

ONE FUTURE 2021 METHANE EMISSIONS INTENSITIES REPORT



ONE FUTURE MEMBER COMPANIES







































































































TABLE OF CONTENTS

<u>02</u>

ONE FUTURE MEMBERS

<u>03</u>

TABLE OF CONTENTS

04

A MESSAGE FROM RICHARD HYDE, EXECUTIVE DIRECTOR <u>05</u>

ONE FUTURE 2020 OVERVIEW

06

REPORT HIGHLIGHTS
AND EXECUTIVE
SUMMARY

07

SECTOR TARGETS AND EMISSION INTENSITY RESULTS

08

HIGH-LEVEL SUMMARY

<u>09</u>

INTRODUCTION TO ONE FUTURE

<u> 10</u>

MEMBERS BY INDUSTRY
SEGMENTS

<u>11</u>

MISSION STATEMENT

13

ONE FUTURE EMISSIONS INTENSITY APPROACH

15

SECTOR SUMMARY PRODUCTION

19

SECTOR SUMMARY GATHERING AND BOOSTING **23**

SECTOR SUMMARY PROCESSING

27

SECTOR SUMMARY
TRANSMISSION AND
STORAGE

31

SECTOR SUMMARY DISTRIBUTION

<u>35</u>

CONCLUSIONS

<u>38</u>

FOOTNOTES AND REFERENCES

<u>40</u>

APPENDIX A
APPENDIX B

A MESSAGE FROM RICHARD HYDE EXECUTIVE DIRECTOR, ONE FUTURE

When ONE Future started in 2014, it was seven companies that came together with an idea to reduce emissions to 1.0% or less by 2025, to ensure the future of natural gas as a foundational fuel. Since then, our membership has increased more than seven-fold and we are now more than 50 members strong.

We began reporting our emission intensity in 2017 and our members have exceeded our goal in each of the years that we have reported. This latest report shows that our methane intensity, based on 2020 data, was less than one half of one percent. In other words, our members are 99.58% efficient in delivering a molecule of gas from the rig to the burner tip.

Natural gas plays a critical role in providing much-needed energy to nearly 179 million Americans every day. It is a key driver in fueling our country's economy; and its demand will not diminish, even in a net-zero carbon economy.

Natural gas powers more than half of the country's commercial buildings and is the largest source of reliable electricity generation – 38%. Natural gas is plentiful, affordable, reliable, and clean; the growing use of natural gas in the U.S. has reduced the nation's methane emissions and lowered household heating and cooking costs. The lower cost and more reliable our energy is, the more competitive every American company is, lowering the cost of living for every American.

While natural gas is critical to our way of life, we realize that our emissions must remain low to ensure its sustainability long-term. ONE Future's results show that a performance-based approach works, today and tomorrow. We believe industry can further lower emissions as well as energy costs when energy policy makers don't pick winners and losers. An "all of the above" policy would result in lifting restrictions on fracking and much needed pipelines would be constructed.

The natural gas industry is one of the safest, innovative, and essential industries in the world, but we must do a better job in conveying this message to the public. I encourage everyone that reads this report to reach out to your colleagues, friends and neighbors and share the highlights of the report to let people know that the natural gas industry is doing the right thing to ensure that our product is safe, clean and cost efficient, and that it's something that Americans can't do without.

Sincerely,

Ruchard Hydle

Richard Hvde



Committed to reducing methane emissions to less than 1.0% across the natural gas value chain to ensure natural gas is around for decades to come.















US NATURAL GAS IS ABUNDANT, AFFORDABLE, RELIABLE, ACCESSIBLE AND CLEAN



Sector Scorecards













US Natural Gas Produced

38% US Natural Gas Collected and/or

US Natural Gas Processed

56% 42%

2020 Methane Intensity

2020 Methane Intensity

2020 Methane Intensity

2020 Methane Intensity 0.301% 0.142%

2020 Methane Intensity 0.225% 0.118%

0.283% 0.105%

0.080% 0.042%

0.111% 0.017%











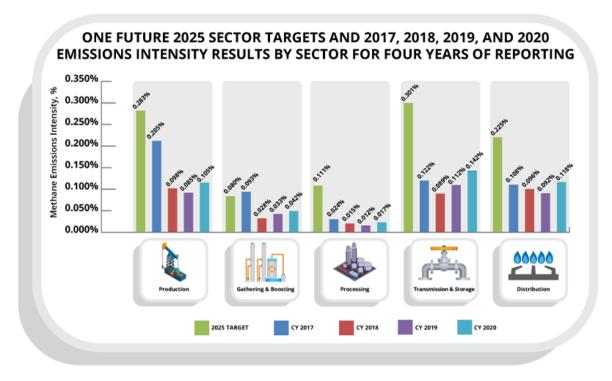
REPORT HIGHLIGHTS

- ONE Future surpasses goal; 2020 methane intensity of member companies recorded at 0.424%, versus 2025 goal of 1.0% - beating our goal by 58%. This means our members are 99.58% efficient in delivering a molecule of gas from the rig to the burner tip.
- In 2019, twenty-four (24) ONE Future members reported their methane intensities; in 2020, forty-five (45) members reported their methane intensities. Despite nearly doubling membership, the overall methane intensity remained much below the 1.0% goal, while production increased by 23% and deliveries to customers increased by 107%.
- For the fourth year in a row, the coalition surpassed its 1.0% goal by a significant amount. These numbers demonstrate that the natural gas industry can minimize methane emissions, increase production and throughput, and supply much needed energy to the U.S. and around the globe for decades to come.

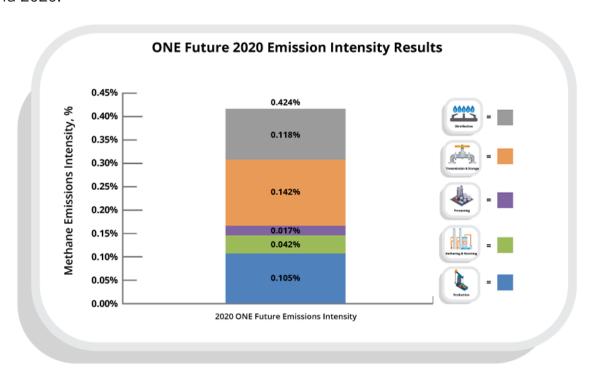
EXECUTIVE SUMMARY

Our Nation's Energy Future Coalition (ONE Future) is a group of 51 natural gas companies working together to voluntarily reduce methane emissions across the natural gas value chain. ONE Future's target is an overall methane intensity of 1.0% (or less) of total produced natural gas by 2025. This is ONE Future's fourth annual report, and based on 2020 emissions and throughput, ONE Future's methane intensity is 0.424%, exceeding the 1.0% goal by 58%. The 2020 ONE Future emissions intensity remained relatively flat year-over-year despite almost doubling membership. The results from 2017, 2018, 2019, and 2020 demonstrate that ONE Future continues to be significantly below the 2025 target of a 1.0% methane emissions intensity, indicating the natural gas industry can minimize methane emissions and increase production and throughput while supplying much needed energy to the U.S. and around the globe for years to come.

This is the fourth year of ONE Future reporting. The following figure shows the sector intensity results for 2017, 2018, 2019, and 2020 compared to 2025 sector targets.



The next figure shows the 2020 industry total intensity results for the ONE Future member companies. There were slight increases in intensities for all five segments between 2019 and 2020.



