

History of Oil Shale in the eastern and central United States

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Shortages and rising costs of conventional oil in the late 1910's, 1940's, 1970's and 2000's each generated short-term interest in U.S. oil shales. Following each one of these events, there was a decade of increased activity in oil shale exploration, assessment, and technology development for mining methods and retort processes. The first three cycles ended abruptly when new oil field discoveries or new drilling and production technology increased the supply and decreased the cost of conventional oil.

Estimates, based on Fischer assay method, of near-surface in-place oil shale resources in Upper Devonian and Lower Mississippian black shales in the eastern and central U.S. were reported as 60, 1500, and 400 (with a possible extension to 3000) billion barrels of oil (BBO) in 1925, 1955, and 1965 respectively (USGS Circular 523). A larger assessment area and more clearly defined resource grades were used in the 1955 and 1965 estimates. US DOE funded significant field work, core collection, shale and organic analyses, and retort technology research for oil shale and gas shale resource potential in the eastern U.S. in the late 1970's and early 1980's. A hydroretorting process (hydrogen atmosphere at high pressure and temperature) was tested that can produce 2-3 times more oil from hydrogen-deficient eastern shale kerogens than the oil yield determined by Fischer assay. In 1980, Matthews, Janke, and Dennison estimated surface-mineable in-place oil shale resources in OH, KY, TN, IN, MI, and AL of 423 BBO based on hydroretorting oil yields. Commercial scale hydroretorting remains unproven and in 2006 the USGS (USGS SIR 2005-5294) revised the resource estimate to 189 BBO based on Fischer assay.

It is unclear whether new fracturing and in situ retorting methods will make thermally immature oil shale an economic resource in the near future or whether development of shale gas resources will again end interest in oil shale.