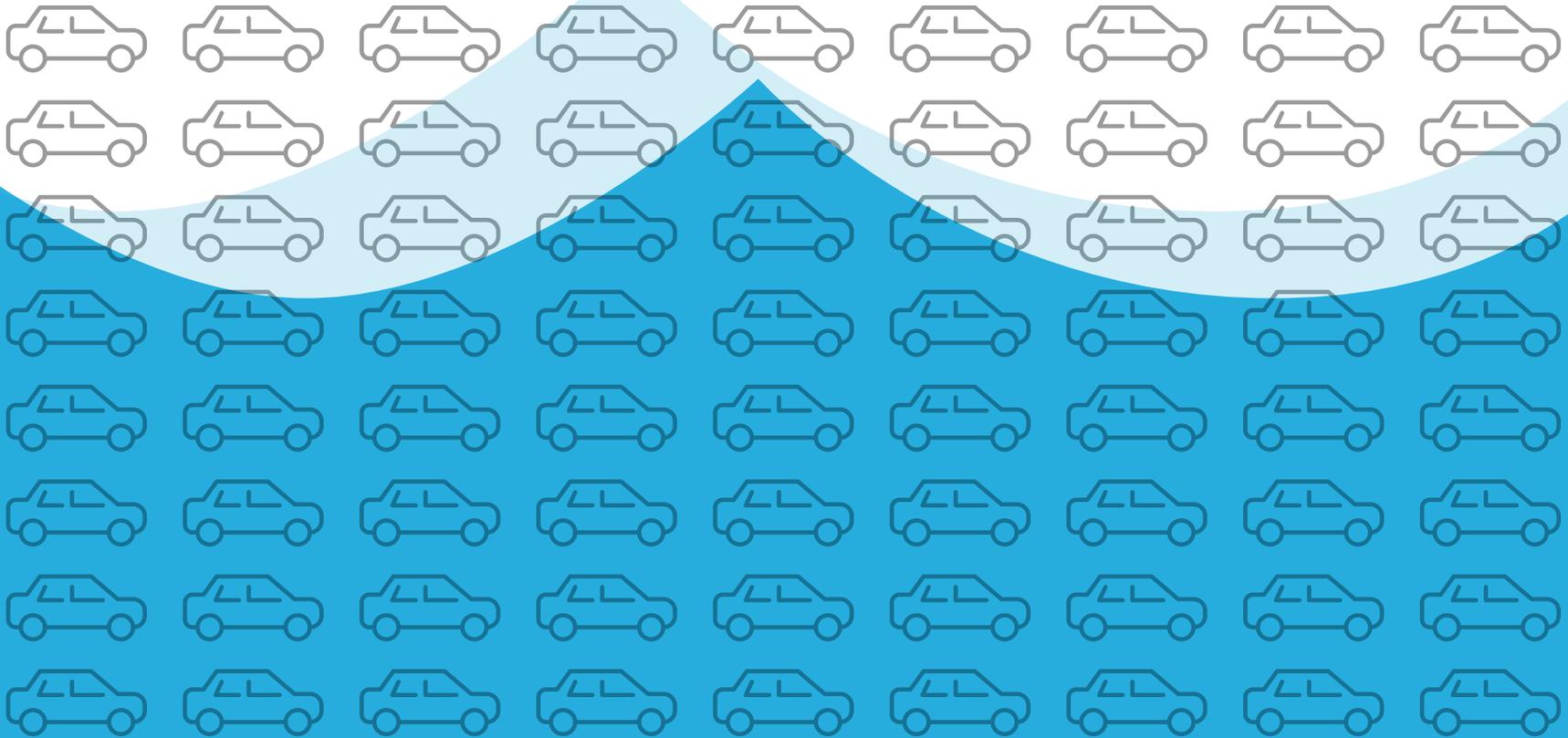
P R O J E C T :

Deckers Creek

Monongalia County

When the project is complete NNE's operations will be water-neutral within two days of water flowing at the Deckers Creek treatment facility. Each year the project will remove 200,000 pounds of heavy metals from Deckers Creek and the downstream Monongahela River. This project will not only clean Deckers Creek but will greatly enhance the water quality of the Monongahela River, which is a source of fresh water for many downstream communities.

