

Carbon Capture and Storage Evolution

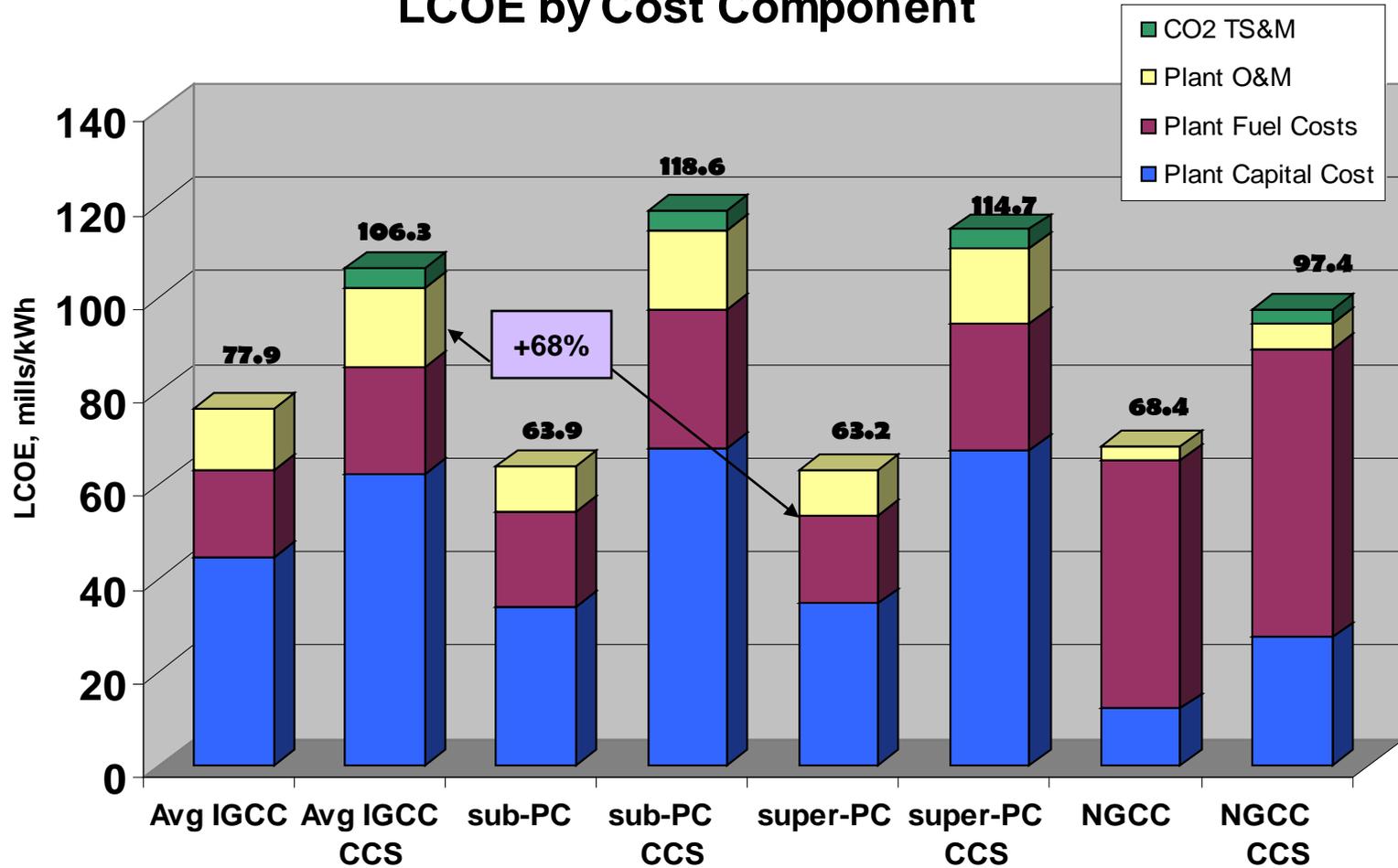
Cost & Timing

- USDOE RD&D budget for integrated CCS plants about \$500 million/year
- \$ millions spent on detailed engineering cost estimates and systems analysis
- CCS cost mostly capture and compression (80-90%)