HIGH-LEVEL SUMMARY

A more detailed description of how the methane intensities changed is discussed in each sector report, but a high-level summary of the changes shown in the figures above is listed here:

- In each sector there are a significant number of new members who have been included in the methane intensity calculations for the 2020 report. Despite almost doubling membership, the 2020 intensity increased only slightly from the 2019 intensity due to the work that most new member companies have done in the years prior to joining ONE Future. In addition, some existing members' intensities have varied due to acquisitions and divestitures as well as implementing operational modifications.
- ONE Future members in each of the sectors show the following 2020 intensity results vs. their 2025 goals:
 - **Production**: Intensity of 0.105% vs. goal of 0.283% beating goal by 62%
 - Gathering & Boosting: Intensity of 0.042% vs. goal of 0.080% beating goal by 47%
 - Processing: Intensity of 0.017% vs. goal of 0.111% beating goal by 85%
 - Transmission & Storage: Intensity of 0.142% vs. goal of 0.301% beating goal by 53%
 - **Distribution**: Intensity of 0.118% vs. goal of 0.225% beating goal by 46%
- Overall production increased by 23% and deliveries to customers increased by 107%, from CY2019 to CY2020.

Due to the year-to-year changes in each sector, the net emissions intensity from ONE Future has remained relatively flat, but is still 58% lower than our 1.0% goal despite a significant growth in membership. ONE Future's overarching goal is to ensure the future of natural gas as a long-term sustainable fuel. That objective will be assured as additional players in the natural gas value chain continue to step-up and embrace the benefits of reducing methane emissions collectively to make a larger impact. We understand that methane emission reductions, when implemented on a flexible performance-based approach and determined by each company, are not just good for the environment, but are also good for the natural gas industry, its employees, customers, communities, and investors.

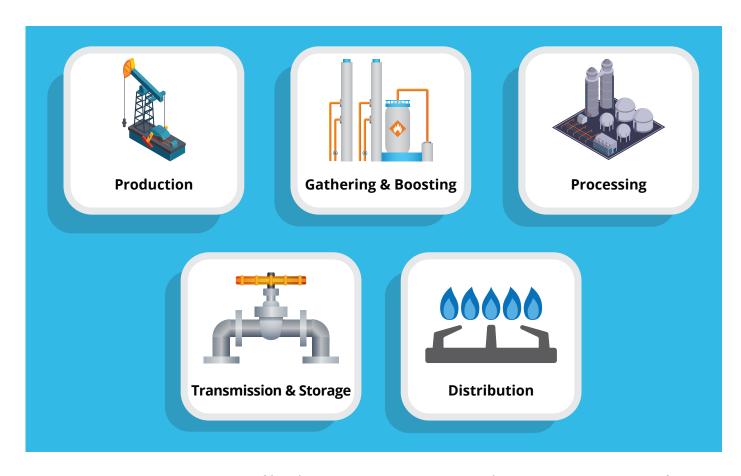
We strive for continuous improvement to ensure that natural gas remains the environmentally responsible fuel of choice for all end-use sectors at all times: power – including natural gas delivered by local distribution companies for power generation; residential, commercial, and industrial demand; and critical emerging markets like transportation. Natural gas also serves a crucial role in generating on-demand backup power that can ramp up when intermittent renewable resources ramp down, thus enabling the expansion of renewable energy while maintaining reliability on which customers depend.

America's future depends on America's energy industry. Energy is the industry that powers every other industry. The lower cost and more reliable our energy is, the more competitive every American company is, ultimately lowering the cost of living for every American.

We believe that ONE Future's results demonstrate that industry can cost-effectively achieve an average emissions intensity rate of 1.0% or less. ONE Future believes that targeted investment in abatement technologies today can yield both significant improvements in environmental performance and supply chain efficiency.

INTRODUCTION TO ONE FUTURE

Leading companies with operations spanning the natural gas value chain.



ONE Future is a unique group of leading energy companies with operations spanning five sectors of the natural gas value chain: (1) oil and natural gas production; (2) natural gas gathering and boosting (G&B); (3) natural gas processing; (4) natural gas transmission and storage (T&S); and (5) natural gas distribution. Since our formation in 2014, we have grown to 51 companies, accounting for some of the largest natural gas producers, transmission, and distribution companies in the United States (U.S.).

ONE Future members operate in 16 out of the 38 production basins¹ and have distribution operations in 36 out of the 50 states, other segments of the value chain operate in multiple regions of the country as well. Therefore, ONE Future's data represent a geographically diverse and material share of the U.S. natural gas supply chain.

ONE Future's members are listed in Table 1.

ONE FUTURE MEMBERS

TABLE 1: ONE FUTURE MEMBER COMPANIES

COMPANY	INDUSTRY SEGMENTS REPORTED FOR CALENDAR YEAR 2020	YEAR JOINED
ANTERO RESOURCES	PRODUCTION, G&B	2018
APACHE CORPORATION	PRODUCTION, G&B	2014
ASCENT RESOURCES	PRODUCTION	2019
ATMOS ENERGY	T&S, DISTRIBUTION	2020
BHE PIPELINE GROUP	PRODUCTION, G&B, PROCESSING, T&S	2018
BKV CORPORATION	PRODUCTION, G&B	2021
BLACK HILLS ENERGY	DISTRIBUTION	2021
BLUE RACER MIDSTREAM	G&B, PROCESSING	2021
BOARDWALK PIPELINES	T&S	2019
CAERUS OIL AND GAS	PRODUCTION, G&B	2020
CONEDISON	DISTRIBUTION	2021
CRESTONE PEAK RESOURCES	PRODUCTION, G&B	2021
CRESTWOOD	G&B, PROCESSING	2020
DOMINION ENERGY	PRODUCTION, G&B, PROCESSING, T&S, DISTRIBUTION	2018
DTE ENERGY	T&S, DISTRIBUTION	2021
DT MIDSTREAM	*	2021
DUKE ENERGY	T&S, DISTRIBUTION	2020
EAGLECLAW MIDSTREAM	G&B, PROCESSING	2020
ENBRIDGE	T&S	2020
ENCINO ENERGY	PRODUCTION	2020
ENSTOR	T&S	2021
EQT CORPORATION	PRODUCTION, G&B	2018
EQUITRANS MIDSTREAM	G&B, T&S	2019
FLYWHEEL ENERGY	*	2021
HESS CORPORATION	PRODUCTION, G&B, PROCESSING	2014
HRM RESOURCES	*	2021
JONAH ENERGY	PRODUCTION	2021
KINDER MORGAN	T&S	2014

RETURN TO TABLE OF CONTENTS

NATIONAL FUEL	*	2021
NATIONAL GRID	DISTRIBUTION	2014
NEW JERSEY NATURAL GAS	DISTRIBUTION	2018
NORTHEAST NATURAL ENERGY	PRODUCTION	2021
NW NATURAL	DISTRIBUTION	2020
ONE GAS	DISTRIBUTION	2020
ONEOK	T&S	2020
ROANOKE GAS	*	2021
SEMPRA	T&S, DISTRIBUTION	2021
SHERIDAN PRODUCTION	PRODUCTION	2021
SOUTHERN COMPANY GAS	DISTRIBUTION	2014
SOUTHERN STAR	T&S	2020
SOUTHWESTERN ENERGY	PRODUCTION	2014
SPIRE	DISTRIBUTION	2021
SUMMIT UTILITIES	DISTRIBUTION	2016
TARGA	G&B, PROCESSING	2021
TC ENERGY	T&S	2016
TERRA ENERGY PARTNERS	*	2021
THQ APPALACHIA	PRODUCTION	2021
UGI	G&B, DISTRIBUTION	2021
WESTERN MIDSTREAM	G&B, PROCESSING	2021
WILLIAMS	G&B, PROCESSING, T&S	2019
XCEL ENERGY	DISTRIBUTION	2020

