NZIP Workshops on Decarbonization Pathways of Natural Gas Systems

From April to June 2024, GTI Energy subject matter experts held workshops for stakeholders within the regulatory utility commissions of Indiana, Ohio, and North Carolina. Topics of discussion highlighted techno-economic and regulatory considerations for decarbonizing gas systems, and covered pipeline material history, emissions estimation methodologies, emission reduction solutions, and the interrelation of emerging low-carbon technologies with safety and efficiency priorities.

Led by GTI Energy with the support of the multi-stakeholder Net Zero Infrastructure Program (NZIP), these workshops served an important educational purpose in providing the latest research material, translating technical jargon and content, and engaging public utility commission staff and other stakeholders in discussions to better understand the potential role of natural gas infrastructure in future low-carbon energy systems.

Workshop attendees provided very positive feedback on the workshops, highlighting the technical expertise and communication skills of the GTI Energy team. They appreciated the interactive nature of the workshops and expressed interest in additional workshops for deeper dives into topics such as emissions management practices, the role of various R&D programs, and the integration of different low-carbon fuels. Pictured below is the GTI Energy team after hosting a workshop for stakeholders within the Public Utilities Commission of Ohio.

From left, GTI Energy's James Taff-Clay, Dr. Shadi Salahshoor, Hon Xing Wong, May Kwan, and Jarrod Bullen on June 4, 2024, at the Public Utilities Commission of Ohio in Columbus, OH

GTI Energy subject matter experts prepared the workshop content based primarily on content from the first NZIP white paper: *Natural Gas Infrastructure in the United States: Evolving Towards a Net-Zero Emissions Future*[1]. The agenda for each states' workshop was as follows:

1. U.S. Natural Gas Infrastructure Systems
2. Greenhouse Gas Emissions Measurement and Mitigation Approaches
3. An Overview of Methods for Deep Decarbonization Including Hydrogen, Renewable Natural Gas (RNG), and Carbon Capture, Utilization, and Sequestration (CCUS)
4. Policy, Social, and Regulatory Considerations for Infrastructure Repurposing

In total, three workshops were held for stakeholders within the Indiana Utility Regulatory Commission, the Public Utilities Commission of Ohio, and the North Carolina Utilities Commission. At each, a diverse set of stakeholders from both technical and non-technical backgrounds were present, offering a range of opinions and perspectives on what their commissions were prioritizing regarding utility customers and the forthcoming energy transition. Stakeholders included state commissioners, representatives from legal divisions, utility consumer councils, and pipeline safety teams.

Key Discussion Takeaways

- Regulators require additional tools and information to properly assess the cost-effectiveness of emerging emission mitigation technologies.
    - GTI Energy shared numerous prospective projects that provide utilities with more clarity on measurement technologies, lower carbon gaseous energy carriers, and repair prioritization.
- There is urgency to understand the costs and impacts of integrating hydrogen into their pipeline systems.
    - A better understanding of leak monitoring, pipeline retrofits, and reliability concerns are needed before further commitments can be made to hydrogen blending.
- Stakeholders highlighted uncertainty about investments and the expected lifetime of gas pipelines.
    - More research into repurposing pipelines and reducing costs for maintenance and pipeline replacement is required.
    - Participants expressed concerns about premature abandonment, investing in stranded assets, and the complexities of pipeline replacement programs that lead to delays and cost overruns.
- There is a need to further educate non-utility stakeholders on the purpose and fundamentals of emission reporting.
    - Attendees were curious about what companies can, or should, do to reduce their emissions and get appropriately credited; though not covered in the workshops, there were questions about the cost-benefit and purpose of voluntary certifications. There were additional questions about how to balance safety and cost priorities with emissions verification, and mitigation initiatives.

[1] *GTI Energy, Natural Gas Infrastructure in the United States: Evolving Towards a Net-Zero Emissions Future, 2023*