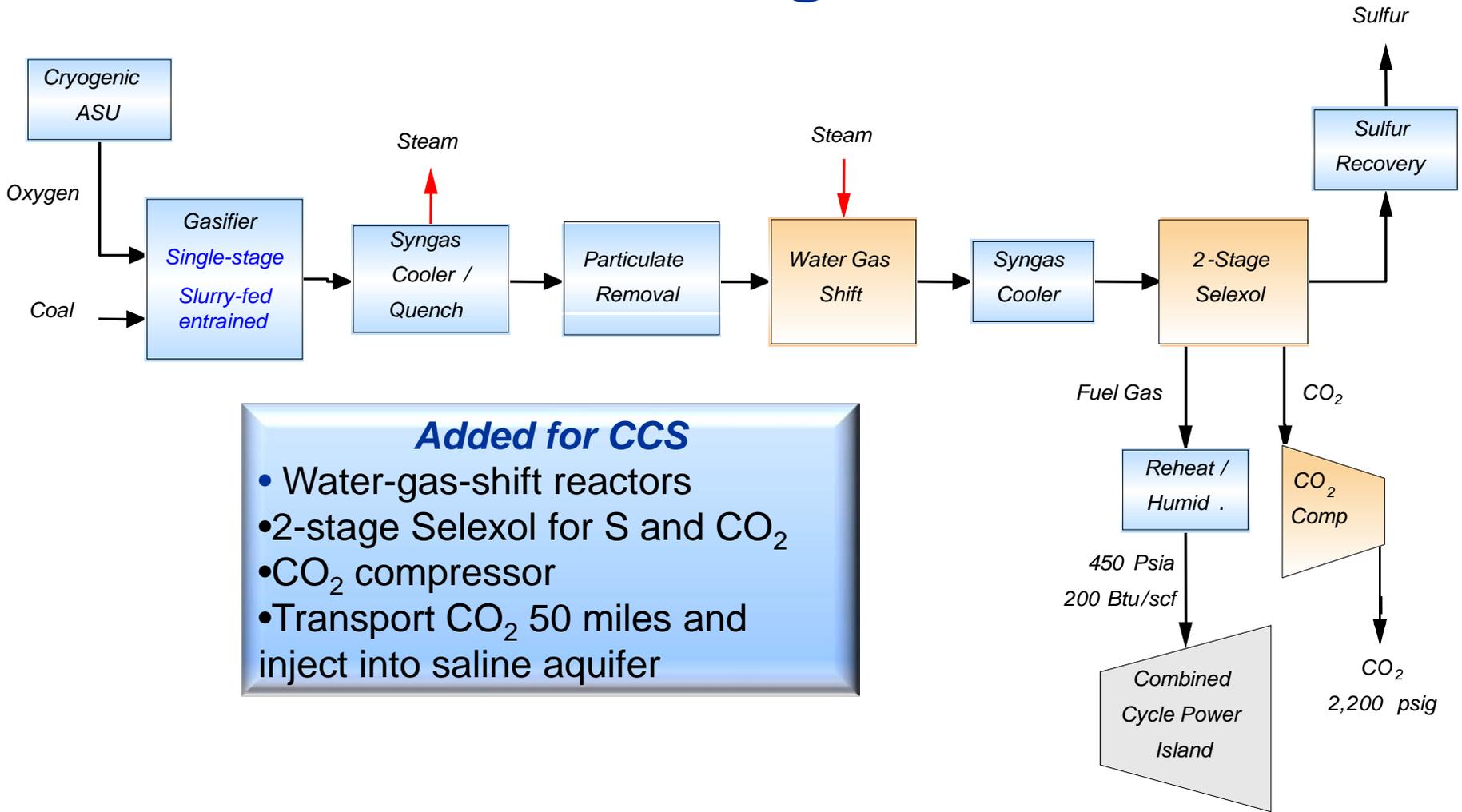
Busbar Cost of Electricity

LCOE by Cost Component



January 2007 Dollars, Coal cost \$1.80/10⁶Btu, Gas cost \$6.75/10⁶Btu
CCS = Carbon capture and sequestration
TS&M = transport, storage, and monitoring

