

## **From “FutureGen” to the “Texas Clean Energy Project”, Building the World’s First 90% Carbon Capture Clean Coal Plant with CCS/EOR**

**Hoxie W. Smith**

*PPDC, Midland College, Midland, TX.*

On December 6, 2005, the U.S. Department of Energy and the newly formed FutureGen Alliance issued a solicitation for state competition in determining a host site for the first nearzero emissions coal-fired power plant of the future, dubbed “FutureGen”. On August 1, 2007 the State of Texas submitted “Best and Final Offers” for two sites, one located in the heart of the Permian Basin oil patch at Penwell, Texas. The site, 15 miles west of the city of Odessa, sits less than a mile from Kinder Morgan’s main Central Basin Platform CO<sub>2</sub> trunk line that delivers CO<sub>2</sub> to several tertiary EOR projects located in the Permian Basin. The Penwell site was not selected in the FutureGen competition, but may ultimately be the home of the first FutureGen-like plant in the United States. Summit Power Group, a far-sighted developer of clean energy projects, seized the opportunity to launch a commercial project named the Texas Clean Energy Project or TCEP.

On January 29th, 2009, the U.S. Department of Energy signed a \$350 million dollar cooperative agreement for the TCEP through funding allocated for the third round of the “Clean Coal Power Initiative”. Summit Power Group plans to break ground on this ambitious state-of-the-art Integrated Gasification Combined Cycle (IGCC) clean-coal power plant by the end of 2010. The plant will be a 400 Mw power plant utilizing Powder River Basin low-sulfur coal as the feedstock. The coal will be gasified and separated into syngas, CO<sub>2</sub>, and usable end-products of Urea (fertilizer) and sulfuric acid. Slag will be utilized for road construction and as a cement additive. The CO<sub>2</sub>, estimated at roughly 2.8 million tons per year, will be sold to the oil field for use in enhanced oil recovery (EOR). The Texas Bureau of Economic Geology will handle all monitoring, verification, and accounting to see that the CO<sub>2</sub> is sequestered in formations that will meet a 1,000 year storage requirement. This presentation will describe the positive project economics for IGCC with CCS/EOR in the Permian Basin, where CO<sub>2</sub> is a commodity rather than an expense making a clean-coal project with carbon capture and storage economically viable.