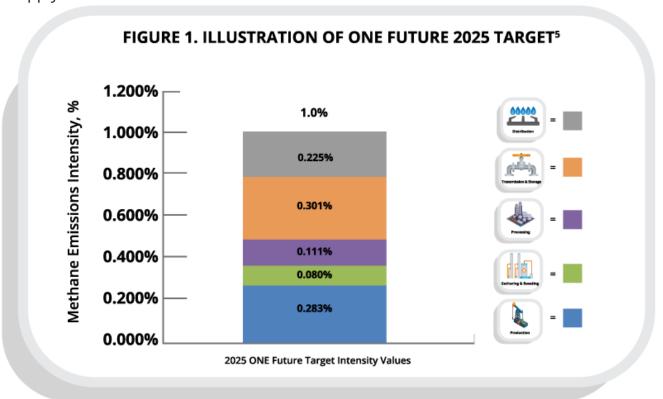
NOTE: *DT MIDSTREAM, FLYWHEEL ENERGY, HRM RESOURCES, NATIONAL FUEL, ROANOKE GAS, AND TERRA ENERGY PARTNERS JOINED ONE FUTURE AFTER METHANE INTENSITY DATA COLLECTION AND CALCULATIONS TOOK PLACE FOR THIS CALENDAR YEAR 2020 REPORT. THEIR EMISSIONS DATA ARE NOT REFLECTED IN THIS CURRENT REPORT BUT WILL BE INCLUDED IN FUTURE YEARS.

Established as a non-profit 501(c)(6) trade group, ONE Future's mission is to reduce methane (CH_4) emissions across all segments of the natural gas value chain by means of innovative, cost-effective, and performance-based actions.

ONE Future's approach is science-based and goal-oriented, but flexible in that member companies choose how they can cost-effectively and efficiently achieve their methane emissions intensity goal for their particular assets – whether by deploying an innovative technology, modifying a work practice, or in some cases replacing or retrofitting high emitting equipment. What is important is that each company demonstrates progress toward the target, which in turn allows the group as a whole to achieve ONE Future's overall emissions intensity target (total CH₄ emissions divided by gross gas production) of 1.0% or less by 2025².

The original goal of 1.0%, established by the founding members of the ONE Future Coalition in 2014, was partially based on EPA's 2012 National Greenhouse Gas Inventory³ (referred to as the GHGI) and its national methane emissions intensity of 1.44%. ONE Future's 1.0% goal was ambitious, but the members believed that it was feasible using existing technology and practices. In addition, when comparing end use applications of fossil fuel and the benefits of greenhouse gas (GHG) reductions, peer-reviewed analyses suggested that natural gas needed to achieve a methane emissions intensity of 1.0% or less across the natural gas value chain⁴. Finally, by orienting our activities toward a specific and measurable outcome (a sustained low rate of methane emissions that is consistent with efficient operations), we focus on identifying the most cost-effective abatement opportunities, which ultimately benefit the end-users of the product.

Figure 1 shows the emissions intensity targets broken down by industry sector. ONE Future's target is to cumulatively achieve the 1.0% methane emissions intensity goal for the natural gas supply chain.



ONE Future reviews our target periodically as we gain a better understanding of the methane intensity data collected each year and the areas that need improvement. No matter the actual base level national emissions intensity for the entire U.S., ONE Future members aim to continuously evaluate and implement voluntary actions to achieve an intensity that is below its 1.0% target.

ONE FUTURE EMISSIONS INTENSITY APPROACH

BY REDUCING METHANE EMISSIONS ACROSS THE NATURAL GAS SUPPLY CHAIN, ONE FUTURE MEMBERS WILL DELIVER MORE VALUE TO OUR CUSTOMERS AND SHAREHOLDERS, AND INCREASE SAFETY WHILE MEANINGFULLY REDUCING OUR GREENHOUSE GAS EMISSIONS.

Natural gas is primarily composed of methane, a clean fuel that emits few air pollutants when burned (for example, in stove tops, in power plants to generate electricity, and in vehicle engines). However, when methane is emitted directly into the atmosphere (and not combusted), it is a potent greenhouse gas. By reducing methane emissions across the natural gas supply chain, ONE Future members will deliver more value to our customers and shareholders, increase safety, and meaningfully reduce our greenhouse gas emissions.

Although the organization was formed in 2014, most ONE Future member companies have invested in methane mitigation technologies and work-practices for several decades. This report explains ONE Future's approach through 2020 for quantifying the methane emissions intensity for each coalition industry sector and presents the resulting methane emissions intensity values based on 2020 data.

To enable multiple companies involved in different sectors of the natural gas supply chain to report methane emissions in a manner that is both consistent and transparent, ONE Future has developed a Methane Emissions Estimation Protocol (ONE Future Protocol). The ONE Future Protocol defines both the annual emissions intensity calculation techniques, as well as the method by which annual results will be compared to the ONE Future sector and overall goals. By using a written protocol, ONE Future members aim to benchmark performance according to a common and uniform set of emission calculations and measurements so that the results are transparent and verifiable.

ONE Future tracks company and program progress by calculating emissions intensities at the national, segment, and member levels. Segment and member emissions intensities are based on total methane emissions for the particular member or for all ONE Future companies with operations in a particular segment divided by a segment-based throughput. The initial segment intensity values are not additive across different segments because they are referenced to different segment-specific throughput quantities in the denominator. However, individual segment intensities can be normalized to total national production rates, allowing the normalized segment intensities to become additive. This normalization, using national production rates, is described in the protocol. ONE Future uses national gas production rates² that are published annually by the U.S. Department of Energy's Energy Information Administration (DOE EIA).

The ONE Future Protocol also provides the procedures that member companies will use to quantify and report their emissions and track their progress. The detailed procedures that companies use to compute their emissions largely follow the EPA's Greenhouse Gas

Reporting Program (referred to as the GHGRP)⁸ or the national GHGI prepared annually by EPA². ONE Future members have included additional emission sources not required for reporting under the GHGRP, and are using the latest EPA approved emission factors in their reports.

ONE Future has identified sector-specific targets to benchmark company progress toward their methane reduction goals, as well as to facilitate comparisons among the ONE Future member companies. The segment intensity values are based on segment emissions divided by segment throughput. Segment intensity targets will be used to track the progress of the participant companies and member emissions will be scaled to the national level in order to track progress toward ONE Future's overall emissions intensity goal.

Sustained SuccessWe Beat Our 1% Intensity Goal by 58% in 2020!

The 4th consecutive year of beating our goal!

2020 Methane intensity



Members are **99.58%** efficient in delivering a molecule of gas from the rig to the burner tip.

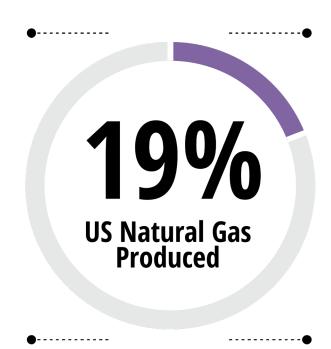
SECTOR SUMMARY

PRODUCTION

2020 Methane Intensity

Goal Actual **0.283% 0.105%**































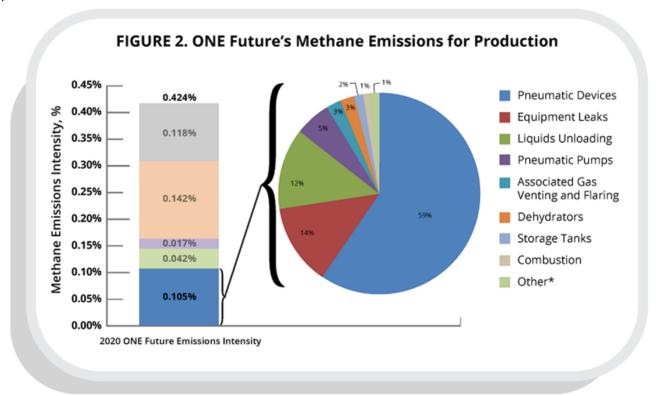






The Production sector consists of companies who have natural gas exploration wells, wells producing natural gas (including oil wells producing gas), and equipment located at the well site associated with natural gas production. Because wells often co-produce natural gas and crude/condensate, the ONE Future Protocol describes an emission allocation approach using the energy content of the various streams to allocate total emissions to those represented by natural gas production only. This allocation is necessary because the ONE Future emissions intensity value is based on the gross production of natural gas (co-produced crude or condensate volumes are not included in the natural gas value chain).