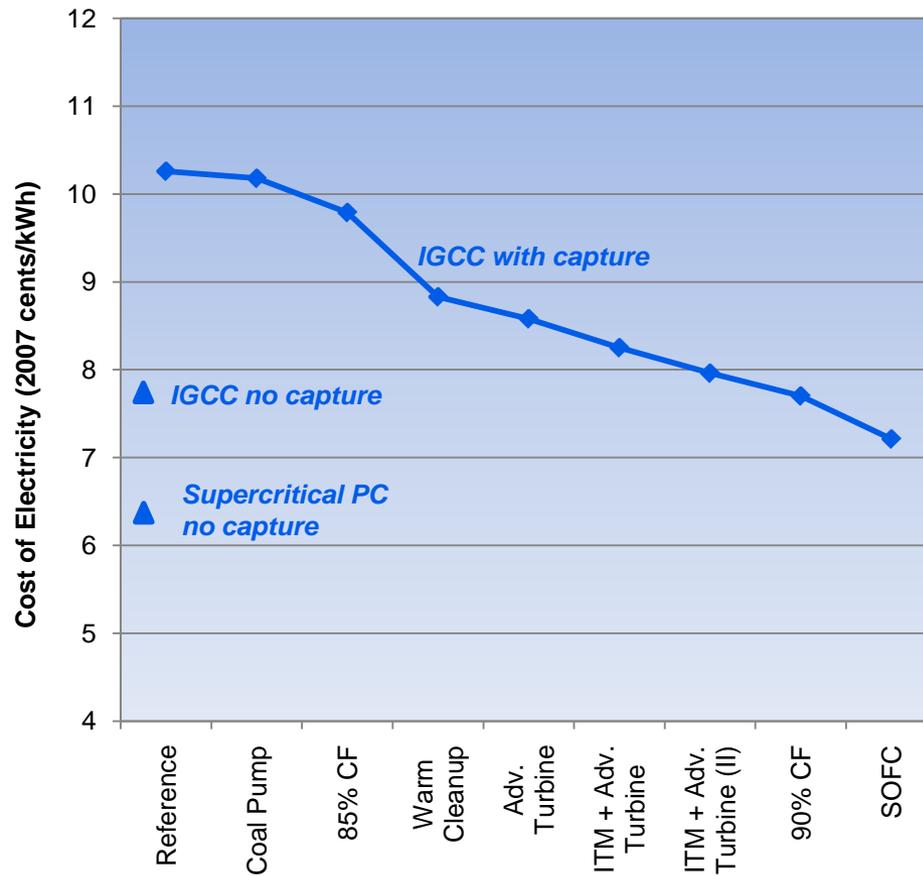
IGCC Configuration



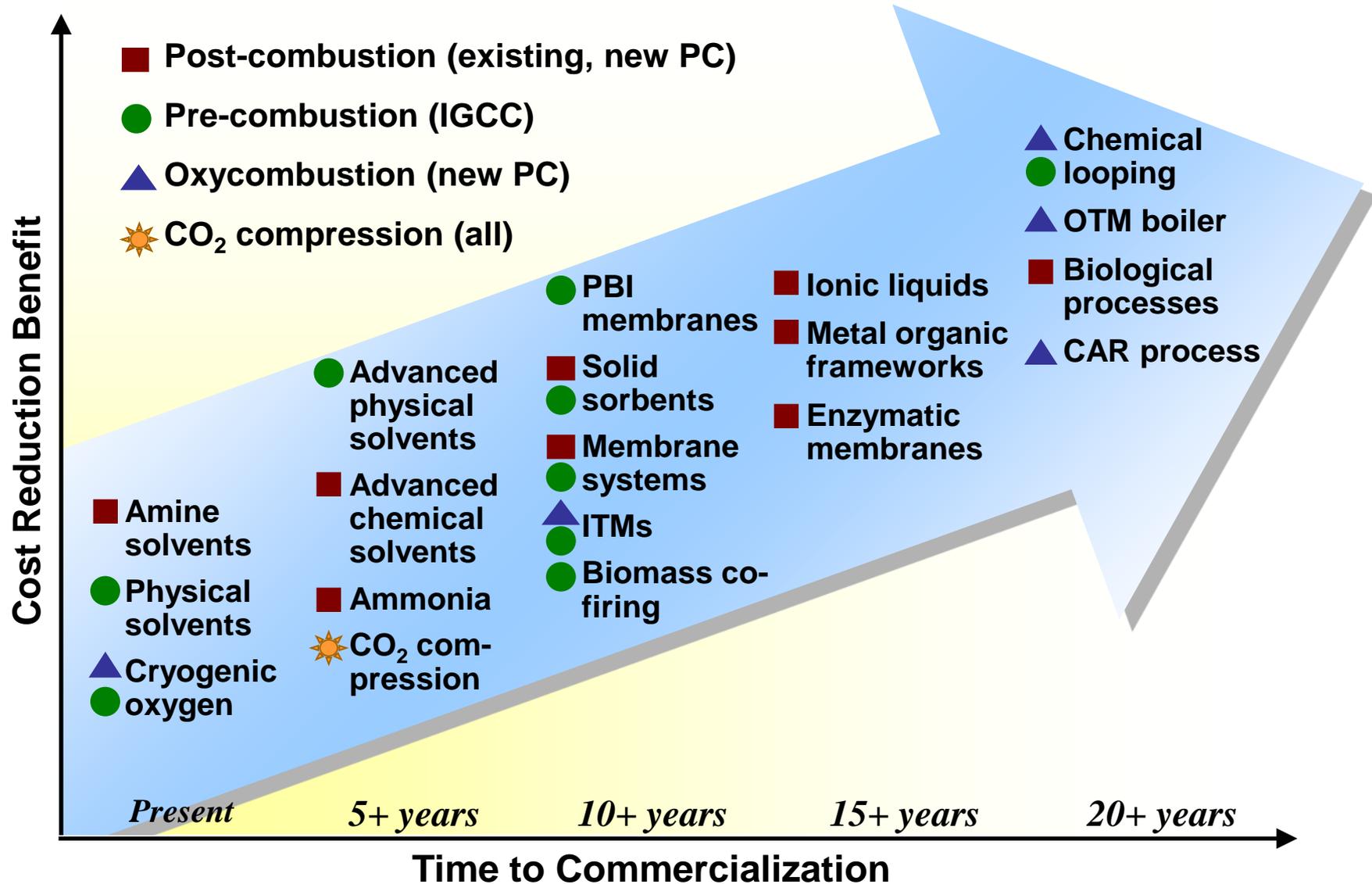
**Orange Blocks Indicate Unit Operations Added for CO₂ Capture Case*

Driving Down the Cost of CCS with Advanced Technology

Cost of Electricity (COE) decreases by 30%



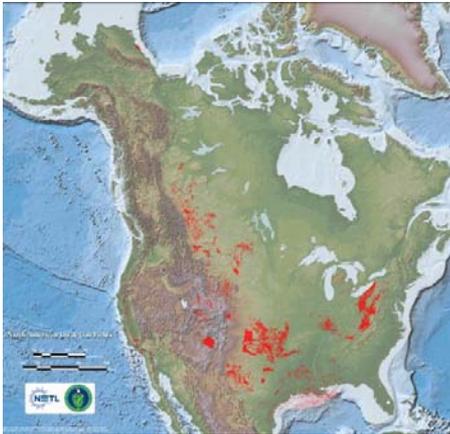
Capture Technologies Are Starting to Emerge



Geologic Sink Capacity Estimates

Adequate Storage Projected

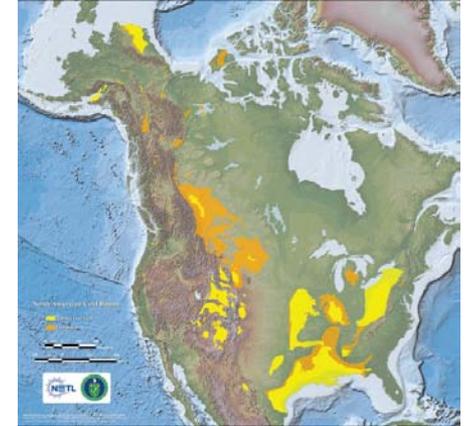
U.S. Emissions ~ 6-7 Gt CO₂/yr all sources > 4,600 Stationary Sources Identified



Oil and Gas Fields



Saline Formations



Unmineable Coal Seams

Estimated North American CO₂ Storage Potential (Gigatonnes)

**Conservative
Resource
Assessment**

Sink Type	Low	High
Saline Formations	3,300	12,600
Unmineable Coal Seams	160	180
Oil and Gas Fields	140	140

**Hundreds of
Years of
Storage
Potential**

