

**Carbon Sequestration, CBM, and Coal-to-Liquids Conversion in Appalachia; Critical Need for Understanding Unmineable and Deep Coal Resources,** Stephen F. Greb, Cortland F. Eble, and Gerald A. Weisenfluh, Kentucky Geological Survey, University of Kentucky, Lexington, KY 40506-0107, greb@uky.edu, eble@uky.edu, jerryw@uky.edu

As U.S. energy needs increase, Appalachian coal production is projected to increase. Yet much of the easy-to-exploit resources are gone or under development. More and more focus is being placed on deeper, below-drainage coals, some of which may be unmineable because of technological or economic restrictions. Deeper coal resources are being considered for coalbed methane potential; for geologic sequestration of carbon dioxide; and for coal-to-liquids conversion technology, which may be required to include a carbon sequestration component. Fundamental to each is an understanding of the deep and/or presently unmineable coals; the surrounding geology; proximity of favorable areas to existing and planned mines, CO<sub>2</sub> sources, water, and transportation corridors, as well as any environmental concerns.

Although deep saline reservoirs are currently being proposed for large-volume CO<sub>2</sub> sequestration, there are many areas in the Appalachians where coal beds are likely to be utilized because of their potential to generate enhanced coalbed methane, and favorable absorption mechanisms, which will allow for shallower injection depths than for many saline reservoirs. In some areas, it may be possible to use multiple beds as stacked reservoirs, whereas in others, there will be fewer options. There are large areas where little is known about the extent or thickness of deep coals, their permeabilities, water chemistry, cleating, and secondary cementation; all issues that will be important considerations for potential sequestration.