ONE Future member companies represent approximately 19% of the total U.S. natural gas production in 2020. The current (2020) ONE Future methane emissions intensity value for the production sector is 0.105%. Figure 2 shows the percent contribution by emission source type for the Production sector.



^{*}Note, Other includes Completions and Workovers, Reciprocating Compressors, Offshore Emissions, Flare Stacks, Centrifugal Compressors, Pressure Relief Valves (PRVs), Vessel Blowdowns, Well Drilling, and Well Testing

ONE Future's methane intensity value for Production reflects the implementation of some of the following methane reduction activities with production operations¹⁰:

- Replaced or repaired high-bleed pneumatic devices with low or no-bleed devices¹¹.
- Replaced natural gas-powered pneumatic devices to devices that use alternative power such as electrification, where applicable and/or feasible.
- Rerouted natural gas-powered pneumatic device vent gas into process equipment or for combustion in enclosed combustors and/or process heaters.

- Replaced natural gas-powered chemical injection pumps with pumps and/or heat trace pumps that use alternate power such as solar or battery power.
- Implemented voluntary Leak Detection and Repair (LDAR) programs to identify and fix equipment leaks at aboveground sites.
- Included pneumatic controllers in existing LDAR surveys using Optical Gas Imaging (OGI) cameras, to detect and repair malfunctioning devices.
- Addition of continuous emission monitors in some locations.
- Reduced gas well liquids unloading emissions by installing physical systems to remove liquids such as using foaming agents, velocity strings, wellhead compression, plunger lifts, and vent-less restoration.
- Implemented tankless design at new well sites to reduce emissions from tanks, truck loading, and fugitive components.

Although not part of the natural gas value chain, the co-production of crude and/or condensate with natural gas represents additional opportunities for methane emission reductions.

For transparency, if crude/condensate methane emissions from production operations were included in the ONE Future methane emissions intensity calculation, the resulting production sector methane emissions intensity would be 0.113%, as opposed to the emissions intensity value (0.105%) that is based on natural gas production operations only. The result of including emissions from crude/condensate production when calculating the overall emissions intensity across all sectors would be approximately 0.431%, or 1.7% higher than the ONE Future value which is based on natural gas production operations only (0.424%).

It is difficult to assess long-term trends since this is only the fourth year of ONE Future reporting. However, some short-term year-to-year observations can be made. Addition of new member companies as well as acquisitions and divestitures made by existing member companies help explain some of the year-to-year differences. For the Production sector, emissions from pneumatic devices remained the largest contributor to this sector's total reported emissions and its contribution to the total emissions decreased from Calendar Year 2019 (CY2019) to CY2020. Equipment leaks are the second highest contributor in CY2020 as it was in CY2018. Liquids unloading went from the second largest contributor for CY2019 to the third largest contributor in CY2020. Emissions from pneumatic pumps is now the fourth largest contributor in CY2020.

PRODUCTION MILESTONES FOR CY2020

Production - Methane Intensity of 0.105% vs. goal of 0.283% - beating goal by 62%.

Five net new production member companies.

ONE Future production member companies now represent approximately 19% of the total U.S. natural gas production in CY2020.

Overall production increased 23% from CY2019 to CY2020.

SECTOR SUMMARY

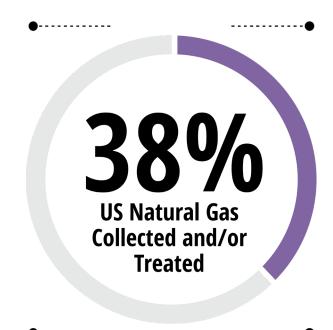
GATHERING AND BOOSTING

2020 Methane Intensity

Goal 0.080% 0.042%

Actual

































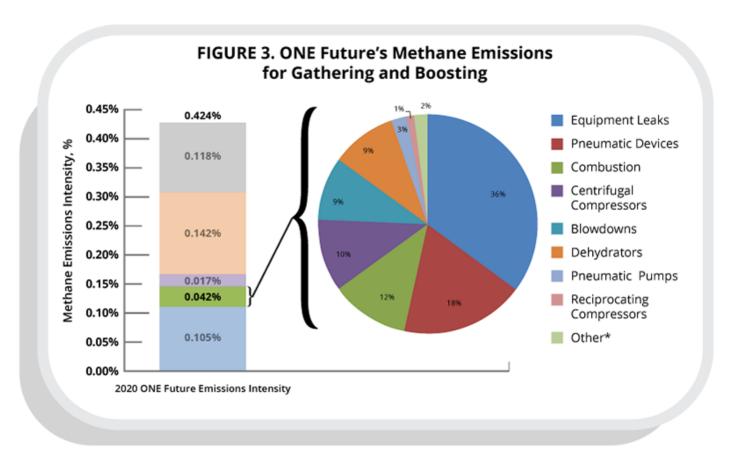


Western Midstream



The Gathering and Boosting (G&B) sector includes companies with pipelines and other equipment used to collect natural gas from production facilities, treat the gas as needed through dehydration or acid gas removal, and compress the gas to transport it to a natural gas processing facility, a natural gas transmission pipeline, or to a natural gas distribution pipeline. Methane emissions from equipment leaks, natural gas-operated pneumatic controllers, and combustion are the three largest sources of emissions for this sector.

ONE Future member companies represent approximately 38% of the total U.S. natural gas produced and handled in G&B¹² in 2020. Based on 2020 emissions data from ONE Future member companies, the methane emissions intensity for the G&B sector is 0.042%. Figure 3 shows the percent contribution by emission source type for the Gathering and Boosting segment.



*Note, Other includes Flare Stacks and Storage Tanks

ONE Future's methane intensity value for G&B reflects the implementation of some of the following methane reduction activities by ONE Future members with G&B operations¹³:

 Implemented voluntary LDAR programs to identify and fix equipment leaks at aboveground sites.

RETURN TO TABLE OF CONTENTS

- Replaced high-bleed natural gas pneumatic devices with low or no-bleed devices.
- Included pneumatic controllers in existing LDAR surveys using Optical Gas Imaging (OGI) cameras, to detect and repair malfunctioning devices.
- Installed electrically operated glycol pumps to replace natural gas operated pumps.
- Programmed compressor unit controls to reduce pressure prior to venting.
- Maximized the utilization of compressors to optimize combustion performance and fuel efficiency.
- Implemented performance-based maintenance programs to determine the need for compressor rod packing replacement. A performance-based program uses the measured leak rate of the rod packing to objectively evaluate whether rod packing needs replacement.
- Continuous monitoring of operational parameters to quickly notify operators of performance issues and operating conditions.
- Improved piping design to eliminate direct venting during compressor blowdowns.
- Full recovery of dehydration still vent low pressure gas stream (post Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) recovery) using vapor recovery units (VRU).
- Installed electrical driven compressor units at some facilities.
- Improved piping and process design to minimize direct venting during pipeline maintenance activities.

Like the Production sector, the Gathering and Boosting sector also handles both gas and liquid streams. Therefore, GHG emissions from gathering and boosting operations are allocated between gas streams and crude/condensate using the energy content of the natural gas relative to the total energy content of all streams. For transparency, if all methane emissions from gathering and boosting operations were included in the ONE Future methane emissions intensity calculation, the resulting methane emissions intensity would be only slightly higher at a rate of 0.044%, but still far below its goal of 0.080%.

