



October 6, 2017

Mr. Sam Wade, Branch Chief
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Comments on Proposed Changes to LCFS Regulations

Dear Mr. Wade:

Gas Technology Institute (GTI), founded in 1941, is a nationally and globally recognized non-profit research and training organization addressing energy and environmental challenges to enable a secure, abundant and affordable energy future. GTI research, development, and deployment initiatives are focused across the energy spectrum, including projects in the areas of natural gas, energy efficiency and renewables.

With growing attention directed towards climate change and carbon management, GTI has been working extensively at the interface of government agencies, natural gas operators, and other stakeholders. Our efforts have focused on understanding the root causes of methane emissions, reducing the uncertainty in national-scale methane emission estimates from natural gas systems, and helping reduce methane emissions across the value chain. Contemporary studies that are underway include:

- An examination of methane emissions from industrial facilities
- A more detailed characterization of pipeline methane emissions based on material type and age
- A closer investigation of methane emissions from the residential and commercial sectors

GTI Addressing Methane Emissions

Since the early nineties, GTI has performed significant work in the development and evaluation of leak detection technologies and quantifying methane emissions from the natural gas industry, including:

- Quantifying methane emissions with collaborative research programs to develop national and state specific estimates for key emission factors for distribution sources such as gas meters, regulator stations, and below ground pipelines.
- Developing several methane measurement tools used by the gas industry today including the Hi-Flow Sampler, the Optical Methane Detector and the Portable Methane Detector.
- Quantifying methane emissions from distribution pipelines for the Air Resources Board (ARB) that provided important information on natural gas leaks from local distribution companies and improving methane emission estimates from this sector. State-specific emission factors based on pipe material were developed and utilized to estimate methane emissions.

- Collaborating with Lawrence Berkeley National Lab performing an assessment of fugitive emissions from the natural gas system in commercial buildings for the California Energy Commission that will quantify total building emissions.
- Conducting field campaigns to measure methane emissions from industrial meters, new and vintage plastic, plastic-lined steel, and cast-iron pipes working with partners including AECOM Engineering, GHD Group and Washington State University. The information collected on parameters will allow further classification of pipeline and meter emission categories to improve the USEPA's U.S. Greenhouse Gas Inventory and help operators prioritize the repair of leaks. This work was funded by a grant from the United States Department of Energy (USDOE).
- Developing and demonstrating, through a USDOE-sponsored project, a system to provide remote monitoring of natural gas pipeline conditions and to provide early detection of factors that may lead to an unintended release of methane. Our partners in the project were RTI International and PPG industries.
- Working with NASA's Jet Propulsion Laboratory to develop a high efficiency Methane Mitigation Thermoelectric Generator for gas field applications. The proposed system will enable operating pneumatic devices with air, thus eliminating natural gas emissions while providing an economically attractive and secure alternative.
- Partnering with stakeholders in GTI's Center for Methane Research. This collaborative program provides a centralized industry-wide technical and policy support resource focused on the presence, measurement and potential impacts of methane in the atmosphere.

The background above is provided to bring to light our experience with research and science related to methane emissions and the development of means to reduce those emissions.

