

Regional Partnership Annual Meeting

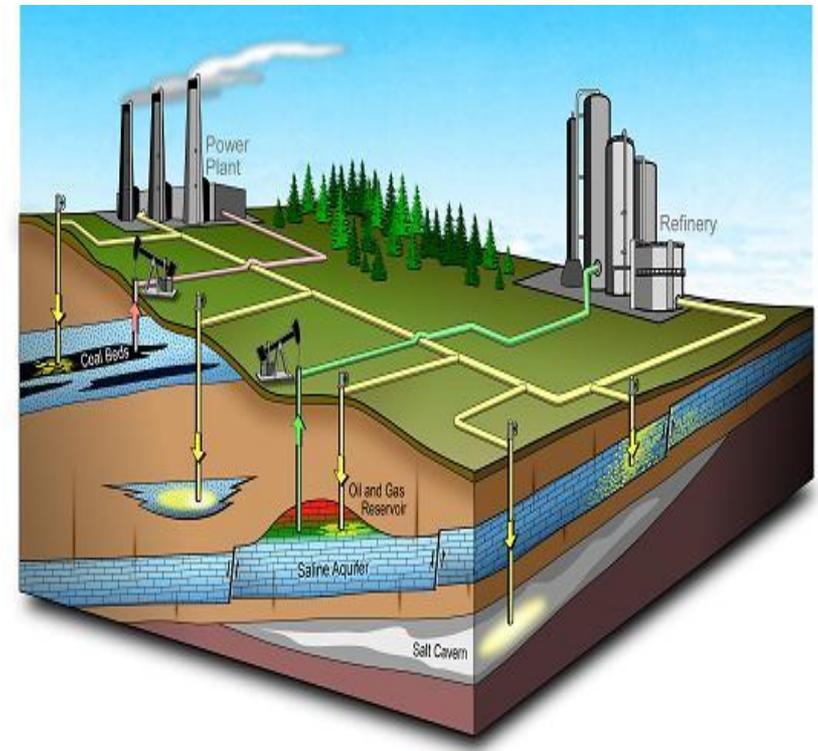
Sean I. Plasynski, PhD
Sequestration Technology Manager
November 17, 2009



