OFFICE OF THE MAYOR

The Permian Basin of West Texas & Southeast New Mexico

The Permian Basin of West Texas and Southeast New Mexico, which according to the U.S. Energy Information Administration now accounts for 48% of the crude oil and 18% of the natural gas produced in the United States, is not only playing a vital role in providing the United States with energy independence, but is also playing a key role in reducing air pollution. As many of you know, the United States leads the world in reducing carbon dioxide emissions and that's primarily due to the increased use of clean-burning natural gas. This has been achieved while production from the Permian Basin has quadrupled over the last ten years.

While methane emissions have been raised as a concern by detractors of the industry, the large majority of methane emissions from production in the Permian Basin centers around flaring necessitated by lack of takeaway capacity. However, there is an estimated 14 billion cubic feet per day of additional natural gas (methane et al) pipeline capacity that is scheduled to come online in the Permian Basin by the end of 2022 according to Texans for Natural Gas. This equates to more than five trillion cubic feet of natural gas annually, which, according to data from the Railroad Commission of Texas, is about 93 times larger than current flaring levels. Once these pipelines are in place, even with increased production, methane emissions in the field will greatly be reduced.

The entire Permian Basin region is larger than states like Alabama. With such a large footprint, you find diversity of people and communities. The communities in the producing regions inside the greater Permian Basin, being mainly the Midland and Delaware sub-basins, the Central Basin Platform and the Northwestern Shelf, are also varied in their community needs and concerns. However, the entire region is at the northern edge of the Chihuahuan

U.S. House Committee on Energy and Commerce hearing

Desert, and we all have the concern of water as a top priority.

Generally, statewide in Texas the hydraulic fracturing process used to unlock the valuable hydrocarbon resources trapped in tight formations like those being accessed in the Permian Basin, accounts for less than 1% of all ground water used. Agriculture and municipalities, are by far the greatest users of groundwater in Texas. Even with such a low use rate, however, oil and gas companies in the Permian Basin continue to use innovation to use less ground water, instead relying on recycled and reused produced water for their operations. This produced water is highly brackish and unless treated is unsuited for any other use. It has been traditionally thought of as a waste product, but innovation being what it is in the Permian Basin, companies are finding ways to turn this waste product into a valuable part of the hydrocarbon production process.

Some companies are also contracting with cities, like Midland and Odessa, to use their waste water in these recycling processes. Operators in the Permian Basin understand how valuable groundwater is, especially in the desert, and work to find ways to use less of that water, allowing for more of that water to be available for our growing populations. As a city that is seen by some as the capital of the Permian Basin, this isn't the first time we've worked with the oil and gas community. Close to a decade ago when oil and gas operations really began their resurgence in the Permian Basin, the City of Midland worked with operators to better prepare the city to address the growth challenges facing all users of surface property, whether they be residential, commercial, or industrial. This has allowed both the city and the oil and gas industry to coexist and comprehensively plan their growth.

Even in the relatively sparsely populated Permian Basin, there are concerns about protecting our native species and their habitats. Unprecedented efforts, such as the Range Wide Plan for the Lesser Prairie Chicken (which covers five states including, Texas, New Mexico, Oklahoma, Kansas and Colorado), as well as more localized conservation plans for species like the Dunes Sagebrush Lizard and the Texas Hornshell Mussel, have been led by oil and gas operators and other stakeholders in the Permian Basin. These conservation efforts, developed in concert with state organizations who also provide oversight, have helped protect species in the Permian Basin from not only oil and gas operations, but ranching and farming as well as wind farms and solar energy installations.

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Midland Development Corporation (MDC)

Demographics

- The population of the Midland MSA was 165,430 according to the 2017 American Community Survey, but since Midland has experienced explosive growth since 2017 the population of Midland in 2019 is likely much higher
- Midland is more ethnically diverse than Texas and the U.S. as a whole; it is a minority-majority city (source: Chmura Economics)
- Midland is a young city, with a median age of 31.8, compared to the median age in the U.S, which is 37.8 (source: Chmura Economics)

Jobs

- Unemployment in Midland was 2.2% in February 2019, which is the lowest unemployment rate in Texas (source: Texas Workforce Commission)
- Midland had the largest county over-the-year percentage increase in employment in September 2018 at 11.9%. (source: Bureau of Labor Statistics, February 2019)
- In 2018, mining, logging and construction employment had the largest growth (18.4 percent) (source: Bureau of Labor Statistics)
- In 2018, Texas' overall employment grew at an annual rate of 2.5% from Q3 2017 to Q3 2018. Over that same time, Permian oil industry jobs increased at a rate of 25%. (source: Bureau of Labor Statistics)