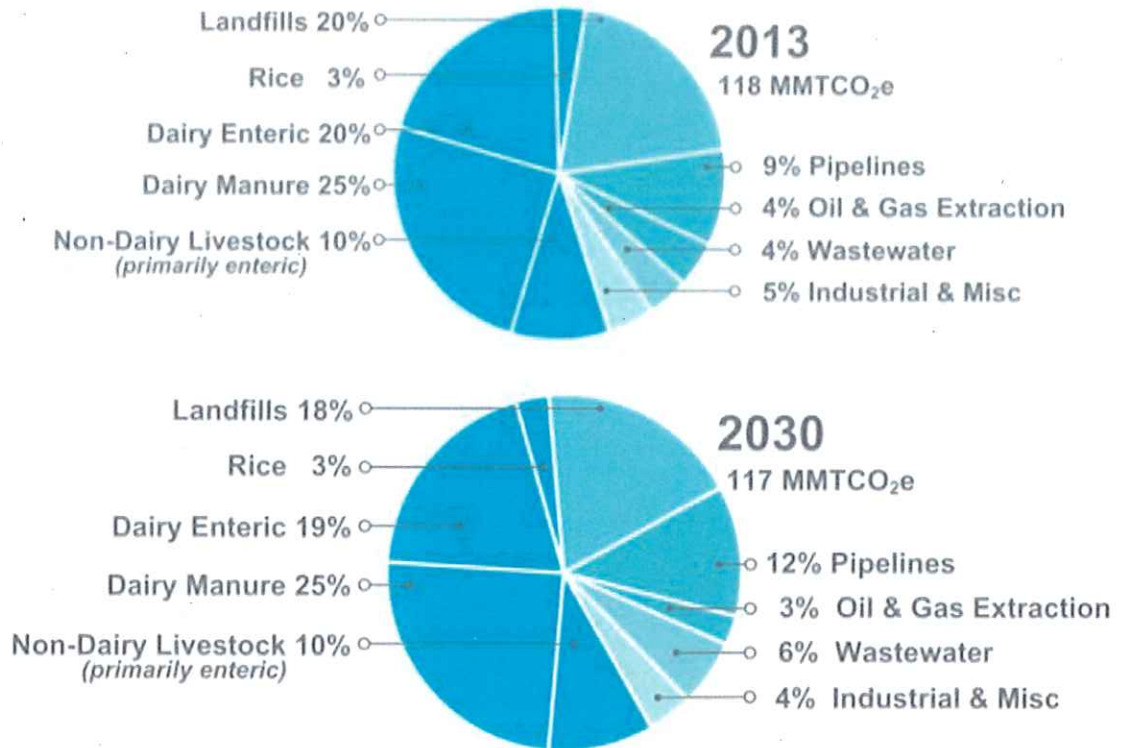
Concerns over changes to LCFS

We are submitting these comments to share our concerns over the proposed carbon intensity (CI) changes to compressed natural gas and renewable natural gas.

Our concerns are twofold:

1. **GTI is concerned that the data for making these changes has not been provided to interested stakeholders.** Our engagement regarding methane emissions suggests to us a complex set of data and measurement methodologies that do not all lead to conclusions that are consistent with those outlined by ARB. Our work in methane mitigation, coupled with empirical data from the National Oceanic and Atmospheric Administration (NOAA), paints a picture of methane mitigation techniques and methodologies expanding throughout the entire delivery and production system of natural gas that will likely lead to an overall decline in methane emissions from natural gas production, through delivery and end-use.

In an ARB workshop on April 17, 2017, the graph on the top of the next page was presented by ARB staff as California's methane inventory.



While the data for the proposed changes for the CI of CNG and RNG was not provided by ARB, the pie charts above point to a less than 1% reduction in the California CO₂e from methane by 2030, while pointing to a higher percentage of methane emissions from pipelines. Could this small decrease and the projected increase in the percentage of methane leaks from pipelines be a factor in the agency's analysis to increase the CI of CNG and RNG? Our experience and engagement regarding methane emission reduction technology, improving practices, and pipeline replacements would lead us to believe future methane emissions from pipelines will decrease by 2030.

2. **GTI believes that more time is needed for public comment and that an opportunity to review the data supporting the proposed changes is a reasonable request of stakeholders.** The changes proposed to the LCFS could have a significant effect on the program and the state's ability to meet their CO₂e reduction goals and mandates. Requiring public comments on the proposed changes before the public has been given the opportunity to review the background material and supporting documentation means that the public – and key stakeholders – will not have adequate opportunity for meaningful public comment.

GTI urges ARB to extend the public comment to 30 days after ARB releases the full text of the proposed changes and all supporting documentation.

Sincerely,

Edward Johnston
Senior Vice President of Research
GTI