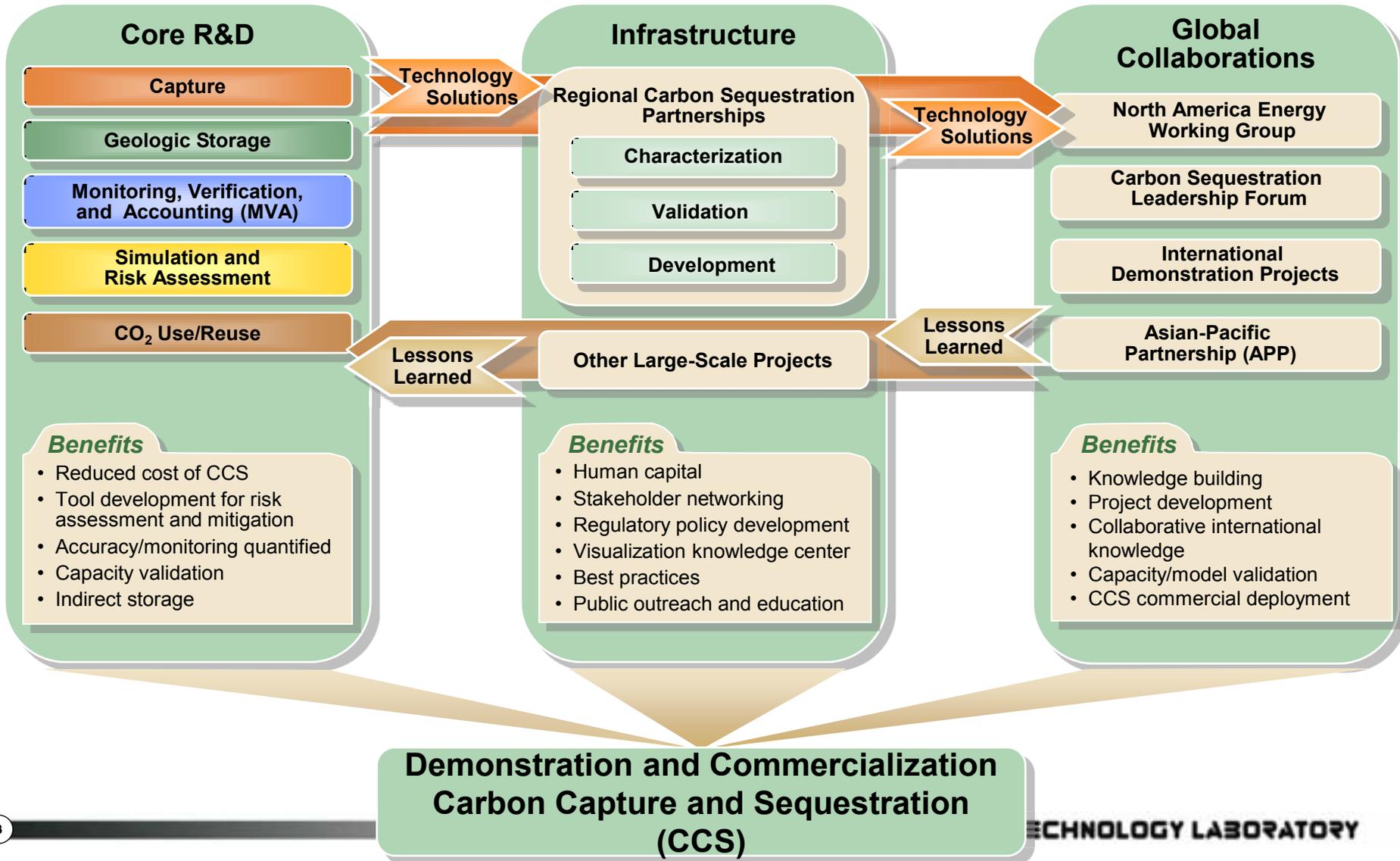
Carbon Sequestration Program Goals

Develop Technology Options That...

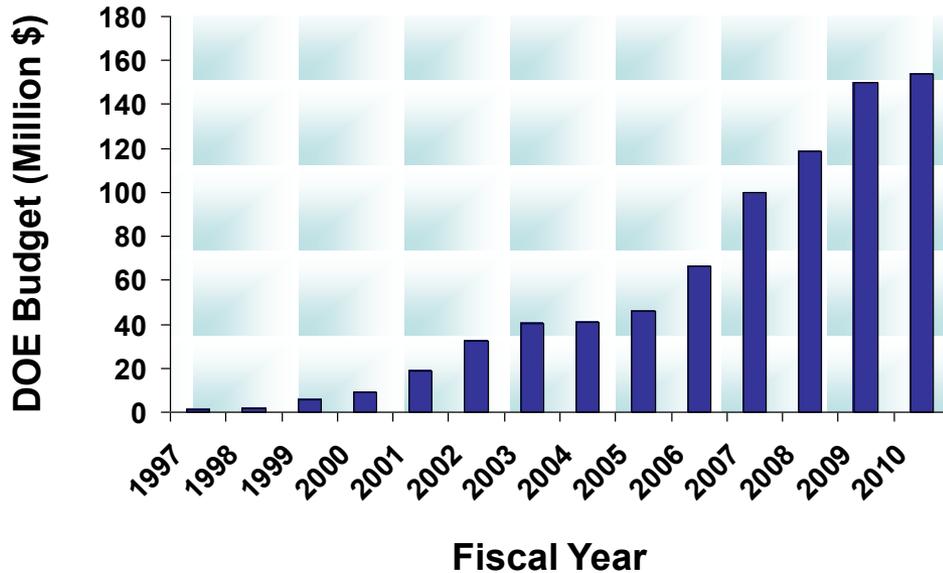
- Deliver technologies & best practices that provide Carbon Capture and Safe Storage (CCSS) with:
 - 90% CO₂ capture at source
 - 99% storage permanence
 - < 10% increase in COE
 - Pre-combustion capture (IGCC)
 - < 35% increase in COE
 - Post-combustion capture
 - Oxy-combustion