Economy

- In 2017, the GDP of the Midland MSA was $18,799,734,000 (source: Chmura Economics)
- Taxable spending in Midland increased 34.8% year-over-year from 2017 to 2018

- Motor vehicle sales tax in Midland County increased 33.8% from 2017 to 2018
- Building permit valuations in Midland increased 72.1% from 2017 to 2018 (source: Ingham Economics)
- From 2011 to 2019, the 12 Texas counties in the Permian Basin produced 25% of all state severance taxes. (source: MOTRAN)
- Average annual wages in Midland are 27% higher than the national average ($71,084/year in Midland; $55,713/year in U.S.) (source: Bureau of Labor Statistics)
    - Average annual wages per worker increased 5.1% in 2018

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Oil & Gas

1. Use of Combustors:

   Within City of Midland the releasing of gas vapor from oil and gas wells directly into the atmosphere is not allowed. Flaring at tank battery facilities is not allowed inside the city limits except for emergency situations. Combustors are allowed and are not considered to be a flare by City of Midland if operated in correct manner. Combustors are internal burning. Regular gas flares have been shown to have only a burn rate of gas as low as 60-69%.

   The use of Combustors is a device that destroys fugitive emissions from tank, well casing or vent gas vapors. Combustors are able to handle both high and low gas pressure situations. They have been measured to have efficiency rates of 98% plus for high pressure gas situations and efficiency greater than 99.5% for low pressure gas situations. Combustors meet regulatory emission limits. Combustor meet or exceed the US EPA NSPS 40 CFR Part 60, Subpart 0000 (Quad "O") regulatory emission limits (Information from ACL Combustion available from http://www.acl-combustion.com/combustors.html)

   Enclosed combustors, often called vapor combustors, are designed to destroy vapors from PRODUCED OIL or WATER TANKS. We have developed systems

specifically engineered for the smokeless combustion of heavy (high BTU), low-pressure streams without the use of utility power.(Information from MRW Technologies from https://www.mrw-tech.com/Enclosed-Combustors)

The systems are used when gas sales lines are not able to handle the capacity of gas being produced. Operators are able to keep producing wells to maintain oil production instead while handling the gas in this manner.

2. Water Use:

Municipalities do not regulate downhole drilling nor do they control where water comes from for the drilling/ fracing process. The State of Texas agencies regulates these areas.

The City of Midland does encourage operators to use water from deeper depths being the Santa Rosa water instead of fresh water aquafers. The Santa Rosa water is a very brine water that is not potable for human use but can be used to meet drilling and fracing needs.

In addition, many operators are reclaiming production water which is produced as a by -product of oil and gas production that is separated at the well tank battery facility. This water can be reclaimed and cleaned to be used for fracing at cost and methods that are becoming more economical. Fasken Oil & Ranch currently using these methods at some sites in West Texas. Further information- Tommy Taylor -Office 432-687-1777, Cell 432-556-2228

Operator Pioneer Resources has partnered with the City of Midland in reclaiming grey/black water and cleaned to a standard to be able to use as fracing water. Utilities Dept can provide more in-depth information and maps of pipeline system.

3. Drilling Pit Remediation Process:

Diamondback Resources has switched to an alternative of deep burial pits recently which meets state guidelines to a more environmental alternative of bio technology treatment which is a pit remediation process.
The process using bio-organic catalysts along with indigenous soil which will detoxify and break down hydrocarbon contaminants. This method will cause the drill cuttings to rapidly decompose, biodegrading them to carbon dioxide and water a the end products, and hydrocarbons will be reduced to less than 3%. The cuttings will be covered with a minimum of 36 inches of clean, compactable soil. This method has been determined to be more environmentally friendly than a deep burial method of pit closure.

The pit closure will meets or exceeds the requirements of the applicable Railroad Commission rules and Texas commission of Environmental Quality rules. (Per Diamondback Energy Amending City Permit Whitefish Unit 812MS)

Deep Burial- After drilling and completion operations are finished, the drilling pit (or reserve pit) is required to be dewatered and buried to restore land back to its natural state. This remediation process is often referred to as a pit closure or deep burial Reserve pits are dewatered, leaving only drilling mud behind. The mud is dried and a hole is excavated adjacent to the reserve pit so it can be buried. These holes are often 18' to 22' deep and allow for 3' to 6' of natural top soil to cover the area.