Analyzing the Deep Coal Resources of Eastern Kentucky for their Carbon Sequestration Potential, Michael P. Solis and Stephen F. Greb, Kentucky Geological Survey, University of Kentucky, Lexington, KY 40506-0107, msolis@uky.edu, greb@uky.edu

The Lower Pennsylvanian CBM plays of southwestern Virginia and Alabama occur in coal beds that are largely absent in southeastern Kentucky due to truncation by thick quartzarenites and updip loss of accommodation space. In Kentucky, however, there are coals at depth that may contain CBM, or could be utilized for carbon sequestration with the potential for enhanced CBM production. Lower Pennsylvanian coals of the Grundy Formation, and lower parts of the Pikeville Formation are preserved at depths of more than 500 and 1,000 feet below drainage in parts of the Middlesboro and Eastern Kentucky Synclines. There are, however, few coal exploration boreholes at these depths.

As part of the SECARB partnership, subsurface oil and gas wells are being used to better understand the stratigraphy of the Lower Pennsylvanian and lower Middle Pennsylvanian strata in the synclines. There are few density logs of the deeper coal-bearing strata, but there are many gamma and neutron logs. These logs are being used in combination with the existing density data to correlate Lower Pennsylvanian depositional sequences and determine areas where deep coals might be evaluated in the future for CBM or carbon sequestration. Useful stratigraphic markers include major marine flooding surfaces at the top of the Bee Rock–Middlesboro Sandstone and Betsie Shale, the base of the Bee Rock–Middlesboro Sandstone, and a series of minor flooding surfaces in the lower Grundy Formation.