



Fact Sheet

Shale Gas & Oil Terminology Explained: Reserves and Estimates

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Hydraulic fracturing, or fracking, involves injecting fluid into a body of rock to create fissures from which natural gas and oil can be extracted. The technology has been credited with making available an extremely large amount of previously unrecoverable fossil fuels. Estimates of the amount of natural gas and oil made available through this technology vary, partly because there are several different kinds of estimates, and various categories of resources. This factsheet defines some of the most common terms used to describe the size, scope and recoverability of shale gas and oil.

DISCOVERED AND UNDISCOVERED RESOURCES

- **Undiscovered resources** are resources that are—based on surrounding geological structures—believed to exist, but for which a precise location has not yet been determined.¹
- In the case of **discovered resources**, the exact location has already been determined. However, not all discovered resources are available for extraction due to economic and technical constraints.²

TECHNICAL AND ECONOMIC RECOVERABILITY

- **Technically recoverable natural gas deposits** are discovered deposits of gas that are extractable using current technology. Estimates of technically recoverable natural gas may change as technology advances and the precise locations of the resource are determined.³
- The designation '**discovered technically recoverable natural gas**' typically describes reservoirs of natural gas that:
 - have been located by geologists and deemed technically recoverable
 - are currently in production, or;
 - have not yet been tapped.⁴
- Many industry estimates refer to **undiscovered technically recoverable resources**. These resources are shale deposits that have not yet been precisely located, but are suspected to be extractable using current technology.

Due to economic and geographic restraints, an undiscovered technically recoverable shale deposit may not actually be appropriate for fracking.⁵ The resources in these estimates have not yet been precisely located means that there are many geographic and geological concerns that would affect whether or not a deposit could actually be extracted, for example, the location of local aquifers or the depth of the well. Therefore, estimates of undiscovered

technically recoverable natural gas are not an accurate expression of the amount of shale deposits likely to be fracked.⁶

- **Economic recoverability** concerns both the accessibility of a shale deposit, and the financial feasibility of extraction. An assessment for economically recoverable resources considers financial incentives and market conditions, while an assessment of technically recoverable resources does not.⁷ Economically recoverable resource estimates can change based on market conditions. For example, if the price of gas increases from \$3.50/mmBTU to \$4.50/mmBTU, gas once considered uneconomic to recover at \$4 would be considered economically recoverable.

RESERVES

- Estimates of **recoverable resources** include shale gas and oil that is both technically and economically recoverable. However, there are different types of reserves: proven, probable, possible, and other reserves. Whether or not a deposit is considered proven depends on how certain analysts are of the location and recoverability of the shale gas.⁸
- **Proven reserves** are reserves of shale for which the *certainty* of natural gas quantity and location that is both technically and economically recoverable *is very high*—usually greater than 90 percent.⁹ These estimates are reported to the Securities and Exchange Commission because they are considered capital assets. A recent SEC ruling extended the limits of which natural gas reserves could be considered proven. Estimates can now include reserves that are located farther from producing wells.¹⁰
- **Probable reserves** are deemed more likely than not to be recovered, whereas **possible reserves** are reserves that are less likely to be recovered than probable reserves. Estimates of possible and probable reserves are less certain than estimates of proven reserves.
- **Other reserves**, also called *inferred* or *indicated* reserves, fall below the certainty of probable or possible reserves.

This fact sheet is available electronically at www.eesi.org/papers.

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¹ “U.S. Fossil Fuel Resources: Terminology, Reporting, and Summary”

http://epw.senate.gov/public/index.cfm?FuseAction=Files.view&FileStore_id=04212e22-c1b3-41f2-b0ba-0da5eaead952

² “U.S. Fossil Fuel Resources: Terminology, Reporting, and Summary”

http://epw.senate.gov/public/index.cfm?FuseAction=Files.view&FileStore_id=04212e22-c1b3-41f2-b0ba-0da5eaead952

³ “World Shale Gas Resources” <http://geology.com/energy/world-shale-gas/>

⁴ “The Natural Gas Resource Base” http://www.naturalgas.org/overview/ng_resource_base.asp

⁵ “Unconventional Natural Gas Resources” http://www.naturalgas.org/overview/unconvent_ng_resource.asp

⁶ “The Natural Gas Resource Base” http://www.naturalgas.org/overview/ng_resource_base.asp

⁷ “The Natural Gas Resource Base” http://www.naturalgas.org/overview/ng_resource_base.asp

⁸ “U.S. Fossil Fuel Resources: Terminology, Reporting, and Summary”

http://epw.senate.gov/public/index.cfm?FuseAction=Files.view&FileStore_id=04212e22-c1b3-41f2-b0ba-0da5eaead952

⁹ “The Natural Gas Resource Base” http://www.naturalgas.org/overview/ng_resource_base.asp

¹⁰ “SEC Shift Leads to Worries of Overestimation of Reserves” <http://www.nytimes.com/2011/06/27/us/27gasside.html>