



CCPI and ICCS Demonstration Projects

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DOE - FE ARRA Demonstration Portfolio

\$3.3 Billion Total Funding

Objectives

FOAs

Results

Demonstrate CCS technology to reduce GHG emissions from electric power and industrial applications

Clean Coal Power Initiative – Round 3 - \$800M added to \$600M from the base program

*5 New CCPI Projects:
- 3 Back-End CO₂ Capture
- 2 IGCC*

Promote technology; support economic recovery; produce jobs

Industrial Carbon Capture & Storage (ICCS) Area 1 - \$1.321 B

*11 Phase 1 Projects
Down-selected to
3 Phase 2 Projects*

Logical extension of FE coal program activities

Carbon Capture & Storage \$1B

Evaluation Stage

FE RD&D Performance Measures and Goals

Performance Measure	FE Performance Goals		
	Current FE R&D Program	Recovery Act FE RD&D Projects	Total Enhanced FE R&D Program
FE-1: Number and MWe of projects funded to capture CO₂ from anthropogenic sources	Recovery Act Targets Only – No FE R&D Program Equivalent Targets	8-10 projects, at least 3 CO₂ capture technologies, equivalent to 750 to 2,000 MWe	NA
FE-2: Characterize number of geological reservoirs for CO ₂ storage		Characterize 10 geologic reservoirs, representing at least 5 types; with 0.3 - 1 billion tons of CO ₂ capacity	
FE-3: Number of students and professionals trained for future capture and storage industry		Train 100 students conducting 40,000 research hours, and 500 Professional Development Units or Continuing Education Units (CEU)	
FE-4: Tons CO₂ captured and stored per year		5 million tons per year by 2015	
FE-5: Tons CO₂ emissions avoided	11.8 million tons by 2015	7.5 million tons by 2015	19.5 million tons by 2015
FE-6: Barrels of oil consumption displaced (Crude Oil Equivalent) per year	8.8 million barrels of foreign oil displaced per year	4 million barrels of foreign oil displaced per year	12.8 million barrels of foreign oil displaced per year

Clean Coal Power Initiative Round 3 (CCPI-3)

- **Objective**

- Demonstrate coal-based technologies that capture & sequester, or put to beneficial reuse, CO₂ emissions at commercial scale

