

California State Agencies Collaborative Research Project

West Coast Regional Carbon Sequestration Partnership

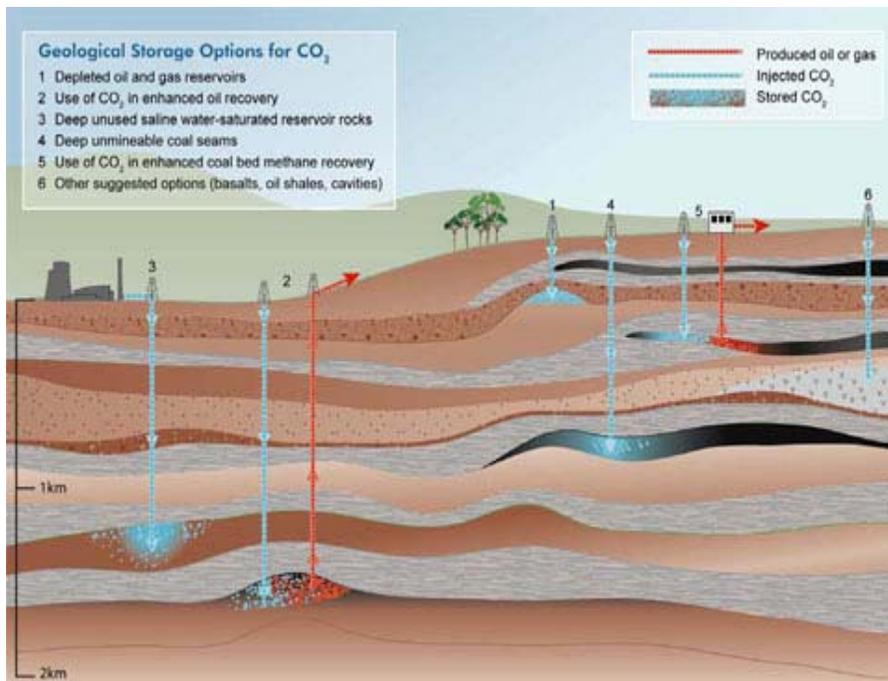
The West Coast Regional Carbon Sequestration Partnership (WESTCARB) is a collaborative research project established to identify and validate the best regional opportunities for reducing carbon dioxide (CO₂), a major greenhouse gas, in the atmosphere, thereby reducing humankind's impact on the climate. WESTCARB is exploring opportunities in seven Western states—Alaska, Arizona, California, Hawaii, Oregon, Nevada, Washington—and in British Columbia for removing CO₂ from the atmosphere through (1) terrestrial sequestration: enhancing natural processes that store it in biomass and soil, and (2) geologic carbon capture and storage: modifying industrial facilities to remove CO₂ from process or exhaust gases for injection into rock formations deep underground.

Established in 2003, WESTCARB is one of seven research partnerships co-funded by the U.S. Department of Energy (DOE) to characterize regional carbon sequestration opportunities and conduct technology validation and demonstration projects. The partnership has participants from over 90 organizations including state and provincial resource management and environmental protection agencies; national laboratories and research institutions; colleges and universities; conservation non-profits; oil and gas companies; power companies; pipeline companies; trade associations; vendors and service firms; and consultants.

The California Energy Commission leads the partnership and, along with the DOE, is a principal funder of its work. The California Energy Commission's Public Interest Energy Research program is leveraging an investment of approximately \$10 million in state funds to bring up to \$110 million in federal and industrial match funding to the WESTCARB effort.

Within its territory, WESTCARB is identifying the major stationary sources of CO₂ such as power plants, oil refineries, and cement plants; assessing CO₂ separation technologies that could be used to capture the CO₂ at these facilities; determining the potential for storing CO₂ in geologic formations; and assessing the costs of transporting CO₂ via pipelines from major CO₂ sources to storage sites. The DOE combines WESTCARB's findings with those of the other regional partnerships in the interactive National Carbon Explorer to help understand how sequestration can help the United States and Canada reduce CO₂ emissions and mitigate climate change impacts.

The WESTCARB program consists of three phases of research. Phase I assessed the opportunities for carbon capture and storage within WESTCARB's territory. Phase II, now ongoing, includes completion of more detailed and thorough characterizations and small-scale pilot projects, including terrestrial sequestration studies, geologic site assessments and small-scale pilot tests, and a feasibility study for adding carbon capture and storage to California's natural gas combined cycle plants. Phase III will involve additional regional characterization and research and development related to large-volume, commercial-scale storage projects.



Source: Peter Cook, CO2CRC

WESTCARB geologic characterization studies show excellent carbon sequestration potential throughout the region. Deep saline formations in broadly distributed sedimentary basins have the potential to store hundreds of years' worth of the region's stationary CO₂ source emissions. Numerous enhanced oil recovery opportunities, as well as some for enhanced coal bed methane, offer the potential for geologic sequestration to be coupled with revenue-producing products. Other emerging beneficial uses of CO₂ are also being examined.

For terrestrial carbon sequestration, WESTCARB quantified the extent to which changes in the management of forests and rangelands can increase carbon storage within these types of ecosystems.

Governor Arnold Schwarzenegger and the California Legislature have recognized the importance of reducing CO₂ and other greenhouse gas emissions to the atmosphere to combat climate change. Upon passage of AB 32, state agencies began to identify ways to reduce greenhouse gas emissions to 1990 levels by 2020. Carbon capture and storage could play a significant role in achieving this goal and an even bigger role in achieving the 2050 goal of 80 percent of 1990 levels, which was set forth in Executive Order S-3-05. To support business and utility efforts to adopt carbon capture and storage to reduce CO₂ emissions, Senate Bill 1368¹ mandates that geologically stored CO₂ shall not count as an emission of a power plant for determination of greenhouse gas emission performance standard compliance. To assist policymakers and agencies in understanding how to facilitate and optimize adoption of carbon capture and storage in the state, WESTCARB members provided significant technical input to

¹ Perata, Chapter 598, Statutes of 2006

the Assembly Bill 1925² report³ and to the California Carbon Capture and Storage Review Panel.. Assembly Bill 1925 required the California Energy Commission provide “recommendations for how the state can facilitate, and provide incentives for, cost effective strategies to contain, sequester, and recycle carbon dioxide that is created during the generation of electricity.”

The California Energy Commission, the California Public Utilities Commission, and the California Air Resources Board formed the California Carbon Capture and Storage Review Panel to provide recommendations to state agencies and others on what policies and institutional and regulatory changes are needed to enhance greenhouse gas emissions reduction through the use of geologic carbon capture and storage in California. Other state agencies interested and involved in these issues are the California Department of Conservation and the California State Water Resources Control Board.

² Blakeslee, Chapter 471, Statutes of 2006

³ “Geologic Carbon Sequestration Strategies for California: Report to the Legislature,” California Energy Commission, February, 2008, <http://www.energy.ca.gov/2007publications/CEC-500-2007-100/CEC-500-2007-100-CMF.PDF> (Accessed December 15, 2010).