200k lbs of toxic metals is equivalent to removing 72 average size automobiles from Deckers Creek each year. That's a lot of metal!





Reducing our footprint
by **55,000 truckloads**
and **1.5 million trucking**
miles per year

Risk Mitigation

NNE water management practices minimize risk factors associated with the re-use/recycle of produced water by engaging in mitigation efforts:

- **NNE has developed an extensive water infrastructure that is comprised of 32 miles of water pipeline** serving to reliably and safely transport water for our operations.
- By utilizing an extensive network of water pipelines NNE removes approximately 55,000 truckloads from public roads and highways. This eliminates more than 1.5 million trucking miles per year, which both increases the safety and longevity of our highways and reduces significant emissions that would have occurred from the truck traffic.





Safety First

Risk Mitigation

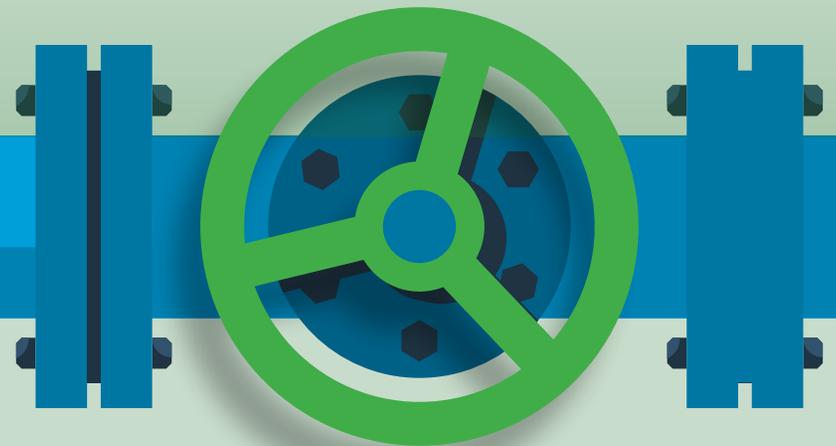
- A start up and shut down checklist is completed for each transfer operation as outlined in standard operating procedures and job safety assessment documents.
- All water lines are pressure tested with fresh water prior to transfer of any flowback or produced water.
- We maintain continual monitoring of the pipeline while water transfer operations are ongoing through visual inspection of above ground appurtenances, pressure gauges, and flow meters.
- All produced water is stored in above ground tanks equipped with secondary containment that is designed to hold the volume of the largest tank with sufficient freeboard to contain collected precipitation.