National data for the G&B sector are limited as U.S. GHGRP reporting for this sector only began in 2016. As a result, the methane emissions intensity value for this sector is scaled nationally by gross gas production, just as for the Production sector. This is the same as combining the emissions from Production and G&B operations together.

It is difficult to assess long-term trends since this is only the fourth year of ONE Future reporting. However, some short-term year-to-year observations can be made. Addition of new member companies as well as acquisitions and divestitures made by existing member companies help explain some of the year-to-year differences. In 2019 the methane intensity was 0.033%, in 2020 the G&B intensity increased 27% while throughput increased 53%. Emission contributions from equipment leaks and pneumatic devices were the highest and second highest for this sector's emissions in CY2020 whereas these two emissions sources were the second and third highest contributors, respectively in CY2019. Combustion emissions' contribution increased this year and is now the third largest contributor in this sector.

GATHERING & BOOSTING MILESTONES FOR CY2020

Gathering & Boosting - Methane Intensity of 0.042% vs. goal of 0.080% - beating goal by 47%.

Nine net new G&B member companies.

ONE Future G&B member companies represent approximately 38% of the total U.S. natural gas production in CY2020.

Overall G&B throughput increased 53% from CY2019 to CY2020.

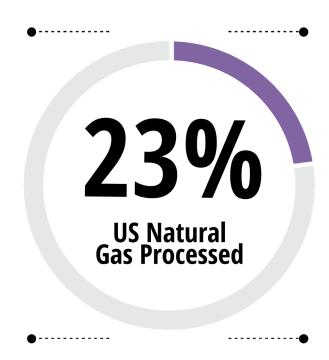
SECTOR SUMMARY

PROCESSING

2020 Methane Intensity

Goal Actual **0.111% 0.017%**

















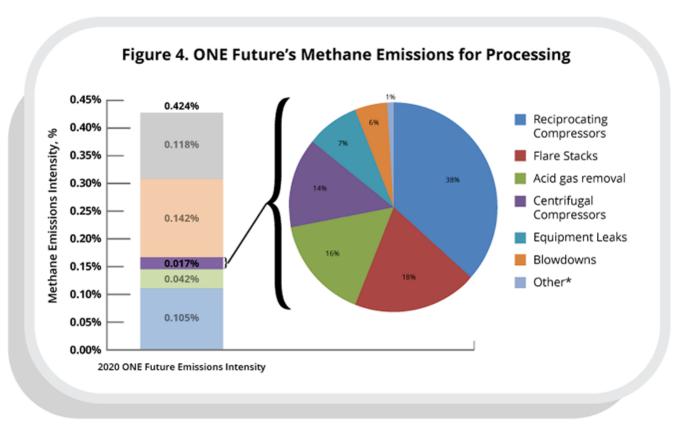


Western Midstream



The Processing sector is made up of companies that operate gas processing plants where hydrocarbons and fluids in produced natural gas are separated to result in natural gas that meets pipeline specifications. Equipment associated with the gas processing segment includes all equipment inside a gas processing plant, such as: absorption units or cryogenic expanders, fractionators, dehydrators, acid gas removal units, and compressors. Based on the EPA's national greenhouse gas inventory (GHGI)¹⁴, equipment leaks and engine exhaust from uncombusted natural gas are the largest sources of methane emissions for the Processing sector.

ONE Future members reporting emissions for the natural gas Processing segment make up approximately 23% of the total national volume of gas processed. The methane emissions intensity for the processing sector is 0.017% on a net gas produced basis. Figure 4 shows the percent contribution by emission source type for the Processing segment.



*Note, Other includes Combustion, Dehydrators and Pneumatic Devices

ONE Future's methane intensity value for Processing reflects the implementation of some of the following methane reduction activities by the ONE Future companies with processing operations¹⁵:

- Replaced or repaired high-bleed pneumatic devices with low or no-bleed devices.
- Performed LDAR programs to identify and fix equipment leaks at aboveground sites.
- Installed vapor recovery controls on some dehydrators.
- Installed vapor recovery controls on some tanks.
- Used certified control devices to improve destruction efficiencies.
- Replaced rod packing more frequently than regulatory requirements.
- Used blowdown headers to reduce direct venting during compressor and equipment blowdowns.

Although, the natural gas Processing sector also handles both gas and liquid streams, the volume of natural gas liquids (NGL) and the corresponding energy content is small compared to natural gas. Allocating methane emissions between natural gas and NGL on an energy basis has a small impact on the natural gas Processing sector methane emissions intensity, changing the intensity value from 0.017% to 0.019% which is still far lower than its 0.111% goal.

It is difficult to assess long-term trends since this is only the fourth year of ONE Future reporting. However, some short-term year-to-year observations can be made. Addition of new member companies as well as acquisitions and divestitures made by existing member companies help explain some of the year-to-year differences. The emissions intensity for 2019 was 0.012%, and in 2020 the intensity increased 39% while throughput increased by 158%. Emissions from reciprocating compressors and flare stacks were the highest and second highest contributors this year for the processing sector. Acid gas removal unit emissions contribution remained the third highest in CY2020 as it was in CY2019. The centrifugal compressors' emission contribution decreased by roughly a half and moved from the highest contributor in CY2019 to fourth highest contributor in CY2020.

PROCESSING MILESTONES FOR CY2020

Processing - Methane Intensity of 0.017% vs. goal of 0.111% - beating goal by 85%.

Six new processing member companies.

ONE Future processing member companies represent approximately 23% of the total U.S. natural gas processed in CY2020.

Overall processing throughput increased 158% from CY2019 to CY2020.

SECTOR SUMMARY

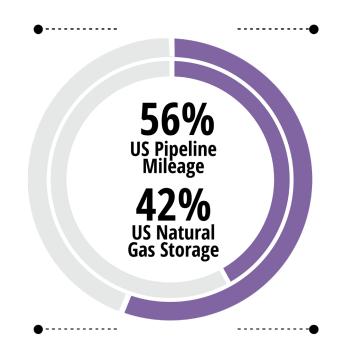
TRANSMISSION AND STORAGE

2020 Methane Intensity

Goal Actual

0.301% 0.142%































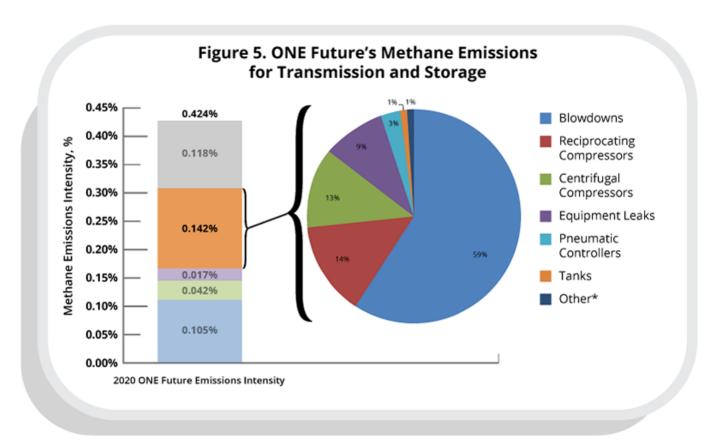






The Transmission and Storage (T&S) sector is comprised of companies with high pressure, large diameter pipelines that transport natural gas from production and processing to natural gas distribution systems or large-volume consumers such as power plants or chemical plants. This includes interstate and intrastate facilities. Storage facilities, such as underground storage in expended gas reservoirs and liquified natural gas (LNG) storage, are used by transmission companies to hold gas and LNG to allow for seasonal demand differences. EPA combines T&S into one segment since many of the storage facilities are owned and operated by transmission companies, and in some cases, the surface facilities (compression at underground storage, for example) are similar to other transmission facilities. Compression of natural gas is a significant operation for the T&S sector, and therefore emissions from compressors, including fugitive components, components designed to vent gas, and compressor exhaust play a larger role in methane emissions.

