



U.S. Department of Energy Programs Available for U.S. CCS Projects

	Restructured FUTUREGEN	Clean Coal Power Initiative – Round 3	Loan Guarantees	Industrial Carbon Capture Program
Agency	DOE/ NETL	DOE/NETL	U.S. DOE	U.S. DOE
Program details	Demonstrate commercial scale IGCC or other coal-based power generation	Demonstrate advanced coal-based technologies that capture and sequester, or put to beneficial reuse, CO ₂ and that make “significant progress” toward - <ul style="list-style-type: none"> ○ 90% carbon capture ○ CCS at less than 10% increase in cost of electricity. 	Support debt financing for coal based power generation and industrial gasification facilities at new and retrofitted facilities in the U.S. that incorporate carbon capture and sequestration or other beneficial uses of carbon and for advanced coal gasification facilities	H.R. 1 provides funding for a new, competitive program to demonstrate a range of industrial carbon capture and energy efficiency improvement projects and innovative concepts for beneficial CO ₂ reuse.
Technical Eligibility Criteria and Project Requirements	<p>Demonstration unit must:</p> <ul style="list-style-type: none"> ◆ Achieve minimum CO₂ capture rate of 81% of the carbon content in the syngas or flue gas ◆ At least 1 MMT of CO₂/yr must be capture and stored in a saline formation (during operation period; additional CO₂ can be used for EOR) ◆ Operate 3-5 years, ◆ Monitor injected CO₂ for minimum of 2 yrs AFTER initial operation period (DOE will cost-share add'l time) <p>Eligible Technologies:</p> <p>For IGCC, a single power train with CCS –</p> <ul style="list-style-type: none"> • One or more gasifiers • Syngas required to fuel 200 MW combustion turbine <p>For non-IGCC:</p> <ul style="list-style-type: none"> • A “commercially” sized facility (not defined further) • Focus is upon capture technology <p>Other Requirements:</p> <ul style="list-style-type: none"> ◆ Located in the U.S. 	<p>Demonstration unit must:</p> <ul style="list-style-type: none"> ◆ Capture at least 50% of the CO₂ from the unit and sequester or put to beneficial reuse (i.e. EOR) ◆ At least 300,000 tons per year of CO₂ must be captured and sequestered or put to beneficial reuse ◆ Priority is given to projects that capture and sequester more than 50% of the CO₂. ◆ No injection monitoring required <p>Eligible technologies:</p> <ul style="list-style-type: none"> ○ Pre-combustion ○ Oxy-fuel ○ Chemical looping ○ Post-combustion advanced technology “that significantly reduce(s) the cost and parasitic power load of CO₂ capture when compared to amine systems.” <ul style="list-style-type: none"> ◆ Include Industrial gasification projects producing fuels, chemicals in combination with electricity production are eligible. 	<ul style="list-style-type: none"> ◆ An eligible project shall <ul style="list-style-type: none"> ○ Employ new or significantly improved technologies as compared to commercial technologies ○ Have the potential for replicability in other U.S. commercial projects ◆ Eligible project emissions limits: <ul style="list-style-type: none"> ○ SO_x </= 0.05 lb/MMBtu; ○ Hg >/= 90% removal; ○ NO_x </= 0.08 lb/MMBtu; and ○ PM </= 0.01 lb/MMBtu ◆ Projects must be located in the U.S. ◆ Project sponsor must pay the non-refundable credit subsidy cost by the guarantee closing date. ◆ Face value of the debt guaranteed is limited to no more than 80% of total project costs ◆ Borrower-paid credit subsidy costs and administrative fees paid to DOE may not be included within total project costs ◆ Borrower must have a significant equity stake in the project. 	<ul style="list-style-type: none"> ◆ The ‘American Recovery and Reinvestment Act of 2009’ (H.R. 1) provides \$1.52 billion for a competitive program to demonstrate a range of industrial carbon capture and energy efficiency improvement projects, including innovative concepts for beneficial CO₂ reuse. ◆ Specifics for this program have not been announced by DOE. ◆ Funds must be obligated by September 30, 2010.



