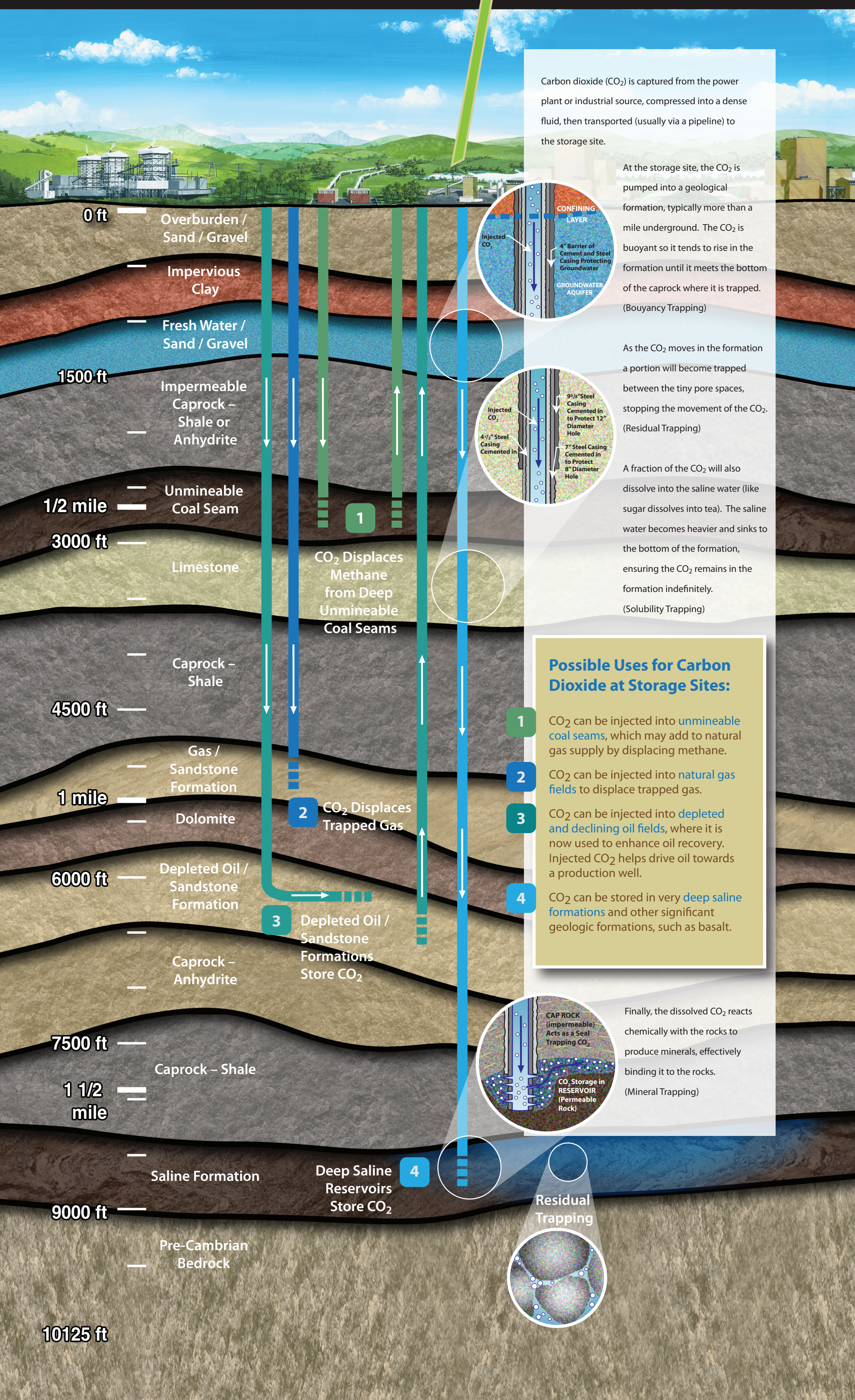


CO₂ capture and geological storage *in depth*



Carbon dioxide (CO₂) is captured from the power plant or industrial source, compressed into a dense fluid, then transported (usually via a pipeline) to the storage site.

At the storage site, the CO₂ is pumped into a geological formation, typically more than a mile underground. The CO₂ is buoyant so it tends to rise in the formation until it meets the bottom of the caprock where it is trapped. (Bouyancy Trapping)

As the CO₂ moves in the formation a portion will become trapped between the tiny pore spaces, stopping the movement of the CO₂. (Residual Trapping)

A fraction of the CO₂ will also dissolve into the saline water (like sugar dissolves into tea). The saline water becomes heavier and sinks to the bottom of the formation, ensuring the CO₂ remains in the formation indefinitely. (Solubility Trapping)

Possible Uses for Carbon Dioxide at Storage Sites:

- 1** CO₂ can be injected into **unmineable coal seams**, which may add to natural gas supply by displacing methane.
- 2** CO₂ can be injected into **natural gas fields** to displace trapped gas.
- 3** CO₂ can be injected into **depleted and declining oil fields**, where it is now used to enhance oil recovery. Injected CO₂ helps drive oil towards a production well.
- 4** CO₂ can be stored in very **deep saline formations** and other significant geologic formations, such as basalt.

Finally, the dissolved CO₂ reacts chemically with the rocks to produce minerals, effectively binding it to the rocks. (Mineral Trapping)



U.S. DEPARTMENT OF
ENERGY

www.fossil.energy.gov