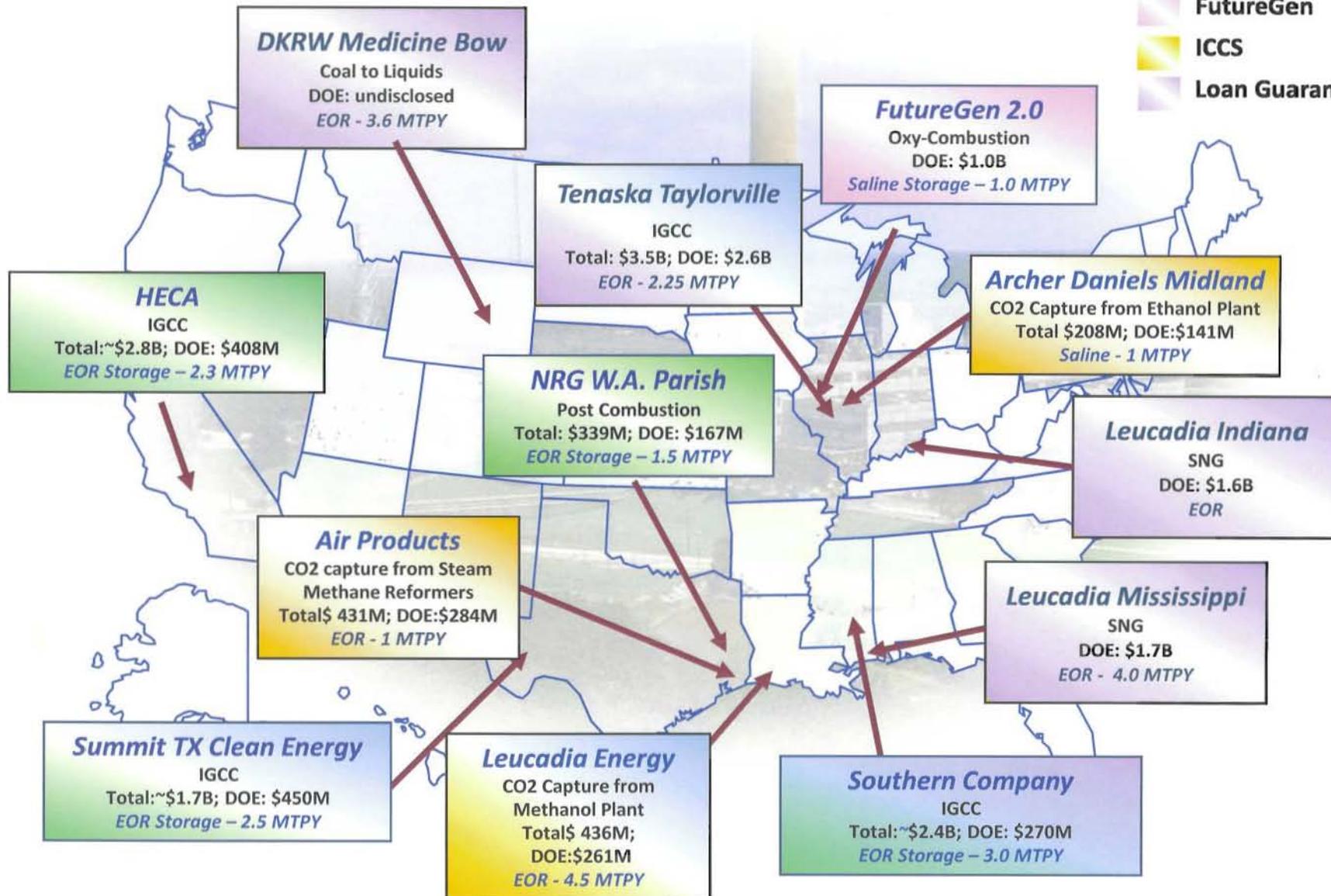


Major CCS Demonstration Projects

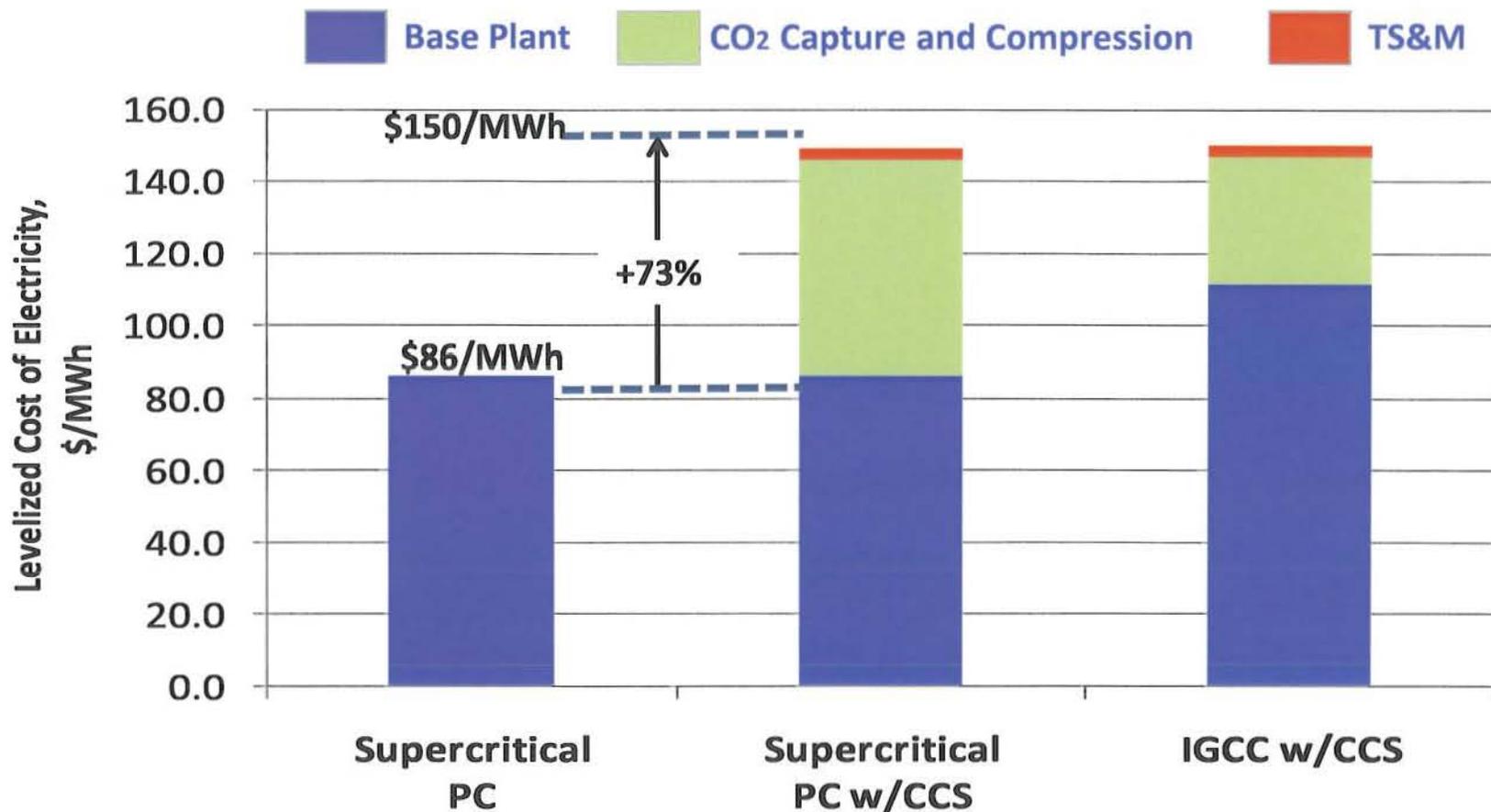
-  Tax Credit
-  CCPI
-  FutureGen
-  ICCS
-  Loan Guarantee



*Additional Advances Coal Demonstration Projects include Duke Edwardsport IGCC (no CO2 capture component) and Tenaska Trailblazer Energy Center (no public funds received)

