REGIONAL CARBON SEQUESTRATION PARTNERSHIP WATER WORKING GROUP

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RCSP Water Working Group

Abstract

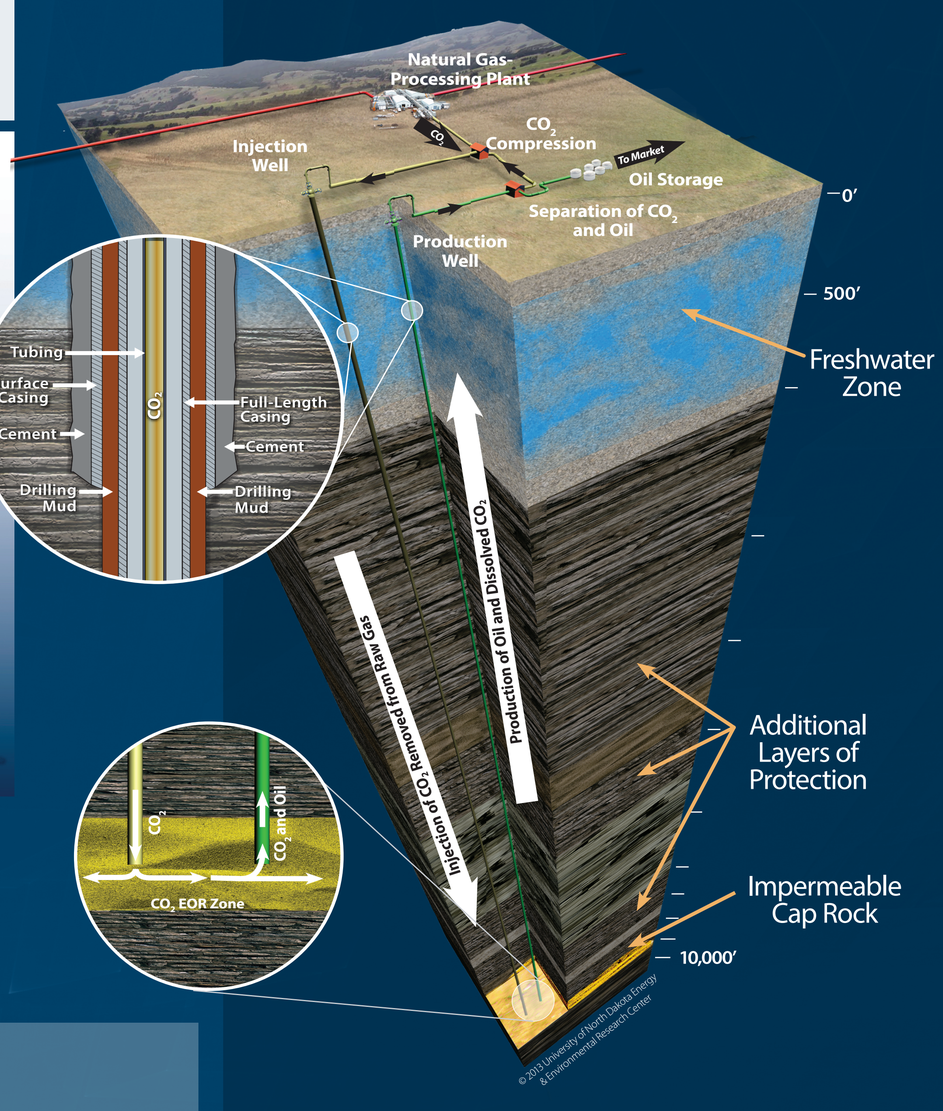
The U.S. Department of Energy's National Energy Technology Laboratory has been developing the technology, infrastructure, and experience to implement large-scale carbon capture and storage (CCS) from a regional perspective through its Regional Carbon Sequestration Partnership (RCSP) Program, which consists of seven regional partnerships. Members of these partnerships have formed the Water Working Group (WWG), the goal of which is to address the concerns of the public and industry regarding CCS technology and its potential relationships with water resources. Members of the WWG represent different regions of North America, and each region has its own unique set of opportunities and challenges related to water resources and CCS.

The mission of the WWG is to provide a sounding board for researchers, industry, and public and private entities on the challenges and opportunities related to water and CCS. To this end, the group has produced a white paper, presentations, and a growing series of fact sheets on the interrelationships and issues related to the CCS and water nexus. These relationships include increased water use in industrial sources generating CO_2; additional water use for capture, compression, and transportation processes; and interactions with water found in deep, confined formations targeted for storage. Other issues such as the development and application of new monitoring technologies, evolving regulatory policies, and changes in public perception contribute to the growing complexity of this nexus. WWG members will continue to provide valuable insight on these issues through continuing and new research efforts as part of the RCSP Program.

