

Status of CCS Demonstration Projects on EGUs in the USA (Feb. 8, 2012) – PG 1

Project	State	Status	Description	Estimated CO₂ to be captured per year	Sequestration Type	Public Funding	Total Estimated Cost (citation)
AEP – Mountaineer Plant - Post Combustion CO ₂ Capture (235 MW)	WV	Postponed indefinitely (July 2011)	Post-combustion chilled ammonia capture scale-up project from previous 20 MW project to a 235 MW slipstream at Mountaineer 1300 MW PC plant. Continuing to evaluate financing options after rate recovery requests denied by WV and VA. Project proposed 2/01/2010; end date proposed 6/30/2019	1.5 M tons	Deep saline sequestration	\$334 M (CCPI***)	\$668 M
Antelope Valley Station Post-Combustion CO ₂ Project	ND	Postponed indefinitely, (December 2010)	The company said the FEED* results, considered alongside an assessment of additions necessary at the power plant and sequestration costs put the total cost of the demo project at around \$500 million. It also said that until a market for the sale of CO ₂ to EOR projects is developed further in the area as a potential revenue stream – and a long-term US energy policy is in place – it is postponing further investment, but has not ruled out the technology for the future.	450 k- 1.36 M tons	EOR**/geologic sequestration	\$100 M (CCPI***)	\$287 M
FutureGen 2.0 Oxy-combustion/Regional Repository (200 MW)	IL	FutureGen Alliance and Ameren in negotiations, 11/11; Pre-FEED* in progress	According to Carbon Capture and Storage @ MIT website (MIT), the FutureGen Alliance needs 20 members to fully fund this project; there are currently 11 members. Negotiations between the Alliance and Ameren are continuing. In November 2011, Ameren Corp. announced that it would close down the Meredosia Energy Center at the end of 2011 in order to comply with new air quality rules. FutureGen Alliance is currently in negotiations with Ameren to buy parts of the plant in order to continue the DOE project. Construction will begin late-2012 and be complete in late-2015. The current project schedule has construction beginning on both the Meredosia power plant and the CO ₂ pipeline and storage facility during the second half of 2012. The repowering of the Meredosia plant with oxy-fuel design, the CO ₂ pipeline and storage facility and the training and research center should be completed by end of 2015.	1.3 M tons	Deep saline sequestration	\$1.05 B (Fed)	1.29 B
HECA Commercial Demo of Advanced IGCC w/Full Carbon Capture (250 MW)	CA	Under new management and continued FEED*	SCS Energy executed a conditional agreement, May 2011, to take over Hydrogen Energy California (HECA) and to move a modified power project forward through permitting, construction and operation. HECA's original investors — BP and Rio Tinto — entered into discussions with the U.S. Department of Energy (DOE) in early 2011 to seek ways to sustain the project upon their exit by replacing their investment. These efforts resulted in SCS Energy proposing a viable solution that will enable the continued feasibility of the project. Project proposed 10/01/2009; end date 11/01/2018.	2.0 M tons	EOR**	\$408 M (CCPI***)	\$2.8 B (MIT) \$4 B (DOE)
NRG W.A. Parish Post-Combustion Capture	TX	FEED* for 60 MWe almost completed	Original project proposal - 60 MW slipstream capture on existing coal unit using Fluor's Ecoamine process; 2 year test. NRG now looking at scaling up to 247 MW capture (one unit at plant). Investigating novel business models to make the project economical. Project started 6/1/2010.	400,000 tons (original proposal) 1.4 M tons if scaled up	EOR**	\$167 M (CCPI***)	\$339 M (DOE)

Status of CCS Demonstration Projects on EGUs in the USA (Feb. 8, 2012) – PG 2

Project	State	Status	Description	Estimated CO₂ to be captured per year	Sequestration Type	Public Funding	Total Estimated Cost (citation)
Southern Company (Alabama Power Company) CO ₂ Capture Retrofit, Plant Barry (25 MW)	AL	Plant currently on reserve shutdown due to low energy demand (mild winter; low NG \$); Class V permit issued for captured CO ₂ injection, 11/11; Capturing CO ₂ , June 13, 2011	The SECARB project team was issued a Class V UIC permit in November 2011 for captured CO ₂ injection into saline formations; 25-MW post-combustion capture retrofit; CO ₂ to be transported 11 miles via pipeline and permanently stored in Citronelle Oil Field; pipeline and oil field operated by Denbury Resources. Pipeline is ready; waiting for plant startup in order to sample and analyze CO ₂ stream.	150,000 tons	Deep saline formation	\$0	Not disclosed but possibly \$600 M (MIT)
Southern Company IGCC-Transport Gasifier w/Carbon Capture (Plant Ratcliffe)	MS	Under construction	582 MW IGCC plant with pre-combustion capture. The captured CO ₂ will be transported via pipeline and used for enhanced oil recovery projects. Project proposed 1/30/2006; construction began 12/2010	2.5 M tons	EOR**/possible saline storage	\$270 M (CCPI***)	\$2.4 B (MIT) \$2.01 B (DOE)
Summit TX Clean Energy Commercial Demo of Advanced IGCC w/Full Carbon Capture	TX	Negotiating project financing; FEED* on-going	400 MW IGCC with pre-combustion capture. Captured CO ₂ will be used for enhanced oil recovery projects. ROD issued under NEPA, Sept. 2011; 25-Year Purchase Power Agreement with CPS Energy signed, June 2011; EIS completed July 2011. Project started 2/01/2010; FEED* and NEPA in progress	3.0 M tons	EOR**	\$450 M (CCPI***)	\$2.4 B (MIT) \$1.727 B (DOE)
Sweeny Gasification	TX	On hold	Waiting for climate legislation. IGCC with 90% capture using coal plus petcoke proposed. Air permit applications are being pursued.		EOR** and geologic sequestrations	\$3 M (CCPI***)	
Taylorville Energy Center	IL	Air permits being challenged, 2012; Facility Cost Report awaiting IL General Assembly final approval; financing and construction timetable have not yet been established	Draft air permits issued in 2010; In 2011, IL Senate rejected legislation that would have financially supported the project; draft air permits are being challenged by environmental NGOs (2012). Has offtake contract with Denbury for CO ₂ to be used in EOR. An IGCC plant with at least 65% carbon capture.	Backup saline storage designed for 2.3M tons CO ₂ /year	EOR** with backup deep saline storage	Loan guarantee up to \$2.579 B	\$3.5 B (MIT and Tenaska)
Trailblazer Energy Center (Tenaska)	TX	Financing and construction timetable have not yet been set	Supercritical PC plant with 85-90% capture. Air quality permit issued and FEED* study for carbon capture facility completed.	Potential of 5.7 M tons of CO ₂ /year available for sale	EOR**	\$0	\$3 B (MIT)/\$4 B (Tenaska) Including \$8.3 M from #GCCSI (2011)

*FEED - Front End Engineering and Design - early design work done after conceptual business planning and prior to detailed design **EOR - enhanced oil recovery - injecting CO₂ to recover oil that remains after primary extraction

***CCPI - Clean Coal Power Initiative - a DOE-sponsored award program that has granted awards for advanced coal generation technology and CCS projects #GCCSI - Global CCS Institute - an independent, not for profit legal entity established by the Australian government in 2001