Today's CCS Technology is Expensive

Adds over 70% to Electricity Cost (new PCF plant basis)



Notes

IGCC and PC fired with Bituminous Coal

CF for IGCC = 80%, PC = 85%

30-Year, Current -Dollar Levelized Cost of Electricity

Draft Final Results – Subject to Revision: DOE presentation by Dr. James Markowsky, Asst. Sec. for Fossil Energy, Department of Energy



Planned and Existing Advanced Coal/CCS Projects

Project	Capture Process/Technology demonstrated	Amount of CO2 captured/stored	Disposition of captured CO2	Federal government incentives	Placed in Service Date
Kemper County Plant Radcliffe project Mississippi Power (Southern Co.) 582 MW	IGCC	65% CO2 capture 3.0 million tpy	EOR	<ul style="list-style-type: none"> ▪ Section 48A ITC ▪ Title XVII loan guarantee ▪ CCPI 2 grant 	2014
NRG WA Parish 240 MW	Post-combustion	1.5 million tpy	EOR	<ul style="list-style-type: none"> ▪ CCPI 3 grant 	2017
Duke Energy Edwardsport 630 MW	IGCC	No CO2 captured	n/a	<ul style="list-style-type: none"> ▪ Section 48A ITC 	2012
Tenaska Trailblazer Energy Center 600 MW	Post-combustion	85+% CO2 capture 5.75 mil tpy	EOR		2014
Tenaska Taylorville 602 MW net	IGCC	50+% CO2 capture 2.25 million tpy	EOR	<ul style="list-style-type: none"> ▪ Title XVII loan guarantee ▪ Section 48A ITC 	TBD
Hydrogen Energy CA (SCS Energy) 250 MW	IGCC	90% CO2 capture 2.3 million tpy	EOR	<ul style="list-style-type: none"> ▪ CCPI 3 grant 	2014
Summit Power Texas Clean Energy Project (TCEP) 245 MW	IGCC	90% CO2 2.5 million tpy	EOR	<ul style="list-style-type: none"> ▪ CCPI 3 grant ▪ Section 48A ITC 	2014
FutureGen 2.0 200 MW	Oxy-Combustion	90% capture 1 million tpy	Saline storage	<ul style="list-style-type: none"> ▪ \$1 billion award from ARRA 	2015
DKRW Medicine Bow coal to liquids	Gasification	3.6 million tpy	EOR	<ul style="list-style-type: none"> ▪ Title XVII loan guarantee 	2015
Archer Daniels Midland (ADM) ICCS project	Industrial Separation	1 million tpy	Saline storage	<ul style="list-style-type: none"> ▪ ICCS Phase II Award from ARRA funding 	2013
Leucadia Indiana SNG	Gasification	85+% CO2 capture	EOR	<ul style="list-style-type: none"> ▪ Title XVII loan guarantee 	TBD
Leucadia Mississippi SNG	Gasification	4 million tpy	EOR	<ul style="list-style-type: none"> ▪ Title XVII loan guarantee 	2015
Leucadia Louisiana SNG	Gasification	85+% capture 4.5 million tpy	EOR	<ul style="list-style-type: none"> ▪ ICCS Phase II Award from ARRA funding ▪ Section 48B ITC 	2014



Project	Capture Process/Technology demonstrated	Amount of CO2 captured/stored	Disposition of captured CO2	Federal government incentives	Placed in Service Date
Sweeny Gasification ConocoPhillips	IGCC	90+% CO2 removal 5 million tpy	Saline storage and/or EOR	▪ ICCS Phase I Award from ARRA funding	TBA
Air Products Port Arthur project	Pre-combustion (steam methane reform)	1 million tpy	EOR	▪ ICCS Phase II Award from ARRA funding	2012
AEP Mountaineer 235 MW	Pre-combustion	90% CO2 capture 1,500,000 tpy	Saline storage	▪ CCPI 3 grant	PROJECT ON HOLD
Basin Electric Antelope Valley 120 MW slipstream	Post-combustion	90% CO2 capture 1 mill tpy	EOR	▪ CCPI	PROJECT ON HOLD