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	<ul style="list-style-type: none"> ◆ 75% of energy must be from U.S. coal ◆ 50% energy output to produce electricity ◆ Start-up of demonstration unit must be no later than December 31, 2015 ◆ Remove 90% of Hg, 99% of SO₂ (or 0.04 lbs/mmBtu if low sulfur coal, 0.05 lb/mmBtu of Nox and 0.0005 lb/mmBtu of PM ◆ Various requirements for sequestration site characterization, monitoring, public education, etc. 	<p>Other Requirements:</p> <ul style="list-style-type: none"> ◆ Located in the U.S. ◆ 75% energy input from U.S. coal ◆ 50% of energy output used to generate electricity ◆ Projects must be at a scale sufficient to show the potential for market penetration upon successful demonstration and proposed new applications of commercially available technologies ◆ Criteria pollutants must be controlled in accordance with table on page 8 of final solicitation ◆ No technical requirements for sequestration site 		
Award Instrument	<ul style="list-style-type: none"> ◆ Cooperative agreement ◆ Technology investment agreement 	<ul style="list-style-type: none"> ◆ Cooperative agreement 	<ul style="list-style-type: none"> ◆ Federal Loan Guarantee 	<ul style="list-style-type: none"> ◆ Unknown at this time
Total/ Maximum Funding Available	<ul style="list-style-type: none"> ◆ \$290 million (through FY 2009) ◆ Additional \$1.01 billion may become available in future if Congress appropriates, ◆ awards could be made in excess of funding available in FY 2009, but additional funding for selected projects subject to future appropriations ◆ No maximum or minimum award size, “DOE anticipates” awards ranging from \$100 to \$600 million (DOE share) 	<ul style="list-style-type: none"> ◆ \$1.5 billion total available for CCPI III <ul style="list-style-type: none"> – \$800 million additional through H.R. 1 – \$700 appropriated in previous measures ◆ No maximum or minimum awards ◆ Funds available may be used to support any technology that meets the requirements of the Round 3 FOA, without regard to the 70/30 percent funding allocation specified in EAct 2005. 	<ul style="list-style-type: none"> ◆ \$6 billion in loan guarantee authority for coal power generation and industrial gasification projects at retrofitted and new facilities that incorporate CCS or other beneficial uses of carbon ◆ \$2 billion for advanced coal gasification projects ◆ Under the terms of the FY08 Appropriations Act, the availability of this loan guarantee authority expires on September 30, 2009. 	<ul style="list-style-type: none"> ◆ \$1.52 billion for a new competitive program to demonstrate a range of industrial carbon capture and energy efficiency improvement projects and innovative concepts for beneficial CO₂ reuse.



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Application Deadline & Anticipated Award Dates	<ul style="list-style-type: none"> ◆ Application due date is October 8, 2008 at 8:00 PM Eastern time; ◆ DOE anticipates awards made by late December 2008 (awards have not yet been announced) ◆ The Obama Administration has not announced plans on how to proceed with FutureGen and/or Restructured FutureGen. DOE will determine how to allocate funds made available for H.R. 1 for Fossil Energy Research and Development. 	<ul style="list-style-type: none"> ◆ Original application due date January 15, 2009 at 8:00 PM Eastern time. ◆ DOE anticipates issuing an amended FOA with an extended application deadline of 3 months; details to be announced soon by DOE. ◆ Awards must be made by made by September 30, 2010 	<ul style="list-style-type: none"> ◆ Application Due Dates: <ul style="list-style-type: none"> ○ <u>Part 1</u>: December 22, 2008 (\$200,000 nonrefundable application fee); ○ <u>Part 2</u>: March 23, 2009 (\$600,000 nonrefundable application fee) ◆ Requires a DOE administrative fee of ~ \$200,000 to \$400,000 annually to cover DOE administrative costs (if awarded the loan guarantee) 	<ul style="list-style-type: none"> ◆ Program not yet established at DOE; details forthcoming ◆ Awards must be made by made by September 30, 2010
URL Link for more information	http://e-center.doe.gov/iips/faopor.nsf/1be0f2271893ba198525644b006bc0be/381d0bff0bcddefd852572e60065938e?OpenDocument	http://e-center.doe.gov/iips/faopor.nsf/1be0f2271893ba198525644b006bc0be/381d0bff0bcddefd852572e60065938e?OpenDocument	http://www.lgprogram.energy.gov/RenSol7-11-08Amend1.pdf	