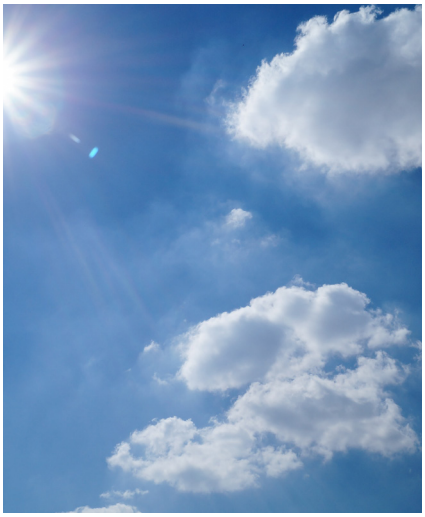
WPX Energy's Methane Emissions Management and Mitigation Measures

What is WPX Energy's position on Methane Emissions?

WPX Energy's position on methane emissions aligns with our commitment to produce oil and natural gas responsibly. We know methane is a greenhouse gas that has a higher global warming potential than carbon dioxide.

Methane is the primary component of natural gas and is produced along with oil in both of our basins. WPX is committed to the responsible management of methane emissions and compliance with environmental regulations. WPX is in business to sell natural gas and oil, so it's in our best interest to minimize methane emissions and eliminate waste.



What are WPX Energy's methane management goals?

WPX's methane management goals are to be compliant with all Federal, State and Tribal regulations and to minimize methane emissions where feasible.

WPX's methane mitigation measures differ by operating area due to the different characteristics of the oil and gas produced, along with the applicable tribal and state regulations. Regulations may also require emission controls for some sources that are not present in both of our basins (e.g., pneumatic pumps).

Methane emission mitigation activities also vary among basins because the available infrastructure for each area is different (e.g., availability of electricity).

How is WPX Energy complying with Methane Regulations?

WPX continues to follow changes in Federal, State, and Tribal air regulations. In 2016, the oil and gas industry become subject to EPA's New Source Performance Standards (NSPS), Subpart OOOOa for the Oil and Natural Gas Sector, published in the Federal Register on June 3, 2016. EPA proposed reconsideration amendments for Subpart OOOOa on October 15, 2018.

These updates are anticipated to change and clarify some of the existing requirements in these regulations. WPX is regulated by numerous air regulations in addition to NSPS Subpart OOOOa and continues to develop new programs to improve compliance and air quality.

Below are examples of how WPX is complying with regulations that reduce methane emissions:

- WPX has implemented Leak Detection and Repair (LDAR) programs that comply with the requirements in EPA's NSPS Subpart OOOOa regulations (40 CFR 60.5397a) and our state permits. The LDAR program uses optical gas imaging technology (IR Cameras) and flame ionizing detectors (Method 21) to identify gas leaks including methane from components such as valves, flanges, hatches or connectors. LDAR requirements apply to production facilities, compressor stations and processing facilities. Inspections are being conducted biannually or quarterly depending on the type of facility. Once a leak is identified, it is repaired and documented, then resurveyed to ensure its integrity. Implementation of the LDAR program correlates to an 80-90% reduction of potential fugitive emissions including methane.
- WPX is utilizing compressed air and electric controls, where feasible, to replace natural gas operated pneumatic controllers. These replacements eliminate natural gas emissions from intermittent and low-bleed pneumatic controllers. WPX completely replaced all potentially affected high-bleed pneumatic controllers with low-bleed or intermittent type devices prior to the effective date of NSPS Subpart OOOO.
- As required under EPA's NSPS Subpart OOOOa (40 CFR 60.5416a), auditory, visual, and olfactory (AVO) monthly inspections are being conducted on closed-vent systems used to route emissions from tanks to vapor recovery units and emission control devices. Leaks identified during these inspections are required to be repaired within 30 days, but the majority of the fixes are being completed during the required five-day first attempt repairs. This program minimizes fugitive emissions including methane.
- The Federal Implementation Plan (FIP) (40 CFR 49) in the Williston Basin requires quarterly inspections for the tank vent systems followed by documentation and repair of any leaks identified, minimizing potential fugitive emissions associated with tanks, equipment and piping. The FIP also requires all tank systems with a potential to emit greater than the FIP emission threshold be controlled with flares having a minimum destruction efficiency of 98%. So, all methane associated with flashing and tank vapors are captured in a closed-vent system and sent to a flare for destruction.
- NSPS Subpart OOOO requires that emissions from a tank that emits more than 6 tons per year of VOCs must be captured and controlled. Similarly, the New Mexico Environmental Department (NMED, NMAC 20.2.38.112) requires facilities that have greater than 65,000 gallons of storage capacity to control tank vapors. WPX's Permian facilities utilize enclosed combustors, flares, vapor recovery towers and vapor recovery units to manage these emissions. Enclosed combustors and flares combust tank emissions including methane. Vapor recovery units are used to capture and sell tank vapors rather than flaring or combusting emissions. Although the thresholds in these regulations are based on VOCs, methane also is captured and controlled or recovered for reuse or sales.
- Oil well green completions became required as on November 30, 2016 (40 CFR 60.5375a). WPX conducts green completions on our oil wells to minimize vented gas and only flares gas when conditions are not amenable for sales (i.e., high pressures, power outages or gas quality).