- **Requirements**

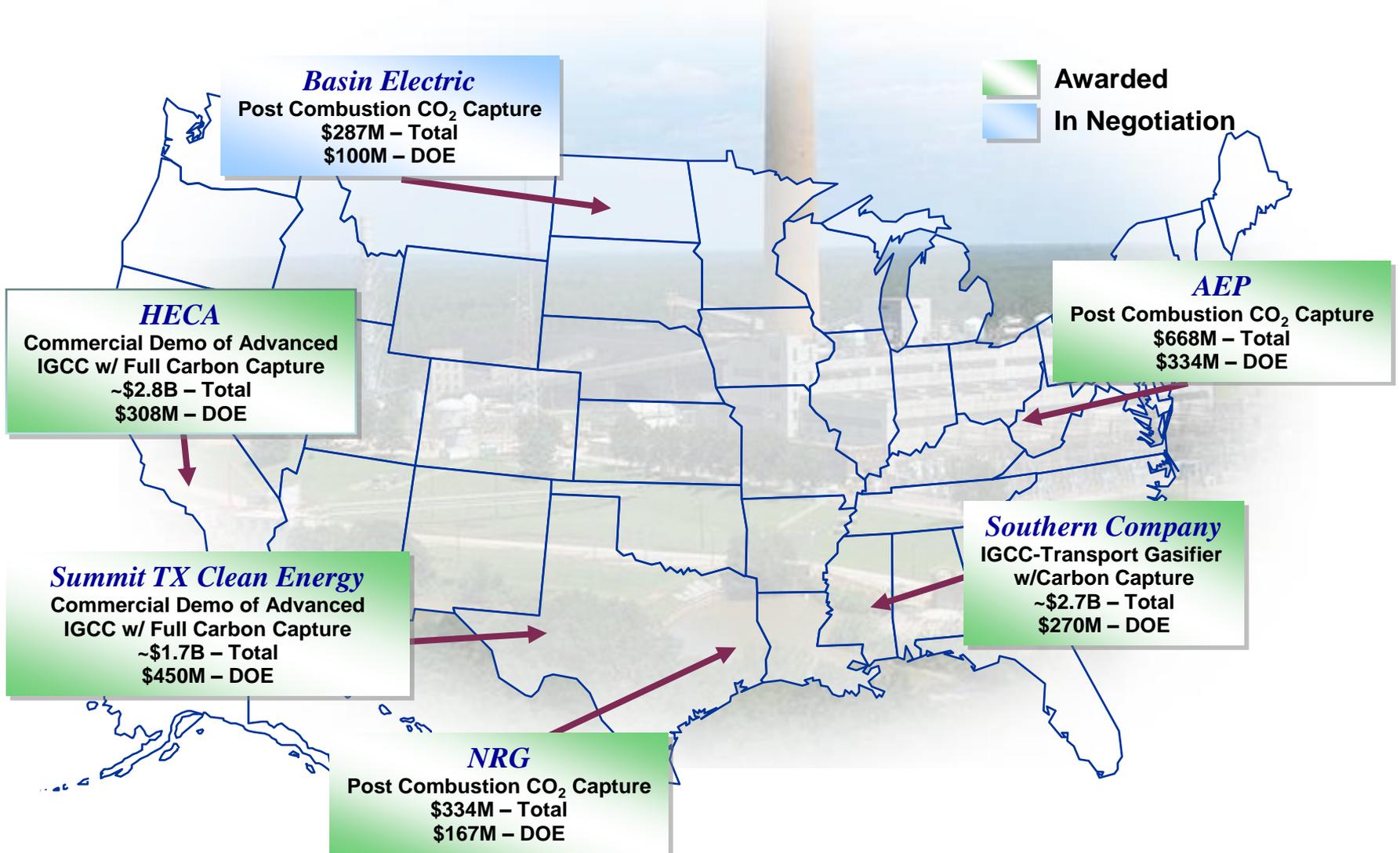
- Projects must capture & sequester $\geq 300,000$ tons CO₂ per year
- Systems must operate at $\geq 50\%$ CO₂ capture efficiency with 90% target
- Targeting COE increases of
 - $\leq 10\%$ for **gasification**
 - $\leq 35\%$ for **combustion & oxy-combustion**
- Potential power systems include
 - **Pre-combustion or post-combustion CO₂ capture, oxy-combustion**
- Geologic storage options include
 - **Saline fm. injection, EOR, coal seams, basalt, stacked storage**

- **Status/Results**

- Applications received January 20, 2009 & August 24, 2009
- \$1.436 billion available, including \$800 million in ARRA funds
- 2 Selections made in June 2009 & 3 Selections made December 2009

Active CCPI CCS Demonstration Projects

Locations & Cost Share



CCPI Active CCS Projects

CCPI Round	Project	Recipient	CO ₂ Capture Technology	Sequestration	CO ₂ Seq. TPY	Seq. Start
2	Kemper	SCS	Selexol™	EOR	3,000,000	2014
3	NRG Energy	NRG Energy	Fluor Econamine FG Plus SM	EOR	400,000	2014
3	TCEP	Summit	Selexol™	EOR	3,000,000	2014
3	Antelope Valley	Basin Electric	HTC Pureenergy Amine	EOR or Saline	1,000,000	2014
3	Mountaineer	AEP	Chilled Ammonia Process	Saline aquifer	1,500,000	2015
3	HEI	HECA	Rectisol® AGR System	EOR	2,000,000	2016

Industrial CCS Project Locations

Large-scale CCS from Industrial Sources (Area 1)

