



Meeting Our Commitments

Air Quality in the Pinedale Anticline Project Area

Preserving air quality in the Pinedale Anticline Project Area (PAPA) is a priority for Ultra, Shell and QEP Energy. We have implemented aggressive, and in many cases voluntary measures that significantly reduce our emissions in the PAPA. We have also actively supported area air quality monitoring and studies to be in a better position to determine what, if anything else, needs to happen to address the issue.

Preserving Air Quality

Ultra, Shell and QEP Energy are working with the State of Wyoming, the Wyoming Department of Environmental Quality (WDEQ), Bureau of Land Management (BLM) and the Environmental Protection Agency (EPA) to reduce volatile organic compound (VOC) and nitrogen oxide (NOx) emissions to assist in improving visibility and to help in mitigating ozone formation, maintaining compliance with the current primary standard for ozone set by the EPA.

Ozone (O₃), a ground level air pollutant, is created by a chemical reaction between

NOx and VOCs in the presence of sunlight. With its high altitude in a valley surrounded by three mountain ranges, cold winter climate, sunny days and propensity for temperature inversions, the location of the PAPA creates the “perfect storm” for the creation of ozone in winter. Sources of ozone precursors in Sublette County are varied and include general industrial emissions, vehicles, drill rigs, well completion activities, gas production, compression and transmission, community/residential emissions, emissions from natural sources, and emissions transported by wind.



The Boulder air monitoring station in Sublette County, funded jointly by the operators and the Wyoming Department of Environmental Quality (WDEQ), monitors ambient air quality downwind from the field.



Reducing Emissions

Collectively, our emissions reduction projects – both short and long term – are minimizing the precursors to ozone in Sublette County.

Investments in **Liquids Gathering Systems (LGS)**, including the infrastructure pictured on the left, are reducing VOC emissions associated with tanks as well as NOx emissions associated with regular tanker truck trips. A LGS is a system of pipelines that transports condensate and produced water from the wells to centralized gathering facilities and trunk pipelines. Ultra, Shell and QEP Energy all have installed and are operating LGSs in the PAPA. It is estimated that these systems will reduce truck traffic by 165,000 truck trips per year when the field is at maximum production.

(Reducing Emissions Continued)

All Ultra, Shell and QEP Energy operated drill rigs on the PAPA are using **Selective Catalyst Reduction (SCR) technology** typically used on power plants, high-end diesel cars and diesel engines to reduce NOx emissions. Catalyst technology installed on our drilling rigs can reduce NOx emissions by more than 90 percent.

Additional measures that the operators are working towards designed to reduce VOC and NOx emissions include:

- Implementing controls on exhaust from heat trace pumps and changing out separator controllers to low or no-bleed devices
- Expanding remote and automatic well monitoring and computer assisted operations to further reduce emissions from truck trips
- Applying current control requirements to older locations that were grandfathered under less stringent emissions regulations
- Developing annual ozone contingency plans for short-term emission reductions to be implemented when the WDEQ determines conditions are favorable for the formation of ozone
- Increasing our inspection of emissions control equipment to reduce fugitive emissions within our operations, including the use of FLIR optical gas camera inspections (or other technologies) to identify and correct these sorts of emissions leaks
- Continuing to review feasibility of electrification of facilities in the field to further reduce NOx as infrastructure becomes available.



We're using Selective Catalyst Reduction (SCR) technology on many of the field's drilling rigs.

Industry is working with the WDEQ to fund ongoing studies to better understand specifically what causes ozone to form in the Pinedale area during winter months, as well as air quality issues in general. Ultra, Shell and QEP Energy also share information on new technology and approaches to more effectively reduce emissions. Collectively, these emission reduction efforts are working. In fact, the operators have reduced NOx emissions to below 2005 levels and were awarded the Bureau of Land Management's 2009 Environmental Best Management Practices (BMP) Award for Responsible Stewardship of Air Resources in the PAPA.

"The companies' partnership exemplifies the ability of industry to collaborate in developing practices that reduce the impacts to the health and welfare of the human environment while still allowing for the orderly development of oil and gas resources on Federal lands."

– Bureau of Land Management

Ultra, Shell and QEP Energy are committed to the responsible development of natural gas on the Pinedale Anticline, including reducing air emissions, to preserve air quality for the area and provide the nation with clean burning and reliable domestic energy.

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