Carbon sequestration beneath the New Jersey continental shelf: An assessment f the geologic and socio-political aspects.

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Carbon capture and sequestration (CCS) is a nascent technology that captures carbon dioxide from large point sources, such as power plants, and stores it in a geological formation a distance away. It thereby allows the use of fossil fuels as an electricity source while limiting their greenhouse gas emissions. The New Jersey continental shelf provides excellent potential for geological storage. We evaluated sequestration potential for the middle continental shelf with well log analysis of six dry industry wells on the Great Stone Dome (GSD). Sequestration potential is excellent in the Cretaceous (Cenomanian to Albian) Upper and Lower Logan Canyon Sand units; these porous sandstone beds in the subsurface, approximately 1800-2500 meters deep, are capped by shale that would potentially seal liquid CO₂. The GSD is potentially superior to outer continental shelf locations because hydrocarbons, particularly methane, have been vented and do not complicate sequestration in contrast to other areas studied. A coal-burning CCS power plant (PurGen One) was proposed for Linden, New Jersey with planned storage on the outer continental shelf or continental slope in 2009 by SCS Energy, but was put into stasis in 2011. An assessment of the social and political factors indicates that PurGen One had an unsuccessful end due to opposition of political figures and environmental activists, financial difficulties, and regulatory uncertainty. The lack of support from the city of Linden and from the administration of Governor Chris Christie had convinced the company, SCS Energy, to abandon their plant and move their efforts to California-based coal CCS plant which will use carbon capture and sequestration for enhanced oil recovery.