



# GEOGULF2021

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## Application of Sage Geosystems™ Proprietary Geothermal Technologies in Geopressed Formations that Exist along the Gulf of Mexico

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### ABSTRACT

Extensive studies dating back to the 1970s concluded that the recoverable electricity generation potential in geopressed formations in areas around the Gulf of Mexico Coast equate to about 5 GW, or a third of the current geothermal power capacity around the world. This power generation comes from three energy sources: (a) geothermal heat from hot water production (hydrothermal), (b) mechanical (hydraulic) energy from the abnormally high fluid pressures that have resulted from the compartmentalization of the sand and shale beds that contain these hot waters, and (c) methane production from dissolved natural gas contained in the hot water, which could otherwise be uneconomic to develop. Geopressed formations are those having a pressure gradient greater than water, produce at high pressures, and are commonly found at depths >4 km along the Gulf of Mexico coast, both onshore and offshore.

Unlike many targeted geothermal locations, there is abundant subsurface information for this geopressed area as it has been actively explored for oil and gas and thousands of wells have been drilled along the Texas and Louisiana coasts. In fact, in 1989 a 1 MW plant operated for a couple of years near Houston and was powered by the Pleasant Bayou well completed in the Frio formation that produced hot water and natural gas; about half of the power generation came from the thermal energy of water using a binary cycle power plant and half by burning the gas in a reciprocating-engine-operated electric generator. The plant was shut down as the economics did not work at the time because of the low price of natural gas and oil. Economics in today's energy markets could be much more favorable with application of Sage Geosystems™ (Sage) proprietary geothermal technologies.

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