

MEMORANDUM

DATE: September 22, 2023

TO: Members of the Sustainability Framework Advisory Committee

FROM: Michael A. Gange, Director of Environmental Services & Sustainability

SUBJECT: Gas Well Inspection Data for Methane Emissions

Sustainability Framework Advisory Committee Member Soph asked what bearing the Gas Well Inspection data would have on the development of the Climate Action and Adaptation Plan (CAAP).

The City currently has a professional services agreement with Modern GeoSciences LLC (Modern) to perform Gas Well Inspections for gas wells permitted within the City of Denton. The Scope of Work sets out inspection protocol based on the proximity to a protected use as defined in the Denton Development Code 6.3.1. Protected use per DDC is defined as any dwelling, church, public park, public library, hospital, pre-kindergarten, kindergarten or elementary, middle or high school, public pool, public transit center, senior center, public recreation center, hotel or motel.

The on-site inspection protocol calls for:

- City of Denton Ordinance Compliance Review
- Near Equipment Evaluation
 - Optical Gas Imaging (OGI) Camera for leak identification
 - Naturally Occurring Radioactive Material (NORM) identification
- Fenceline Evaluation
 - Meteorological Data (wind direction, wind speed, temperature and relative humidity).
 - Methane concentration by direct measurement (multi-gas detector)
 - Radiation concentration by direct measurement
 - Hydrogen Sulfide concentration by direct measurement
 - Total Volatile Organic Compounds (VOC) concentration by direct measurement
 - Noise Levels by direct measurement
 - Particulate Mater (PM2.5 and PM10) by direct measurement

As shown above, Modern inspects gas wells for compliance with City of Denton local ordinances, performs a near equipment evaluation for leaks using an Optical Gas Imaging (OGI) camera and Naturally Occurring Radioactive Material (NORM) identification. Based on wind

OUR CORE VALUES

Inclusion • Collaboration • Quality Service • Strategic Focus • Fiscal Responsibility

direction upwind (what is blowing onto the padsite) and downwind (what is leaving the padsite) fenceline sample locations are identified and sampled.

This inspection effort identifies "leaks", or points where emissions are not permitted. to show compliance with state and federal emission regulations. Leaks do at times include a permitted emission point that is not operating correctly (e.g., pressure control valve on a tank battery that is stuck open). The general ordinance inspection, near equipment evaluation, and fenceline evaluation (ambient air information) for each gas well is documented in an individual padsite report. In an effort to show trends, an Annual Summary Report is generated for that calendar year's inspections. The Annual Reports may be found down on the right hand side of the City's Gas Well Inspection webpage under Inspections & Reports Gas Well Inspections | Denton, TX [cityofdenton.com].

The direct question from SFAC was what bearing the Gas Well Inspection data would have on the development of the Climate Action and Adaptation Plan (CAAP). The data collected would not change the emission estimates from gas well activity used in the CAAP. This is due to the fact that the inspection program is focused on leaks not overall emissions. Optical Gas Imaging (OGI) is used to identify leaks, while OGI data has a detectable range it does not provide the emission rate, concentration, or the length of time for the leak. To perform any enhanced methane emission calculations, all emission points on the gas well pad (permitted and unpermitted/leaks) would need to be observed with an OGI camera. Those emission points would then need a flowrate measurement (quantity of methane per unit of time flowing from the emission point), direct methane concentration measurement, and timeframe estimate (emission lasts for how long) for each individual emission point. Denton's 2019 Greenhouse Gas Inventory and Sustainable Solutions Group's (SSG) modeling both include fugitive emission estimates for gas well activity. Modern did mention during a briefing to the Sustainability Framework Advisory Committee (SFAC) that they have staff that would like to perform such calculations, however this is not typically part of a compliance inspection program and is not included in the current contract.