

## Geologic Carbon Dioxide Sequestration Assessment of the United States

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In 2007, the Energy Independence and Security Act (Public Law 110–140) authorized the U.S. Geological Survey (USGS) to conduct a national assessment of geologic storage resources for carbon dioxide (CO<sub>2</sub>) in consultation with the U.S. Environmental Protection Agency, the U.S. Department of Energy (DOE), and State geological surveys. During the first phase of the project, the USGS developed a probability based methodology (Brennan et al., 2010, <http://pubs.usgs.gov/of/2010/1127>) to estimate the CO<sub>2</sub> storage resource potential that can be uniformly applied to geologic formations across the United States. In the second phase of the project the USGS will use the methodology to assess the Nation's geologic storage resources for CO<sub>2</sub>.

A team of USGS geologists, petroleum engineers, and data specialists are working with State geologic surveys, and other State and Federal agencies, to delineate storage assessment units (SAU) and estimate CO<sub>2</sub> sequestration capacity in buoyant and residual storage traps within U.S. basins. For buoyant traps CO<sub>2</sub> is held in place in porous formations by a top and lateral seal; for residual traps CO<sub>2</sub> is held in porous formations as individual droplets within pores where the capillary forces overcome the buoyant forces. SAUs are defined by the following characteristics: (1) are composed of a storage formation and an overlying seal that will prevent CO<sub>2</sub> from migrating out of the storage unit; (2) are large enough to store at least 1 million metric tons of CO<sub>2</sub>, (3) are located at depths of 3,000 to 13,000 ft (914 to 3,962 m), to ensure that CO<sub>2</sub> is in a supercritical state, and (4) contain no formation water with total dissolved solids less than 10,000 parts per million (ppm), to prevent contamination of potential potable water. Assessment results will be compiled and released as USGS publications and also made available via the DOE NatCarb mapping portal <http://www.natcarb.org/>.