

# Pipeline & Gas Journal

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## LOOKING BACK:

Top 10 Stories  
Of the Past Year


## ARCTIC ANEW:

Russia, EU Vie  
For Position

## New Dawn:

Carbon Capture  
And Pipelines

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# Plastic Pipe Continuing to Play Key Role in Energy Industry

By David M. Fink, President, Plastics Pipe Institute, Inc. (PPI)

It's difficult to go a day without hearing that a business, an industry, a state, or a nation has net zero aspirations. Countries around the globe have taken up the challenge to meet aggressive environmental goals and reduce greenhouse gas emissions.

Some residential and commercial customers are looking for "responsibly sourced" gas. Sourcing energy is one thing; delivering it safely and cost effectively is another. Utilities, public works and city officials plus pipeline operators and piping manufacturers need to ensure that they are ready for changing gas compositions, more aggressive replacement programs, reduced emissions requirements and new regulations.

Much of today's energy piping infrastructure is made of polyethylene (MDPE and HDPE), polyamide (PA12), and spoolable composite piping. PE pipe has served our infrastructure needs for decades. More and more upgraded or new piping systems are made from plastic pipe, but there is a lot of work to be done on the renewable energy front.

Thanks in large part to the expanded use of plastic piping in our energy gathering and distribution systems, we have the ability to use a large part of our existing infrastructure to store and distribute sustainable gases while meeting current and upcoming regulations.

## Methane Emissions

More than 100 countries have just signed a pledge led by the United States and the European Union to reduce global methane emissions by 30 percent by the end of the decade. President Biden said at COP26 that

the United States would cut its methane emissions by strengthening regulations on leaks from oil and gas production.

Many oil and gas companies have announced plans to end routine flaring in the near future and are promising net-zero emissions. Some companies are already fulfilling those promises. For example, Apache Corp., announced in early November that it has ended routine flaring in its U.S. onshore operations ahead of schedule.

One obstacle identified to capturing more natural gas is long-haul takeaway capacity. More connections are needed to gathering systems which means more piping.

Ryan Keys, president and co-founder of Triple Crown Resources in an Oct. 30 Midland Reporter-Telegram article said, "We can sell it for a little more because people want responsibly sourced energy. There are 100 reasons to do it and zero reasons not to," he said. "In the end, consumers win because they've found sources of cheaper gas and can lower their power bills and the environment is protected. This is literally one situation where everyone on the planet wins."

## Sustainable Hydrogen

There are fewer than 1,600 miles of dedicated hydrogen pipelines (700 miles of which is under PHMSA jurisdiction). Efforts are underway to utilize our vast gas distribution network as a battery by transporting hydrogen mixed with natural gas to reduce overall emissions. Hydrogen and hydrogen blends are expected to play a key role in decarbonization efforts around the globe.

According to S&P Global Market Intelligence (September 2021), in just the past year, U.S. natural gas utilities have announced more than 25 new pilot projects to help the industry figure out how to best transport hydrogen and to help the migration to this low-carbon fuel. The goal for many utilities is to blend hydrogen into natural gas distribution systems in order to reduce carbon emissions. The reason, of course, is quite simple - when burned, hydrogen does not release carbon.

These pilot projects coupled with the direct experience of utilities such as Hawaii Gas, where 10-12% hydrogen has been blending into its natural gas for nearly 50 years, plus dozens of extensive research programs in the EU, Canada, Australia, and in the U.S. are providing the insights needed to realize the expanded use of alternative fuels.

## Increasing Regulations

We're likely to see increased regulation of gas gathering, transmission and distribution systems related to methane mitigation, flaring, and the use of sustainable gases such as Renewable Natural Gas (RNG) and hydrogen. The EPA, FERC, and DOT/PHMSA are all looking at measures to reduce emissions. PHMSA has long been focused on safety but is now being asked to put methane reduction on the front burner while not sacrificing safety.

Consistent with their safety and environmental mission, the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA)



is issuing a final rule that expands federal pipeline safety oversight to all onshore gas gathering pipelines.

The new rule will apply federal pipeline safety regulations to tens of thousands of miles of unregulated gas gathering pipelines and require pipeline operators to report safety information for all gas gathering lines, representing more than 425,000 additional miles covered by federal reporting requirements.

In addition, earlier in the year, PHMSA released an advisory bulletin (ABD-2021-01) to push gas utilities to update their inspection and maintenance plans by the end of the year to help reduce methane release.

A recent DOT Order 5610.2C requires DOT agencies to achieve environmental justice as part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects, including interrelated social and economic effects, of their programs, policies, and activities on minority populations, low-income populations, and other disadvantaged communities.

The Biden administration has announced a new proposal to slash methane emissions from oil and natural gas

that would require states to create methane standards for existing wells, tighten methane leak monitoring, mandate the use of zero-emission pneumatic controllers and restrict gas venting.

The proposal by the Environmental Protection Agency is estimated to cut methane emissions by roughly 45 million short tons through 2035, and a final version of the rule is expected to be published by the end of 2022.

The EPA is proposing these actions in accordance with its legal obligations and authorities following a review directed by EO 13990, “Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis,” issued on Jan. 20.

### Piping Infrastructure

The Columbia University Center on Global Energy Policy found that investing in the natural gas pipeline network could be crucial to helping the U.S. reach the 2050 zero emission goals. Fortifying and upgrading the system could prepare the infrastructure to transport zero-carbon fuels and, in the mean-time, reduce methane leaks. A 20% blend rate would utilize 40% more capacity than is currently available in the U.S. pipeline network – we will need more pipelines!

Sustainability has quickly risen within the myriad of dimensions that enter into the piping material decision-making process. With its inherent ductility, durability, chemical and corrosion resistance, and proven performance capability in extremely demanding applications such as potable water, natural gas distribution, nuclear safety water and numerous others, plastic pipe has become a responsible investment in sustainability from the system owner, end-user and social perspective.

Plastic piping provides economic and

environmental advantages in production, transportation, and installation over other materials that make it one of the lowest carbon footprint materials available for our energy infrastructure and allows us to help operators “future-proof” their systems.

Safe, effective, high quality piping systems are needed for a durable infrastructure. Polyethylene (MDPE and HDPE), polyamide (PA12), and spoolable composite piping sold for oil and gas applications are manufactured to the highest industry standards, such as ASTM D2513 “Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings” and API 15S” Spoolable Reinforced Plastic Line Pipe.”

Highly durable and leak-free plastic pipe systems used in gas gathering, produced water, and gas distribution processes prove to be an invaluable component in protecting the environment by minimizing leaks of waste water and the release of methane.

While most leaks are from corrosion, gaskets and seals within a system, PE’s and PA12’s monolithic structures basically eliminate the potential for leaks PPI and its member companies are ready to assist operators with data, documentation and consultation without charge regarding the proper application of PE, PA-12 and spoolable composite piping intended for oil and gas gathering applications, and for transporting alternative fuels like RNG and hydrogen. **PE&J**

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