Summary: Illinois Workshop on Decarbonization Pathways of Natural Gas Systems

On September 3, 2025, GTI Energy held its first Reliable Affordable Infrastructure for Secure Energy (RAISE) Workshop on *Decarbonization Pathways of Natural Gas Systems* for non-utility stakeholders in Des Plaines, Illinois. The team presenting was Jarrod Bullen, Shadi Salahshoor, Marina Slipjecevic, James Taff-Clay, and Esther Goita. Ron Snedic, Senior Vice President, provided opening remarks, and Daniel LeFevers, Director of State and Consumer Programs, provided supporting comments throughout the workshop. This memo summarizes the workshop and key discussion points.

Stakeholders

The RAISE team was excited to welcome six members from the Illinois Commerce Commission (ICC) to GTI Energy's main campus, including two ICC commissioners and their senior staff. The group represented senior executives with deep expertise in energy issues and a strong understanding of the complexities and challenges facing gas systems. The workshop was conversational, with the ICC team actively engaged throughout the session, asking thoughtful questions not only on the technical details but also on broader considerations—specifically, the infrastructure and operational impacts of integrating or expanding emerging fuels, and infrastructure readiness.

Topics included potential impacts to pipeline integrity, emerging fuels, LCAs and TEAs, and the energy transition in Illinois.

Key Topics of Engagement

- Regional data and energy system models for decarbonization pathways
    - The GTI Energy team discussed the recent RAISE publication, *Utilizing Gulf Coast Natural Gas Infrastructure for Emerging Fuels*, which evaluates the most valuable opportunities for leveraging gas infrastructure for hydrogen, renewable natural gas, and synthetic natural gas in the Gulf Coast region.
    - The ICC team expressed interest in seeing similar projections for the Midwest[i], noting that region-specific data and modeling frameworks are essential for their purview; in particular, stakeholders were interested in CO_2 storage and underground hydrogen storage opportunities.
    - There was a question about the storage opportunities in the Midwest compared to the Gulf Coast. The team responded with an overview of the current state of knowledge and ongoing efforts, and highlighted that there were many suitable aquifers in the region for carbon storage as well as hydrogen storage.
- Hydrogen integration concerns with existing pipelines
    - Stakeholders asked about potential impacts to gas pipelines with the integration of alternative fuels specifically to understand the material compatibility and corrosion risk of

the impact of hydrogen on pipeline steel. They expressed concern on the potential for hydrogen to permeate through plastic piping.

  - There was additional discussion on the technology solutions and measures that operators can deploy to detect pipeline degradation, if any, that could be impacted by hydrogen, particularly hydrogen embrittlement. Speakers referred to general ongoing work related to in-line inspection and sensors that are being explored for attaching to PIGs (Pipeline Inspection Gauges), but the implication that hydrogen is the root cause of material failure is difficult.
  - Stakeholders also inquired about the effect that hydrogen injection into pipelines—either as a pure or blended stream—into pipelines may affect existing leak detection practices specifically odorization measures. Hydrogen blends, up to 20%, do not have a large impact on standard odorization measures and pure hydrogen streams can be odorized but research into the extent of the effects is ongoing.

- Readiness and Market Potential for Emerging Fuels
  - Stakeholders requested additional information on how new fuels and changes to infrastructure can impact the customer.
  - Stakeholders inquired about the readiness and consistent gas quality needed to upscale RNG/SNG in distribution pipelines. Many ongoing projects in Illinois to produce RNG were shared with them.
    - A primary example is a facility in Wilmington, IL, generating RNG from landfill gas and transporting to an interstate interconnection point.
    - The team highlighted a facility that previously converted landfill gas to electricity and is now using the RNG produced for home heating – impact increased from serving 5,500 homes to around 12,000 homes.
    - Another example project reviewed an LDC's RNG pipeline tariff specifications against biogas gas quality data to determine whether specific end use equipment may be sensitive to trace constituents which can be found in biogas.
  - The discussion progressed to assessments on the market potential of RNG/SNG and how upgraded production could allow for interstate transmission to improve quality distribution and underutilization.

- Life Cycle Analysis (LCA) and Technoeconomic Analysis (TEA)
  - Stakeholders were familiar with LCA and TEA concepts and their applications in policy and regulations. They were interested in the variations in LCA boundary condition, particularly cradle-to-gate and cradle-to-grave variations and how methodologies may vary for specific segments of the supply chain, such as gate-to-grave.
  - A key discussion was held on the standards and common industry practices of LCA and TEA, notably the data quality and references that are used in LCAs and TEAs, how transparent

third-party companies are with data sources, how boundaries are defined, and whether data references are applied consistently across the industry.

- Stakeholders asked how TEAs compare energy systems – coal, gas, nuclear, solar wind – in relation to benchmarked price per energy unit comparisons as these energy generation sources, and associated infrastructure systems vary with expected operating lifespan.

- Data Centers and Baseload Power Generation Considerations
  - The workshop concluded with an open discussion on various energy transition topics in Illinois. In particular, the discussion focused on the development of data centers and the key tension between data center developers who require a highly reliable and stable energy supply yet need to maintain a low carbon intensity to meet sustainability goals. Commissioners expressed concern about how this uncertainty may impact utility plans to meet demand forecasts. Related to this was the evolving trajectory of nuclear energy development (the largest producer of electricity in Illinois). Current infrastructure meets demand, but the development of data centers may outgrow the ability to meet that demand through nuclear energy options as new construction is heavily regulated and coal plants have shuttered in recent years.
  - ICC members mentioned two ongoing projects in Illinois
    - An agreement to construct a research-based microreactor at the University of Illinois Urbana-Champaign campus - Agreement to build microreactor on US university site - World Nuclear News
    - An agreement between Constellation and Meta for a 20-year energy purchase agreement from the Clinton Clean Energy Center to support Meta's clean energy goals and operations - Constellation, Meta Sign 20-Year Deal for Clean, Reliable Nuclear Energy in Illinois

Feedback and Additional Notes

One of the primary concerns of the ICC team was the impact of alternative fuel integration on the customer, notably how it can be assessed prior to the project approval, how it compares to current systems, and how to ensure customer risk is minimized. Follow-up material was requested.

ICC members complimented the presentation of the content and the knowledge of the speakers. They were interested in whether RAISE applied this information to customer outreach and how it was incorporated. The ICC highlighted their role as intermediaries between energy providers and the customers, noting that information like this helps to inform decision-making to best serve both, and could also aid the understanding of consumers.

Feedback on the content suggested integrating more technical pipeline material information, most notably the state of research on the impact of hydrogen on current pipeline materials, and if reinforcement or replacement is needed for integration.

[i] RAISE intends to complete a Midwest-based regional case study in 2026.