What is WPX Energy doing to mitigate methane emission?

As indicated in the previous descriptions, WPX has a number of programs in place that successfully reduce methane emissions to satisfy Federal, Tribal, and State regulatory requirements.

In addition to these programs, WPX also has implemented other programs, operational practices and equipment to further our methane reductions efforts. The following are some examples of the methane reduction opportunities WPX implemented:

- WPX is a 50/50 partner in a joint venture natural gas processing plant in the Permian Basin. WPX also has added pipelines and compressor stations to improve takeaway capacity. All of these activities contribute to reduced gas flaring and methane emissions.
- WPX has installed blowers at many of our tank batteries to better move tank flash gas (including methane) to our flares, which reduces pressures in our tanks and the potential for hatches to leak.
- Permian personnel implemented and improved operational practices using a series of control valves and separators to capture the majority of gas normally emitted during compressor engine blowdowns, eliminating high pressure gas emissions when servicing the units.
- Williston uses SCADA systems to monitor tank pressures that facilitate effective operation of our tanks and closed-vent systems. By monitoring these tank pressures, issues with blowers, stuck valves or flares can be identified and addressed timely and efficiently. This process minimizes methane emissions by reducing venting durations.
- Permian implemented a high efficiency, high capacity thermal oxidizer with better than 99% destruction efficiencies to control completions gas where sales capacities were constrained or not yet available. This reduces methane emissions and VOC emissions.
- Williston relief valves in the production process are directed to a flare rather than being vented. There are also backup flares at every pad that provide a way to burn gases during flare repairs. Both of these practices minimize or eliminate venting, reducing methane emissions.
- Permian and Williston teams have implemented oil LACT systems. These operations eliminate the emissions associated with oil loadout to trucks. These vapor emissions (that can include methane) were occurring from the open tank hatches and truck vents while the trucks were loading.
- In some instances, WPX has gone to automation and tank gauges to record production volumes instead of opening tank hatches and strapping the tanks. This practice eliminates tank emissions that occur when hatches are opened.
- Permian and Williston teams utilize JT skids and MRU units to remove natural gas liquids from production gas. Removal of these hydrocarbons prior to flaring or utilizing the gas as fuel reduces our combustion emissions.

- In January 2019, WPX deployed a drone on the Fort Berthold Indian Reservation for tank inspections and leak detection. The drone is equipped with a thermal imaging FLIR camera and is anticipated to improve safety and assist with compliance.

WPX is continuously striving to implement innovative methane mitigation. Many of the activities that reduce methane emissions have been identified and implemented because employees are actively seeking ways to improve operations.

Decisions like selecting a tank hatch gasket that lasts longer can reduce methane emissions. Buying tanks, valves and equipment that can handle desired operating pressures and are designed to minimize venting also reduces methane emissions.

Production operators who maintain equipment to reduce downtime and leaks reduce methane emissions. Engineers and facilities personnel that improve system designs to redirect gas from blowdowns back into the system or add blowers to better capture tank emissions are all examples of how WPX is reducing potential methane emissions.

WPX has a 35-year track record in energy production, with more than 40 social responsibility awards recognizing our compliance, environmental protection and best management practices.

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