

Marcellus Shale terms you need to know

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Appalachian Basin: A geographic/geologic area stretching from Canada to Alabama and containing the Marcellus and Utica shale formations.

Blowout: An uncontrolled release of natural gas from a well after pressure control systems have failed.

Brine: Brine is salty water that gas drillers encounter when drilling deep into Pennsylvania's ground. Formed out of ancient shells of sea creatures that, over time, formed a layer of rock, brine is up to 10 times as salty as seawater.

Brine can also contain other elements that occur naturally beneath the earth in Pennsylvania, such as strontium, barium and manganese. Brine can come back up the drilled hole during the fracking process, mixed with fracking fluids that also contain chemicals in what's called "flowback."

BTU: A British thermal unit is a unit of measurement for energy, equal to the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit.

Casing: Casing, made of steel and/or cement, lines the outside of a drilled well to keep it open and sealed. Proper casing prevents materials inside the well from escaping into the surrounding environs.

Christmas tree: The term used to describe the pipes and valves that sit on top of a completed and producing gas well.

Compression: Natural gas is compressed (at compressor stations along transmission lines) to save space during transportation and storage. It is typically compressed at a range of 400 to 1,000 psi.

Containment pits: Manmade pools used to capture and store either fresh water to be used in drilling, or flowback wastewater that has come to the surface through the fracking process.

Cutting(s): Debris removed from the well during the drilling process.

Drilling mud: Also known as drilling fluid, drilling mud is a slurry used in the process of drilling gas wells. The “mud” contains oil, lime, calcium carbonate, barite and other additives which lubricate the drill bit and help remove cuttings to the surface.

Dry/wet gas: There are two types of natural gas coming out of the Marcellus Shale: dry gas and wet gas. Dry gas comes to the surface nearly ready for market, needing little or no additional treatment. Wet gas contains other liquid compounds, such as propane and butane, which require separation but offer added value because those separated gases can be sold separately. Typically, the eastern part of Marcellus contains dry gas and the western part of the play contains wet gas.

Flowback: The liquid, containing brine and fracking fluids, that returns up and out of the well following a fracking.

Fracturing (fracking): A method used by drillers that allows extraction of gas tightly held in rock formations such as the Marcellus Shale. Two common methods of fracturing involve the use of hydraulic or explosive force.

Horizontal drilling: A drilling technique where the well hole is curved upon reaching the rich gas formation, allowing drillers to retrieve greater amounts of gas. It is a breakthrough process that made tapping the Marcellus Shale financially viable.

Hydro-fracking: A mixture of water, sand and chemicals is forced at high pressure into a well, widening the natural fractures in the bedrock to allow gas to flow freely out of the formation.

Marcellus Shale: A layer of sedimentary rock, 4,000 to 8,000 feet underground, containing high amounts of natural gas trapped in a tight rock formation. Most of the Marcellus Shale lies underneath Pennsylvania, West Virginia, New York and Ohio. Geologists estimate the Marcellus holds more than 500 trillion cubic feet of natural gas.

Mcf/Bcf: Mcf stands for 1,000 cubic feet, and Bcf stands for one billion cubic feet; both are units of measurement for natural gas. There is a little more than one million BTU of gas in one Mcf. Texas, the largest gas-producing state in the U.S., produced 6.9 Tcf (trillion cubic feet) of gas in 2008. The Marcellus is estimated to hold around 500 Tcf of natural gas.

Midstream: Pipelines used in the transportation of gas to transmission lines, which then takes the gas to storage facilities or to market.

Natural gas: A hydrocarbon, mainly methane, naturally occurring and used in power generation around the world. Natural gas is trapped in high concentrations in the Marcellus Shale formation.

Platform: A cleared, flat space used as the base of drilling operations, hosting a rig and often the site of multiple wells.

Play: A term used for a natural gas or oil field being actively developed.

Pooling: Pooling combines multiple, separately leased but adjoining tracts of land to create one larger tract. The benefits of a pooling arrangement for landowners is a better chance of earning a share of royalties; for drillers, it provides a wider area on which to drill. Pooling

units can be formed voluntarily but, in some states, forced pooling is legal. One drawback of forced pooling is that it may force holdout landowners to allow drilling underneath their land.

Propping agent: Also known as proppant, which is composed of sand, gravel or other minute particles forced into rock fractures to hold them open, allowing gas to seep out into a drilled well.

Pumping/compression station: These stations are used to raise the pressure of natural gas during its extraction, transportation and storage, minimizing the amount of room it takes up in the pipeline.

Rig: The machine used to drill holes into the Marcellus Shale formation. Usually these must be assembled on site, and disassembled to be moved to another drilling location, although some rigs can “walk” short distances to drill multiple wells from one platform.

Roughneck: A worker on a drilling rig.

Roustabout: A worker who performs manual labor around a drilling site.

Royalties: A percentage fee paid by gas companies to leaseholders on the land from which the gas is being extracted from, ranging in Pennsylvania from no less than 12 percent up to and potentially in excess of 20 percent of the value of all extracted gas.

Spud: The process of beginning a well.

Unconventional play: Extraction of oil or gas done by methods other than conventional vertical drilling into reservoirs. All shale gas plays, including the Marcellus (and the Utica), are deemed unconventional.

Utica Shale: Another layer of sedimentary rock, underneath the Marcellus Shale, that has recently been proven to hold large amounts of natural gas. **Well bore:** A hole drilled for the purpose of extracting natural gas.

