

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 and has a higher global warming potential than carbon dioxide. Methane is the primary component of natural gas and is produced along with oil in all 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 attempt 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 from basin-to-basin due to the different characteristics of the oil and gas produced and the applicable tribal and state regulations for the area. Regulations may also require emission controls for some sources that are not present in all of our basins (e.g., pneumatic pumps). Methane emission mitigation activities also will 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?

In 2016, the oil and gas industry has become subject to a number of significant new Federal environmental regulations. Two of these regulations are specifically focused on methane emissions and include 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, and the BLM's Final Methane and Waste Prevention Rule, published in the Federal Register on November 18, 2016. These two new regulations are in addition to numerous existing Federal, Tribal and State regulations that regulate emissions from oil and gas operations and air quality. Below are examples of how WPX is complying with regulations that reduce methane emissions:

- WPX conducted voluntary green completions to minimize vented and flared gas (reduced emission completions) for years before the practice became required for gas wells in October of 2012 and has continued that practice. Oil well green completions became required as of November 30, 2016 (40 CFR 60.5375a). WPX also has been doing voluntary green completions on oil wells for years to minimize vented gas and only flares gas when conditions are not amenable for sales (e.g., gas quality).
- As required under EPA's NSPS Subpart OOOO (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.
- WPX replaced all potential affected facility high-bleed pneumatic controllers with low-bleed or intermittent type devices prior to the effective date of NSPS Subpart OOOO. By replacing high-bleed pneumatic controllers with low-bleed or intermittent pneumatic controllers, gas emissions were reduced. In the San Juan Basin, electronic controller valves have replaced most gas-actuated pneumatic controllers at oil facilities, thus completely eliminating gas emissions from these types of sources.
- 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 working and breathing vapors is captured in a closed-vent system and sent to a flare for destruction.
- NSPS Subpart OOOO requires 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 and San Juan 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.
- In preparation of the Leak Detection and Repair (LDAR) requirements in EPA's NSPS Subpart OOOOa regulations (40 CFR 60.5397a) and BLM's Methane and Waste Prevention Rule (43 CFR 3179.303), WPX has been conducting voluntary LDAR inspections with IR (Infrared) Cameras to identify and fix equipment leaks before the new requirements become effective on June 3, 2017. LDAR 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 will apply to production

facilities, compressor stations and processing facilities and will occur biannually or quarterly depending on the type of facility. Once the leaks are identified they will be repaired and then resurveyed to ensure the leaks were repaired and documented. Implementation of the LDAR program correlates to an 80-90% reduction of the potential fugitive emission including methane.

- In preparation of the Pneumatic Pump emission control requirements under EPA's NSPS Subpart OOOOa regulation (40 CFR 60.5393a) and BLM's Methane and Waste Prevention Rule (43 CFR 3179.202), our San Juan Basin operations are replacing existing pneumatic pumps with solar powered pumps that will eliminate gas emissions.

WPX strives to comply with the many air regulations that directly impact or will impact the oil and gas industry and our facilities.

What is WPX Energy doing to mitigate methane emission?

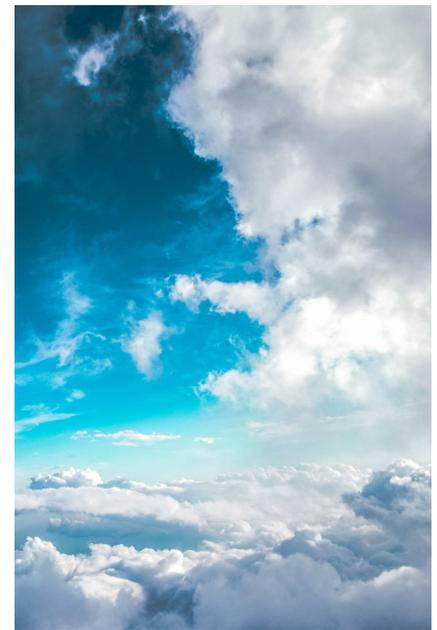
As indicated in the previous descriptions, WPX has a number of programs in place that successfully reduce methane emissions to satisfy Federal, Tribal and State regulatory requirements. In addition to these programs, WPX also has implemented other programs, operational practices, and installed equipment to further our methane reductions efforts. The following are some examples of the methane minimization opportunities WPX has implemented:

- Permian personnel have implemented operational practices using a series of control valves to capture the majority of gas normally emitted during compressor engine blowdowns, eliminating high pressure gas emissions when servicing the units.
- San Juan SCADA systems monitor and have an alarm for tank pressures that indicate possible venting so that repairs can be made as quickly as possible. These alarms have been voluntarily implemented for oil facilities that are not subject to NSPS Subpart OOOO requirements. This process minimizes methane emissions by reducing venting durations.
- 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.
- Williston and San Juan 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 are loading.
- Emissions associated with pigging operations in some of our basins are also significantly being reduced due to rotating pigging valves and pig capture systems that completely eliminate the need to vent gas. Installation of these types of equipment improvements can minimize or eliminate methane emissions.
- 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 the hatches are opened.
- It should be noted that as a result of divesting our operations in the Piceance Basin in 2016, WPX now has many fewer wells in operation and any risks related to methane emissions have been correspondingly reduced.

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 as simple as selecting a tank hatch gasket that does not leak or lasts longer can reduce methane emissions. Buying tanks, valves and equipment that can handle the appropriate range of operating pressures and minimizes venting also reduces methane emissions.

Production operators that maintain equipment and reduce downtime and leaks reduce methane emissions. Engineers and facilities personnel that improve system designs to recycle dumps or 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.



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