Objectives

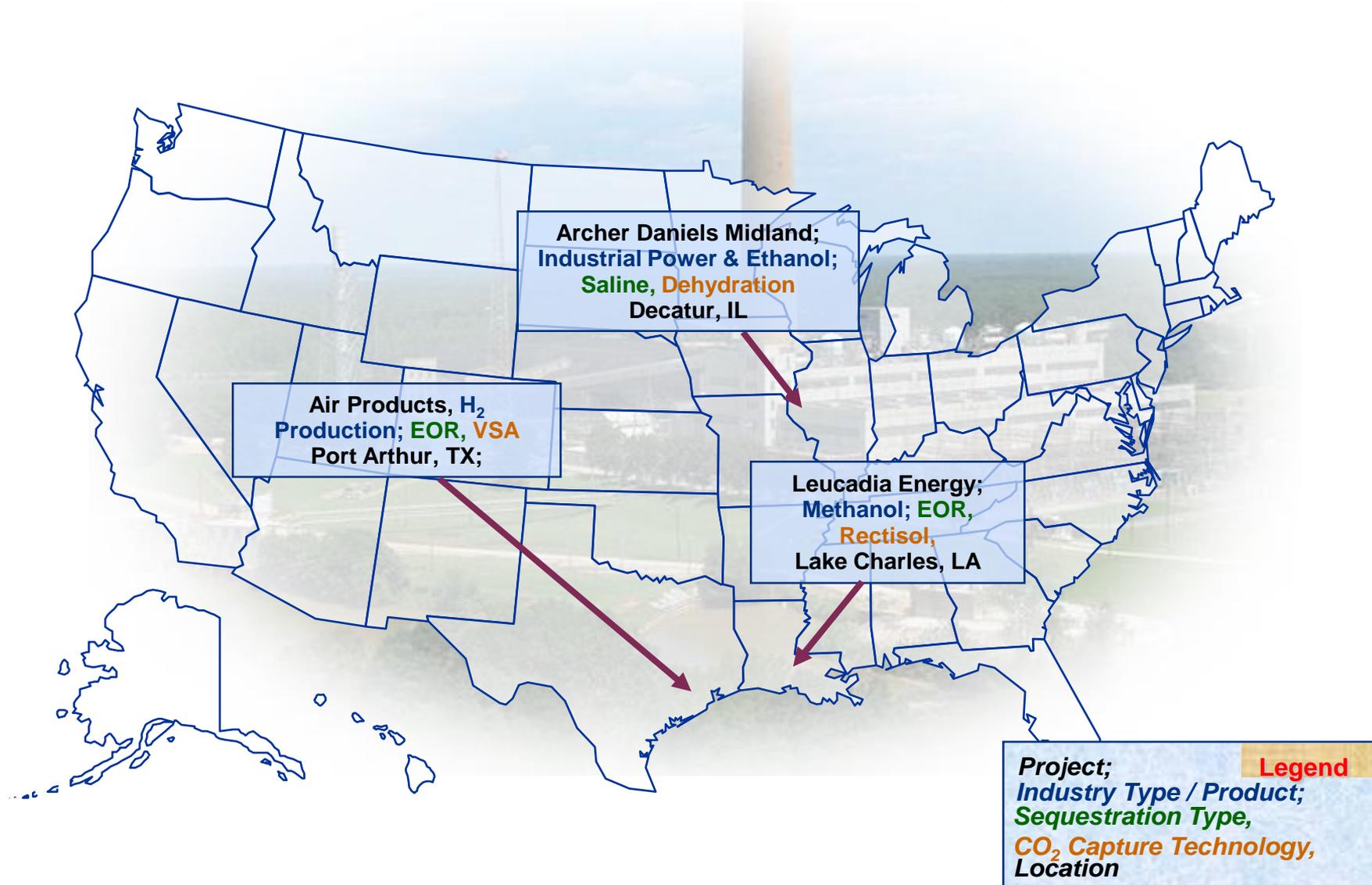
- Demonstrate advanced CCS technologies
- To progress beyond the R&D stage of readiness
- Integration with comprehensive Monitoring, Verification & Accounting (MVA)
- Demonstrate sequestration option

Target

- Industrial sources
- Industries may produce heat, fuels, chemicals, hydrogen or other useful products with or without electricity production
- 1MM tons/yr of CO₂ emission from each plant for CCS

Project Locations for ICCS Area 1

Large-Scale Industrial Carbon Capture & Sequestration



List of ICCS Area 1 Projects

Phase 2: Full-Scope Projects

Project	Recipient	CO ₂ Capture Technology	Sequestration	CO ₂ Seq.TPY	Seq. Start
Air Products H ₂ Production	Air Products & Chemicals, Inc.	VSA	EOR	1,000,000	2012
Archer Daniels Midland	Archer Daniels Midland Corporation	Dehydration	Saline	1,000,000	2012
Leucadia Energy Lake Charles	Leucadia Energy, LLC	Rectisol®	EOR	4,500,000	2014

For Additional Information

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