

USGS Re-assessment of the Undiscovered, Technically-recoverable Oil and Gas Resources of the Marcellus Shale, Appalachian Basin, USA

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The US Geological Survey has recently completed a re-assessment of the undiscovered, technically-recoverable oil and gas resources of the Middle Devonian Marcellus Shale in the Appalachian Basin of the eastern United States. This work re-examined the 2002 assessment, and using the USGS geology-based assessment methodology for continuous petroleum resources, developed a revised estimate for this emerging new trend. The assessment was based on geologic elements of the Marcellus Shale within the Devonian Shale-Middle and Upper Paleozoic Total Petroleum System, recent production histories within the trend, and potential for the Marcellus Shale to respond effectively to multi-stage hydraulic fracture stimulation completions in horizontal wells.

The Marcellus Shale was divided into three assessment units (AUs) within its extent in the Appalachian Basin: (1) Western Margin, in the western extents of the Marcellus where it is less than 50 feet thick and west of the Appalachian Structural Front (ASF), (2) Interior Marcellus, in the eastern extents of the trend, where it is greater than 50 feet thick and west of the ASF, and (3) Fold Belt Marcellus, where it is present east of the ASF. These three AUs extend from southern New York to southwestern Virginia and northeastern Tennessee and from central Ohio to western Virginia and Maryland. The geology and resource assessments of these three AUs will be reviewed and discussed.