Based on 2020 emissions data from ONE Future T&S companies, the methane emissions intensity for the T&S sector is 0.142%. Figure 5 shows the percent contribution by emission source type for the Transmission and Storage segment.



*Note, Other includes Dehydration, Combustion and Flare Stacks

ONE Future's methane intensity value for T&S reflects the implementation of some of the following methane reduction activities by the ONE Future companies with T&S operations¹⁶:

· Implemented voluntary LDAR programs to identify and fix equipment leaks at

- aboveground sites.
- Implemented performance-based monitoring and replacement for reciprocating compressor rod packing.
- Used dry seals over wet seals for centrifugal compressor installations.
- Replaced four stroke lean burn engines with more efficient turbines that have lower methane slip rates.
- Replaced gas-fired engine compressors with electric motors.
- Converted reciprocating engine and turbine gas starters to electric or air operated starters.
- Reduced maintenance blowdown emissions by operating practice changes (such as increasing the length of pressurized hold times on compressors to reduce number of compressor unit blowdowns to atmosphere).
- Reduced blowdown emissions by implementing pipeline pump-down techniques that lowered the pipeline pressure prior to transmission pipeline blowdowns and conducted regulatory required Emergency Shutdown tests (ESDs) utilizing "vents blocked" tests.
- Used sleeves and composite wraps to repair pipelines, eliminating the need to blowdown
 the pipeline. Used pipeline isolation systems and hot taps to make new connections,
 eliminating the need to blowdown the pipeline.
- Replaced or repaired high emitting pneumatic devices with low or no-bleed devices.
- Used cathodically protected pipe.

ONE Future member companies represent approximately 56% of the total U.S. natural gas transmission pipeline miles and 42% of the total natural gas stored in the U.S. Since the same natural gas can pass through multiple transmission pipelines before being delivered to downstream users, the total overall throughput volume reported to PHMSA and EIA for this sector exceeds the total volume of natural gas produced. Because the same gas can be recorded as throughput multiple times within this sector, ONE Future made an additional adjustment to total throughput in addition to being scaled to gross gas production as outlined in the ONE Future Protocol. This adjustment was intended to more closely represent the throughput solely within the ONE Future T&S companies by scaling nationally based on average gas volume per pipeline mile using data collected from PHMSA and the EIA.

It is difficult to assess long-term trends since this is only the fourth year of ONE Future reporting. However, some short-term year-to-year observations can be made. The emissions intensity increased from 0.112% in 2019 to 0.142% in 2020 and throughput increased by 71%. Addition of new member companies and including emissions from LNG storage facilities (not included in previous years of reporting) as well as acquisitions and divestitures made by existing member companies help explain some of the year-to-year differences. For the transmission and storage sector, blowdowns remained the highest contributor for the third year in a row. Reciprocating compressor and centrifugal compressor emissions continued to be the second and third highest contributors, respectively in CY2020 as they were in CY2019.

TRANSMISSION & STORAGE MILESTONES FOR CY2020

Transmission and Storage – Methane Intensity of 0.142% vs. goal of 0.301% - beating goal by 53%.

Six net new T&S member companies.

ONE Future T&S member companies represent approximately 56% of the total U.S. natural gas transmission pipeline miles and 42% of the total natural gas stored in the U.S. in CY2020.

Overall T&S throughput increased 71% from CY2019 to CY2020.

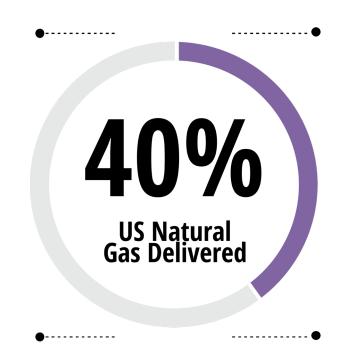
SECTOR SUMMARY

DISTRIBUTION

2020 Methane Intensity

Goal Actual **0.225% 0.118%**































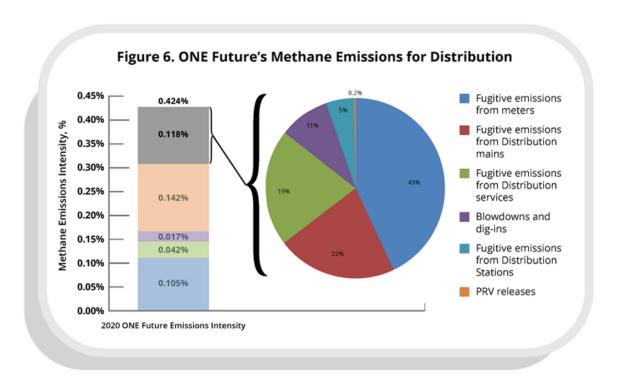






The Distribution sector covers companies with natural gas pipelines that take high-pressure gas from transmission systems and gathering systems, reduce the pressure, and distribute the gas through primarily underground mains and service lines to individual end users. This segment includes natural gas mains and services, metering and pressure regulating stations, and customer meters. The ONE Future member companies represent 40% of the total U.S. natural gas delivered to consumers and 41% of the total national miles of distribution mains.

Figure 6 shows the percent contribution by emission source type for the Distribution segment. Fugitive emissions from outdoor residential meters, commercial meters, and industrial meters. have become the most significant source of emissions for the distribution sector. Distribution mains and services have remained significant sources of methane emissions and are a function of pipeline material. ONE Future members include companies with large inventories of aged infrastructure, including cast iron pipe and unprotected steel pipe. This is reflected in the 2020 methane emissions intensity value of 0.118% (based on gross gas production) for the distribution sector.



As can be seen in Figure 6, the majority of emissions for the Distribution sector come from distribution meters, which is primarily due to the updated GHGI emission factors used that increased significantly from past years. Distribution mains fugitive emissions also make up a significant amount of emissions for the Distribution sector. Within this category, the highest contributor is fugitive emissions from unprotected steel mains. The second and third highest contributors are fugitive emissions from protected steel mains and cast iron mains, respectively. The lowest contributor is fugitive emissions from plastic mains, while plastic mains have the largest mileage reported of the four main types of distribution mains.

RETURN TO TABLE OF CONTENTS

ONE Future's methane intensity value for Distribution reflects the implementation of some of the following methane reduction activities by the ONE Future companies with distribution operations¹⁹:

- Made significant progress in replacing higher emitting pipe and have ongoing pipeline replacement initiatives to improve system integrity and reduce methane emissions.
- Implemented voluntary LDAR programs to identify and fix pipeline and equipment leaks at aboveground sites.
- Increased leak survey frequency.
- Used pipeline pump-down procedures to minimize emissions when mains must be repaired or retired.
- Replaced or repaired high emitting pneumatic devices with low or no-bleed devices.
- Ongoing implementation and improvement of damage prevention programs.
- Efforts to reduce/eliminate the Grade 3 leak backlog.
- Implemented best management practices that identify higher emitting leaks to target for quick repair and help eliminate the largest emitters that can contribute up to 50% of the emissions from the pipeline system.
- Used innovative aerial survey detection technology over areas with non-state-of-the-art pipeline materials.
- Improved emergency response time to enhance safety and reduce emissions.

It is difficult to assess long-term trends since this is only the fourth year of ONE Future reporting. However, some short-term year-to-year observations can be made. This sector's intensity increased from 0.092% in 2019, to 0.118% in 2020, while throughput increased by 107%. Addition of new member companies as well as acquisitions and divestitures made by existing member companies help explain some of the year-to-year differences. In the distribution sector, the fugitives from meters and fugitives from distribution mains emissions sources switched in magnitude from CY2019 to CY2020. Emissions from distribution services and blowdowns/dig-ins remained the third and fourth highest contributors, respectively from CY2019 to CY2020.

