

# Estimates of recoverable gas from basin-centered gas accumulations in the Greater Green River Basin, Wyoming, Colorado, and Utah

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## Abstract

*Estimates of undiscovered recoverable gas in continuous type, basin-centered gas accumulations in the Greater Green River Basin of Wyoming, Colorado, and Utah range from 56 to 213.5 trillion cubic feet (tcf) and the mean gas estimate is 119.3 tcf. The gas occurs in low-permeability, overpressured, Cretaceous and Tertiary sandstone reservoirs that were deposited in marine and nonmarine environments. These sandstone reservoirs are interbedded with shale and coaly rocks that are most likely the source of the gas. The total interval of gas saturation is as thick as 14,000 ft. Individual sandstone reservoirs have porosities ranging from 3 to 12% and permeabilities that are usually less than 0.1 md (millidarcy).*

*In previous U.S. Geological Survey assessments of this type of gas accumulation in the Greater Green River Basin, a volumetric approach was used to determine the amount of in-place gas. A recoverability factor was then used to calculate the volume of recoverable gas. In the current U.S. Geological Survey assessment of the region, the gas accumulation was subdivided into five stratigraphically defined plays. Within each play, the gas accumulation was regarded as a collection of hydrocarbon-containing cells ranging in size between 80 and 160 acres. A probability distribution for the number of potentially productive, but untested cells in a play was developed from geologically based estimates of play size and drilling success ratio. A probability distribution for estimated ultimate recovery from a potentially productive, untested cell in the play was developed using established production within the play, or if necessary, from an analog play within the region. The combination of the two probability distributions yield a range for the estimated recoverable gas in a basin-centered gas play.*

*The results of the gas assessment in the Greater Green River Basin are highly dependent on production data from "sweet spots" in the Upper Cretaceous Almond and Frontier Formations within the basin-centered accumulation. Currently, new drilling and completion technologies are being applied to other more inferior quality reservoirs as well as to the established gas productive reservoirs. The results of this new activity will provide an opportunity to evaluate some aspects of our assessment.*