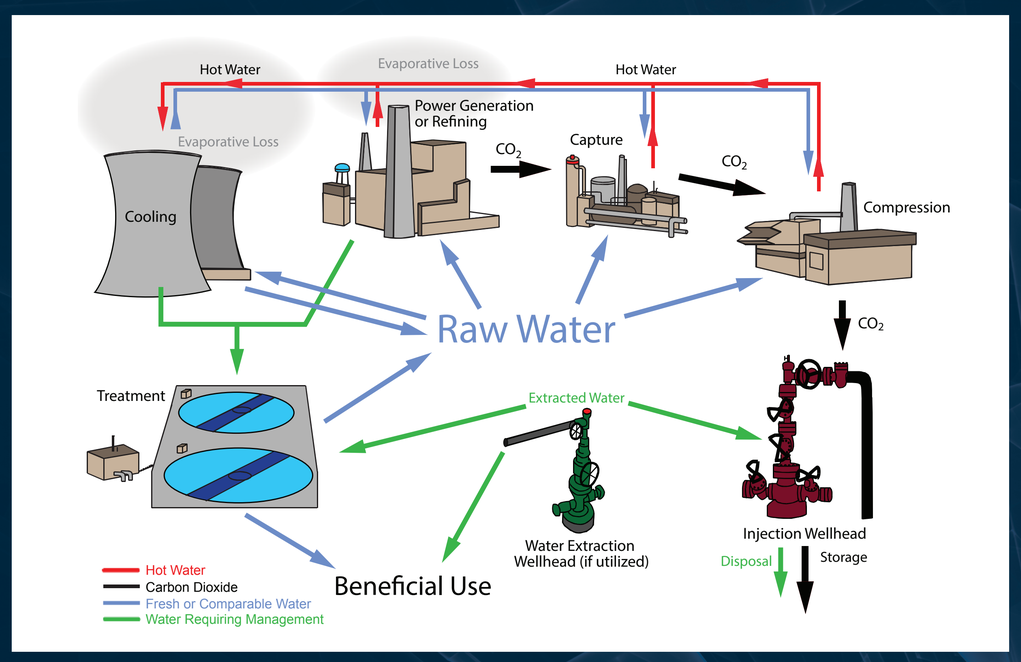
Mission

Address stakeholder concerns regarding emerging CCS technology and its potential interactions with local and regional water resources.

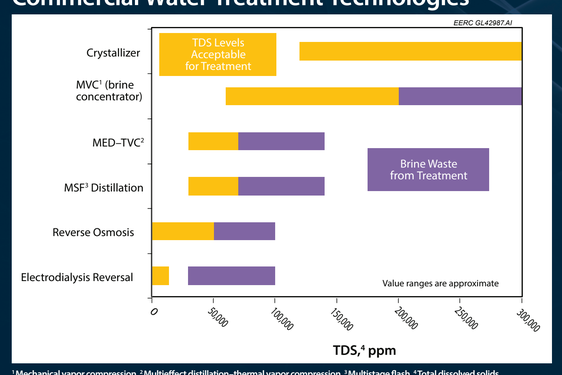
Water Resource Protection



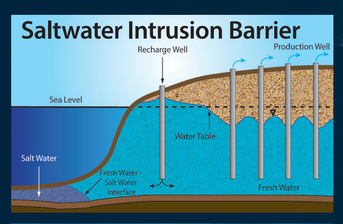
Nexus of Water and CCS



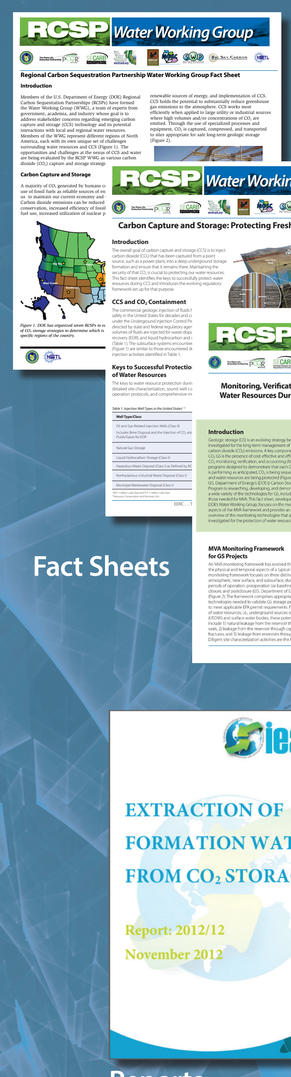
Commercial Water Treatment Technologies



[1] Mechanical vapor compression. [2] Multieffect distillation–thermal vapor compression. [3] Multistage flash. [4] Total dissolved solids.



Products



Fact Sheets

Reports

Presentations

WEB SITE COMING SOON.

Conceptual illustration of the potential migration pathways for CO_2 in a well along the casing–cement interface (a and b), within the cement (c), through the casing (d), through fractures (e), and along the cement–formation interface (f) (from Celia and others, 2004).

Water sampling at a CO_2 geologic storage demonstration site.

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Reference

Celia, M.A., Bachu, S., Nordbotten, J.M., Gasda, S.E., and Dahle, H.K., 2004, Quantitative estimation of CO_2 leakage from geological storage—analytical models, numerical models, and data needs: Proceedings of the 7th International Conference on Greenhouse Gas Control Technology, Vancouver, Canada.