DISTRIBUTION MILESTONES FOR CY2020

Distribution – Methane Intensity of 0.118% vs. goal of 0.225% – beating goal by 46%.

Nine new distribution member companies.

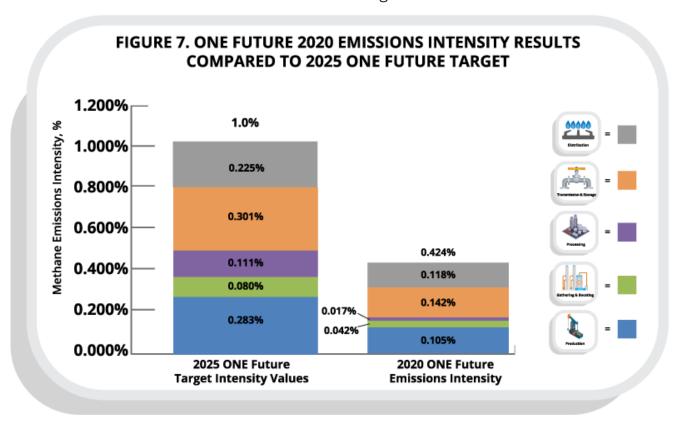
ONE Future distribution member companies represent 40% of the total U.S. natural gas delivered by local distribution companies and 41% of the total national miles of distribution mains.

Overall quantity of gas delivered to end users increased 107% from CY2019 to CY2020.

CONCLUSIONS

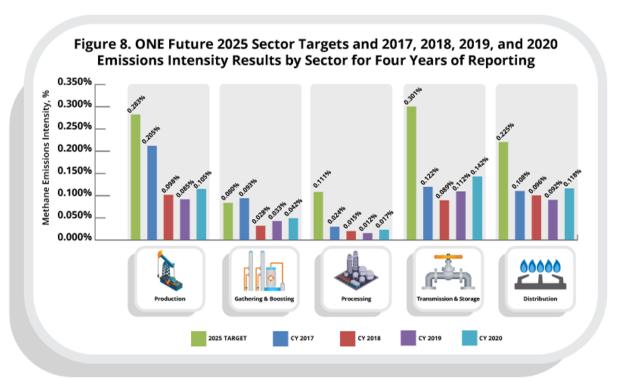
ONE Future is pleased to present the current consolidated progress of our member companies toward our collective goal of achieving an average rate of methane emissions across the entire natural gas value chain of 1.0% or less of the methane portion of gross natural gas produced. ONE Future member companies' collective emissions intensity has already exceeded the 2025 goal, and we encourage other natural gas companies to join us to continue reducing the emissions intensity of the entire natural gas value chain.

Figure 7 shows ONE Future's 2020 cumulative methane emissions intensity by sector of 0.424% versus the ONE Future's 2025 cumulative target of 1.0%.



Although ONE Future's 2020 data resulted in a methane emissions intensity value well below the 1.0% target, ONE Future members are committed to continual improvements and ongoing methane emission reduction activities as well as openly and transparently sharing best practices through technical reports and workshops to enable others across the industry to capture key learnings from ONE Future's successful results.

This is the fourth year of ONE Future reporting, Figure 8 shows the 2025 sector intensity targets as well as the sector intensity results comparing 2017, 2018, 2019, and 2020. There were minor increases in intensity for all five segments while reporting members nearly doubled.



Some explanation of the changes shown in Figure 8 are listed here:

PRODUCTION

There was an overall increase in the number of companies reporting in this sector; eight new companies joined, and three companies discontinued their membership. Members also sold production assets, as well as acquired assets. The number of offshore production assets remained unchanged from CY2019, which generally have lower reported emissions, and has a high allocation of emissions to oil production.

GATHERING & BOOSTING

There was an overall increase in the number of companies reporting in this sector; eleven new companies joined, and two companies discontinued their membership. Some members have sold gathering and boosting assets, as well as acquired assets.

PROCESSING

There was a threefold increase in the number of companies reporting in this sector; there are now nine reporting members in this sector in CY2020 versus three reporting members in CY2019.

TRANSMISSION & STORAGE

There was an increase in the number of companies reporting in this sector; seven new companies joined, and one company discontinued reporting in this sector. This year, emissions from LNG storage facilities were included in the intensity calculations.

DISTRIBUTION

We more than doubled number of companies reporting in this sector; there are now sixteen reporting members in this sector in CY2020 versus seven reporting members in CY2019.

OVERALL SUPPLY CHAIN

Overall methane intensity increased slightly year-over-year while national representation of ONE Future companies increased significantly.

Due to the year-to-year changes in sectors and increasing membership from 24 reporting companies to 45 reporting companies in this year's report, the 2020 emissions intensity from ONE Future was 0.424%, which is relatively flat year-over-year, and 58% below the overall goal of 1.0%.

ONE Future's overarching goal is to ensure the future of natural gas as a long-term sustainable fuel and that objective will be assured as additional players in the natural gas value chain continue to step up and embrace the benefits of reducing methane emissions. Our responsibility and core business is to safely and reliably provide sustainable natural gas to our customers and communities; reducing methane losses aligns with those goals. We understand methane emission reduction is not just good for the environment but is also good for the natural gas industry, its employees, customers, communities, and investors.

FOOTNOTES AND REFERENCES

- ¹ TOTAL PRODUCTION BASIN COUNT IS BASED UPON THE NUMBER OF US BASINS WITH PRODUCTION AND EMISSIONS REPORTED TO THE US EPA UNDER THE GHGRP. THE BASINS ARE DEFINED BY THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (AAPG).
- ² THE NATURAL GAS SUPPLY CHAIN DOES NOT ACTUALLY RECEIVE THE "GROSS GAS PRODUCTION", AS SOME OF THE GAS IS RE-INJECTED FOR RE-PRESSURING BEFORE LEAVING THE PRODUCTION SITE. A "NET GAS PRODUCTION" VALUE CAN BE CALCULATED THAT MORE ACCURATELY REFLECTS THE GAS THAT FLOWS INTO THE SUPPLY CHAIN. THIS NET GAS VALUE SUBTRACTS THE DOE EIA "REPRESSURING" GAS FROM THE GROSS GAS PRODUCTION.
- ³ HTTPS://WWW.EPA.GOV/GHGEMISSIONS/INVENTORY-US-GREENHOUSE-GAS-EMISSIONS-AND-SINKS-1990-2012
- ⁴ HTTPS://WWW.IEA.ORG/PUBLICATIONS/FREEPUBLICATIONS/PUBLICATION/WEO-2012---SPECIAL-REPORT---GOLDEN-RULES-FOR-A-GOLDEN-AGE-OF-GAS.HTML
- ⁵ INDIVIDUAL SEGMENT INTENSITY TARGETS AND RESULTS ARE DISPLAYED WITH THREE DECIMAL PLACES. ONE FUTURE RECOGNIZES THAT THERE IS LESS ACCURACY IN THE THIRD DECIMAL PLACE THAN IN THE VALUES IN THE FIRST TWO DECIMAL PLACES, BUT THIS FORMAT IS USED THROUGHOUT THE DOCUMENT FOR CONSISTENCY.
- ⁶ HTTPS://ONEFUTURE.US/WP-CONTENT/UPLOADS/2020/09/ONE-FUTURE-METHANE-INTENSITY-PROTOCOL_V3_3AUG2020.PDF ONE FUTURE RESERVES THE RIGHT TO UPDATE THE CONTENTS OF THE ONE FUTURE PROTOCOL AT ANY TIME TO MAINTAIN ALIGNMENT WITH EPA DEFINITIONS AND METHODOLOGIES AND REFLECT EPA'S MOST CURRENT GHG EMISSIONS DATA.
- ⁷ FOR THE PURPOSES OF THE ONE FUTURE CALCULATION, NATURAL GAS FROM ALASKAN PRODUCTION IS NOT INCLUDED AS GAS PRODUCTION BECAUSE CURRENTLY IT DOES NOT ENTER THE NATURAL GAS VALUE CHAIN.
- 8 HTTPS://WWW.EPA.GOV/GHGREPORTING
- ⁹ HTTPS://WWW.EPA.GOV/GHGEMISSIONS/INVENTORY-US-GREENHOUSE-GAS-EMISSIONS-AND-SINKS-1990-2018
- ¹⁰ THESE LISTED METHANE REDUCTION ACTIVITIES ARE INTENDED TO REPRESENT EXAMPLES OF ACTIVITIES THAT SOME OF THE ONE FUTURE COMPANIES HAVE IMPLEMENTED IN 2020 OR PRIOR YEARS, BUT EACH COMPANY HAS THE FLEXIBILITY TO DECIDE ON THE ACTIVITIES TO IMPLEMENT BASED ON WHAT IS MOST APPROPRIATE AND FEASIBLE FOR THEIR COMPANY.
- "GIVEN THAT PNEUMATIC EMISSIONS REPORTED HERE ARE DRIVEN SOLELY BY EPA GHGRP EMISSION FACTORS AND NOT BY DIRECT FIELD MEASUREMENTS, THIS DEVICE REPLACEMENT APPROACH IS THE ONLY WAY TO AFFECT THE LARGE EMISSIONS REPORTED HERE. IN THE FUTURE, ACTUAL FIELD MEASUREMENTS OF PNEUMATICS MAY BE USED WHICH COULD REFLECT REDUCTIONS FROM VOLUNTARY PNEUMATIC DEVICE MONITORING AND REPAIR PROGRAMS.
- ¹² THERE IS NO PUBLISHED NATIONAL GATHERING AND BOOSTING GAS THROUGHPUT VALUE, THEREFORE THE NATIONAL GROSS GAS PRODUCTION VALUE IS USED. THIS SAME NATIONAL PRODUCTION VALUE IS USED WHEN CONVERTING THE G&B SECTOR INTENSITY TO THE ADDITIVE VERSION OF THE INTENSITY, THE DETAILS OF WHICH CAN BE FOUND IN THE ONE FUTURE PROTOCOL.