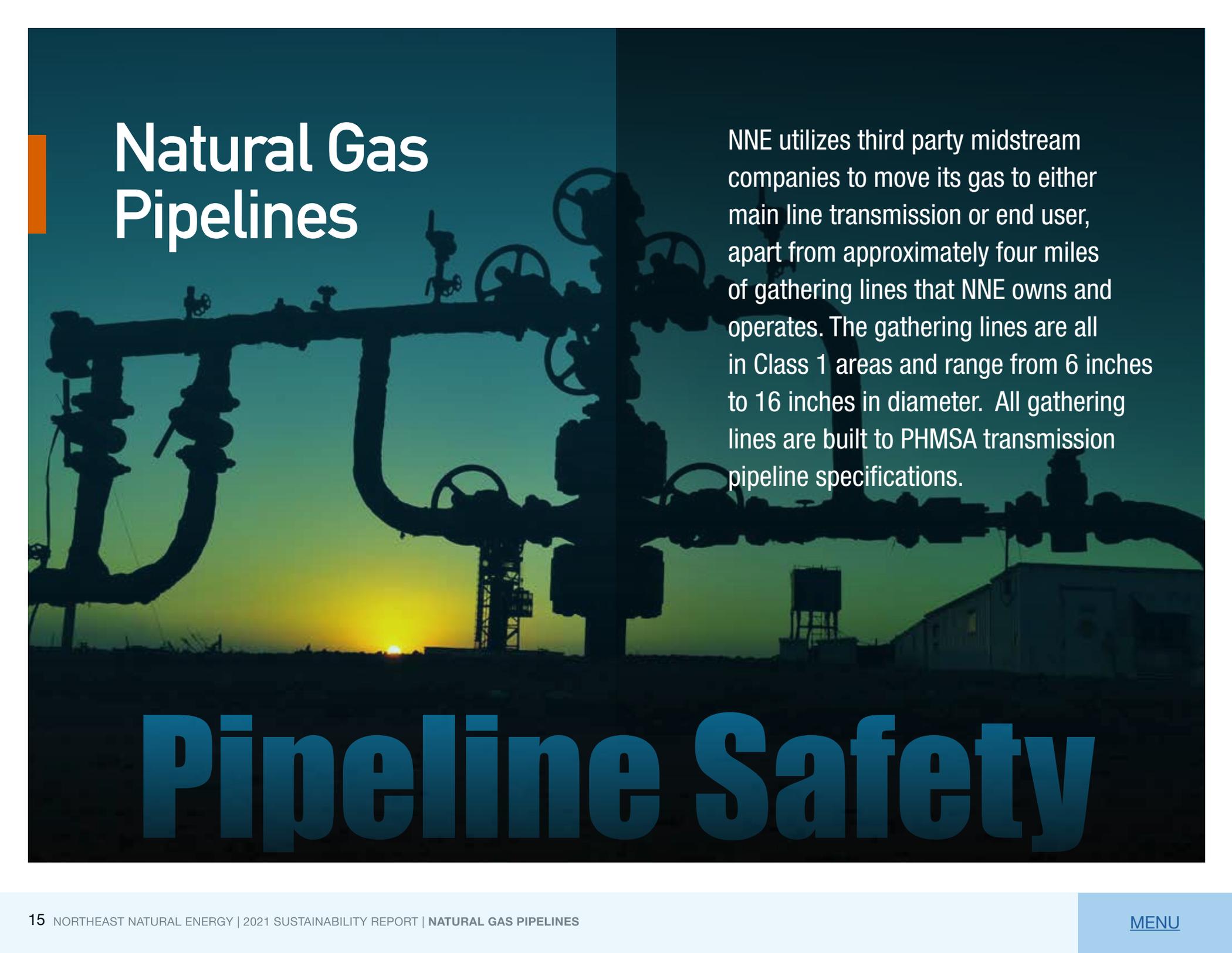
Start up +
shut down
checklist

All water
lines pressure
tested

Continual
monitoring

All produced
water stored
in above ground
tanks



The background of the page is a photograph of natural gas pipeline infrastructure. The scene is silhouetted against a bright sunset sky, with the sun low on the horizon. The infrastructure includes a complex network of pipes, valves, and handwheels. In the foreground, there are several large, circular handwheels for valves. The overall color palette is dominated by the blues and oranges of the sunset, with the infrastructure appearing as dark shapes.

Natural Gas Pipelines

NNE utilizes third party midstream companies to move its gas to either main line transmission or end user, apart from approximately four miles of gathering lines that NNE owns and operates. The gathering lines are all in Class 1 areas and range from 6 inches to 16 inches in diameter. All gathering lines are built to PHMSA transmission pipeline specifications.

Pipeline Safety

Natural Gas Pipelines

Cathodic protection is installed on all pipelines and testing stations are placed along the pipelines. All pipelines are pressure tested when installed and monitored regularly. Strain gauges are also placed in areas deemed necessary.

“Pigging” = improved efficiency

Pipeline pigging (a process for removing any accumulated liquids or debris) is performed on an as needed basis. Some pipelines are pigged weekly, where others are pigged monthly.

Pressure is monitored on pipelines to determine when pigging is necessary. By reducing pressure loss in a pipeline, pigging can help improve energy efficiency.

