Assessment of the Marcellus Shale, Utica Shale, and East Coast Mesozoic basins in the eastern United States – a review

Robert C. Milici[1], James L. Coleman[1] and Mark A. Kirschbaum[2]

[1]*U.S. Geological Survey, Reston, Virginia*
[2]*U.S. Geological Survey, Denver, Colorado*

Abstract

The U.S. Geological Survey (USGS) has recently assessed the technically recoverable, undiscovered hydrocarbon resources of three continuous (unconventional) hydrocarbon accumulations in the eastern United States: the Utica Shale (Ordovician) (Kirschbaum and others (2012), the Marcellus Shale (Devonian) in the Appalachian Basin Province (Coleman and others, 2011), and the East Coast Mesozoic basins (Milici and others, 2012), which are located onshore in the Appalachian, Piedmont, Blue Ridge, and New England Provinces, beneath the Atlantic Coastal Plain Province, and offshore in the state waters of the Continental Shelf. The volumes of natural gas calculated in the more recent assessments of the Marcellus Shale and Mesozoic basins are significantly greater than those assessed previously by the USGS for these plays. Although four continuous assessment units sourced by the Utica Shale and containing sandstone reservoirs were defined within the continuous oil and gas resources of the Utica-Lower Paleozoic Total Petroleum System in the 2002 assessment of the Appalachian Basin (Milici and others, 2003), the Utica Shale source rock was not quantitatively assessed as a self-sourced continuous reservoir at that time. Subsequently, the recent (2012) assessment of the Utica Shale by the USGS was largely in response to the recent development of the Utica Shale by industry as well as the development of extensive continuous shale gas resources elsewhere in the U.S.