- ¹³ THESE LISTED METHANE REDUCTION ACTIVITIES ARE INTENDED TO REPRESENT EXAMPLES OF ACTIVITIES THAT SOME OF THE ONE FUTURE COMPANIES MAY HAVE IMPLEMENTED IN 2020 OR PRIOR YEARS, BUT EACH COMPANY HAS THE FLEXIBILITY TO DECIDE ON THE ACTIVITIES TO IMPLEMENT BASED ON WHAT IS MOST APPROPRIATE AND FEASIBLE FOR THEIR COMPANY.
- ¹⁴ U.S. EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2019, EPA 430-R-21-005, APRIL 2021.
- ¹⁵ THESE LISTED METHANE REDUCTION ACTIVITIES ARE INTENDED TO REPRESENT EXAMPLES OF ACTIVITIES THAT SOME OF THE ONE FUTURE COMPANIES MAY HAVE IMPLEMENTED IN 2020 OR PRIOR YEARS, BUT EACH COMPANY HAS THE FLEXIBILITY TO DECIDE ON THE ACTIVITIES TO IMPLEMENT BASED ON WHAT IS MOST APPROPRIATE AND FEASIBLE FOR THEIR COMPANY.
- ¹⁶ THESE LISTED METHANE REDUCTION ACTIVITIES ARE INTENDED TO REPRESENT EXAMPLES OF ACTIVITIES THAT SOME OF THE ONE FUTURE COMPANIES MAY HAVE IMPLEMENTED IN 2020 OR PRIOR YEARS, BUT EACH COMPANY HAS THE FLEXIBILITY TO DECIDE ON THE ACTIVITIES TO IMPLEMENT BASED ON WHAT IS MOST APPROPRIATE AND FEASIBLE FOR THEIR COMPANY.
- ¹⁷ PRIOR TO THE APRIL 2021 RELEASE OF THE CY2019 GHGI ANNEX TABLE 3.6-2, INDUSTRIAL AND COMMERCIAL METERS BOTH HAD AN EMISSION FACTOR OF 9.7 KG CH4/METER. THIS YEAR, THE GHGI EMISSION FACTORS FOR INDUSTRIAL AND COMMERCIAL METERS INCREASED TO 105 KG CH4/METER AND 23.4 KG CH4/METER, RESPECTIVELY.
- ¹⁸ HTTPS://WWW.EPA.GOV/GHGEMISSIONS/NATURAL-GAS-AND-PETROLEUM-SYSTEMS-GHG-INVENTORY-ADDITIONAL-INFORMATION-1990-2019-GHG
- ¹⁹ THESE LISTED METHANE REDUCTION ACTIVITIES ARE INTENDED TO REPRESENT EXAMPLES OF ACTIVITIES THAT SOME OF THE ONE FUTURE COMPANIES MAY HAVE IMPLEMENTED IN 2020 OR PRIOR YEARS, BUT EACH COMPANY HAS THE FLEXIBILITY TO DECIDE ON THE ACTIVITIES TO IMPLEMENT BASED ON WHAT IS MOST APPROPRIATE AND FEASIBLE FOR THEIR COMPANY.

APPENDIX A

FUTURE CONSIDERATIONS AND IMPROVEMENTS FOR THE PROGRAM

Considerations for ONE Future improvements between now and 2025 are expected to include the following:

- Addition of new member companies, expanding our representation and our flexible emission reduction principles.
- Additional reductions, as companies continue to make improvements in data collection efforts, emission estimates, and reducing methane emissions.
- Updates to the national emissions intensity basis (as EPA makes updates to the methodology) and updates to GHGRP and GHGI emission factors.
- Addition of company measured data where it can rigorously supplant the emission factors used. This may raise or lower net emissions from ONE Future companies. (This is especially important for large categories like pneumatic controller emissions, which may not be well represented by the simple emission factor approach currently used by the EPA).
- Annual review of the ONE Future Protocol to determine the need to incorporate improvements as described in the above items.
- Implementation of a third party assurance program to audit the calculation process and company data.
- Periodic review of the methane intensity targets to determine whether adjustments to targets are needed based on data collected and actual methane intensities reported by ONE Future.

APPENDIX B

YEAR-TO-YEAR CHANGES IN THE EMISSION CALCULATION APPROACH

Since ONE Future members begin with their reported emissions to the EPA's GHGRP, it is important to comment on any calculation approach changes that were adopted by the EPA for CY2020 as well as any changes or updates to ONE Future's calculation methodology. Between CY2019 and CY2020, there were no changes to calculation methodology pertaining to EPA's GHGRP. This year, ONE Future did include emissions from LNG Storage facilities in the T&S sector intensity calculations. Also included in this year's distribution calculations are emissions from copper, ductile iron, and other material mains as well as ductile iron and other material services. As is done every year, the GHGI emission factors were updated and used in calculations. Aside from these updates, all other calculation methodologies used in this report unrelated to EPA's GHGRP did not change from CY2019 to CY2020.

NATURAL GAS



POWERS AMERICA

There are nearly 179 million natural gas customers across the U.S. Natural gas was the largest source of U.S. electricity generation in 2019 – 38%.



LOCAL AND PLENTIFUL

The U.S. produces more natural gas than any other nation in the world, enough to meet America's energy needs for more than 110 years.



AFFORDABLE

The affordability of natural gas has led to \$50 billion in savings for American households since 2015 and \$121 billion in savings for American businesses, since 2009.