Carthodic protection

Testing stations

Pressure tested & monitored

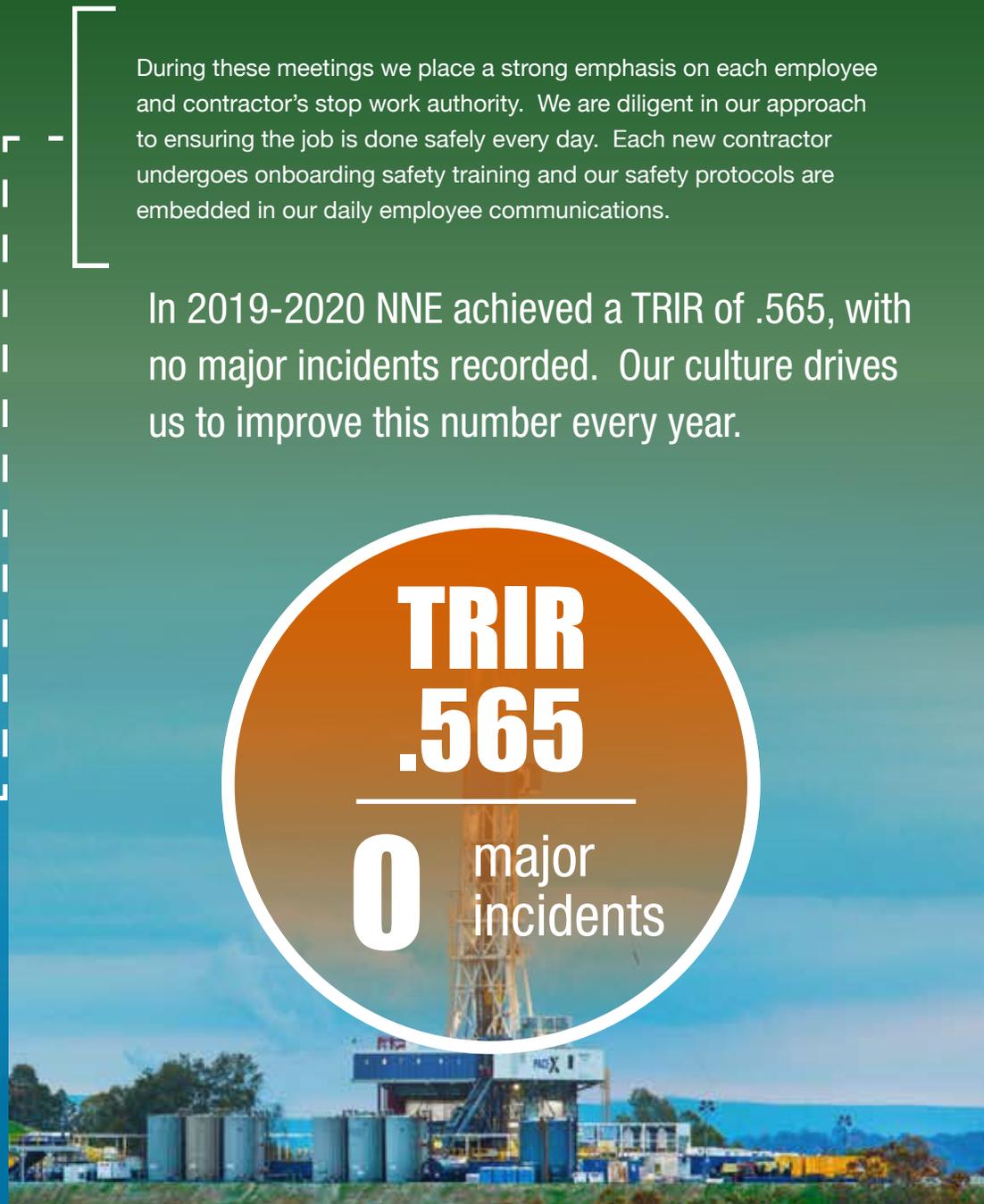
Strain gauges where needed

Employee Health & Safety

Every employee has a family that expects their loved one to return home safe at the end of their shift. NNE is focused on making sure that this happens. **We begin every shift with a pre-job safety meeting to focus on completing the day without incident.**

During these meetings we place a strong emphasis on each employee and contractor's stop work authority. We are diligent in our approach to ensuring the job is done safely every day. Each new contractor undergoes onboarding safety training and our safety protocols are embedded in our daily employee communications.

In 2019-2020 NNE achieved a TRIR of .565, with no major incidents recorded. Our culture drives us to improve this number every year.





Community Involvement

Northeast Natural Energy is a committed community partner in our areas of operation. Our employees are engaged in philanthropic activities across our operating area.

We invest in communities through support for emergency responders and engagement with educational institutions.

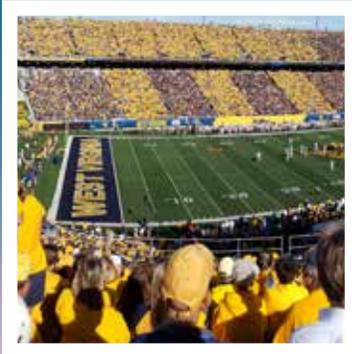
We pride ourselves in our ongoing relationship with first responders near our operations. In 2020, NNE provided funding to the Blacksville, WV Volunteer Fire Department so they could purchase five new sets of firefighting gear.



Community Involvement



4-H / FFA Clubs



West Virginia University



United Way Day of Caring

- Sponsor local 4H and FFA clubs through participation in auction events
- Support West Virginia University and its students through:
 - Support of various sports teams, clubs, and schools
 - Guest lectures in many classes
 - Participation as adjunct faculty in Engineering school
 - Participation on various school boards
- NNE partners with local elementary schools to provide extra tutoring for students
- NNE supports local events and groups of all shapes and sizes through sponsorships, monetary support or through volunteer hours by its staff
- NNE participates in the annual United Way Day of Caring



MSEEL

Northeast Natural Energy is proud to have been selected as the operator of choice to participate in the first ever Marcellus Shale Energy and Environmental Laboratory (“MSEEL”). NNE partnered with the United States Department of Energy and West Virginia University, among others, to establish a long-term field laboratory studying all aspects of unconventional resource development.

Marcellus Shale Energy and Environmental Laboratory “MSEEL”

NNE has been selected as the operator of choice in the first ever Marcellus Shale Energy and Environmental Laboratory

The objective of the MSEEL is to provide a long-term collaborative field site to develop and validate new knowledge and technology to improve recovery efficiency and minimize environmental implications of unconventional natural gas development and to make this data transparent for public review and consumption.

The MSEEL project is located on two different NNE well sites. The first wells were drilled in 2015. Water quality, air, noise, light, dust emissions

and sociological impacts were all monitored throughout the sites’ life cycle. In fact, monitoring of air emissions and water quality continues today. In addition to environmental studies various innovative surface and downhole techniques were utilized and tested to improve extraction efficiency, creating more available energy per acre of disturbance.



MSEEL

Hundreds of scientific publications and public presentations have been written and presented to educate the scientific community and the general public about the benefits of natural gas development both from an energy efficiency and environmental sustainability perspective.

Marcellus Shale Energy and Environmental Laboratory “MSEEL”

Information about MSEEL and all project datasets and scientific publications can be found at –

www.mseel.org



northeast
NATURAL ENERGY

INITIATIVES

To further improve NNE's environmental footprint, we are exploring additional initiatives. NNE constantly strives to identify and implement plans to eliminate or offset carbon emissions and water usage.

utilize
**USEPA
Tier IV**
compliant
engines



Environmental Performance

- Purchasing choices for equipment/vendors
- Choose completion companies with USEPA Tier IV compliant engines which are over 60% cleaner than traditional Tier II engines
- Test electric frac fleet on upcoming well pad
- Replace natural gas activated dump valve controllers with electric controllers
- Plant switchgrass or other efficient CO2 consumer for slope stability projects to improve net CO2 footprint

60% **cleaner**
than traditional
Tier II engines

INITIATIVES

Our employees are encouraged to identify opportunities in operations to make improvements through Top-of-Mind environmental awareness including:



Environmental Performance

- Plant hardwood trees where applicable on NNE properties to enhance CO2 consumption from atmosphere
- Partner with state environmental agencies to restore acid mine drainage affected streams near our area of operations (see Decker's Creek project)
- Pilot test to replace natural gas activated low bleed/no bleed pneumatic controllers with air activated pneumatic controllers
- Exploring direct measurement of emissions utilizing a third-party air monitoring contractor
- Exploring utilizing drone technology to capture potential methane emissions, quantify any emissions through USEPA approved algorithms, and eliminate or reduce any emissions detected



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