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 NATIONAL ENERGY TECHNOLOGY LABORATORY
CARBON SEQUESTRATION PROGRAM



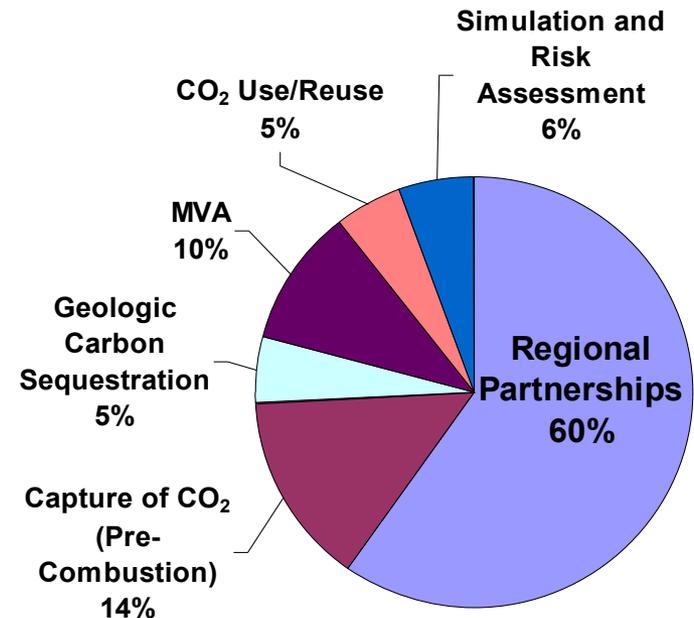
Sequestration Program Statistics FY2009



Strong industry support
~ 39% cost share on projects

Federal Investment to Date
~ \$631 Million

2009 Carbon Sequestration Program Budget Breakdown



Diverse research portfolio

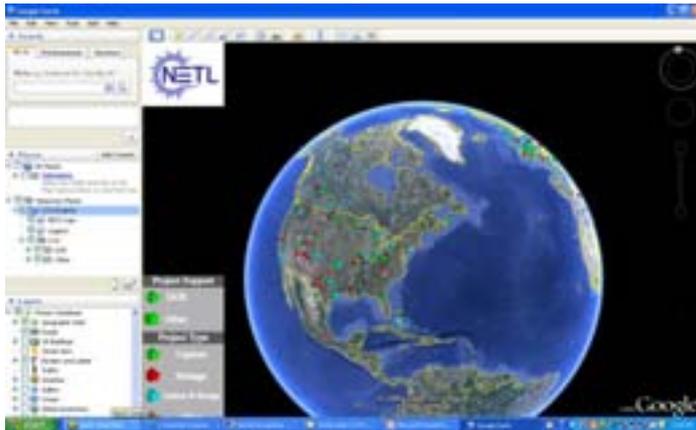
Nearly 100 Active R&D Projects

Recent Achievements

- IEA GHG International Review of the Regional Partnership large scale field tests – 2008 -----*Next Review Planned Spring 2011*
 - *RCSP was recognized as most significant program in the world today*
 - *Excellent program that will achieve significant results*
- Carbon Sequestration Atlas - 2nd Edition published November 2008
- Produced 1st in series of Best Practice Manuals – *Monitoring, Verification, and Accounting of CO2 Stored in Deep Geologic Formations*
- Numerous Phase II (Field Validation) Regional Partnership Projects Drilling, Injecting, Completed
- Phase III (Development Test) Regional Partnership Drilling, Injection Started
- Pipeline Study underway
- Two Funding Opportunity Announcements (non-ARRA funding)
 - *Pre-Combustion Carbon Capture Technologies for Coal-Based Gasification Plants*
 - *Innovative and Advanced Technologies and Protocols for MVA, Simulation, and Risk Assessment in Geologic Formations*
- Added 43rd State to Regional Carbon Sequestration Partnerships Initiative
- Kicked-off National Risk Assessment Program (NRAP)
- Recently release World-Wide CCS Database

World-Wide CCS Projects Database

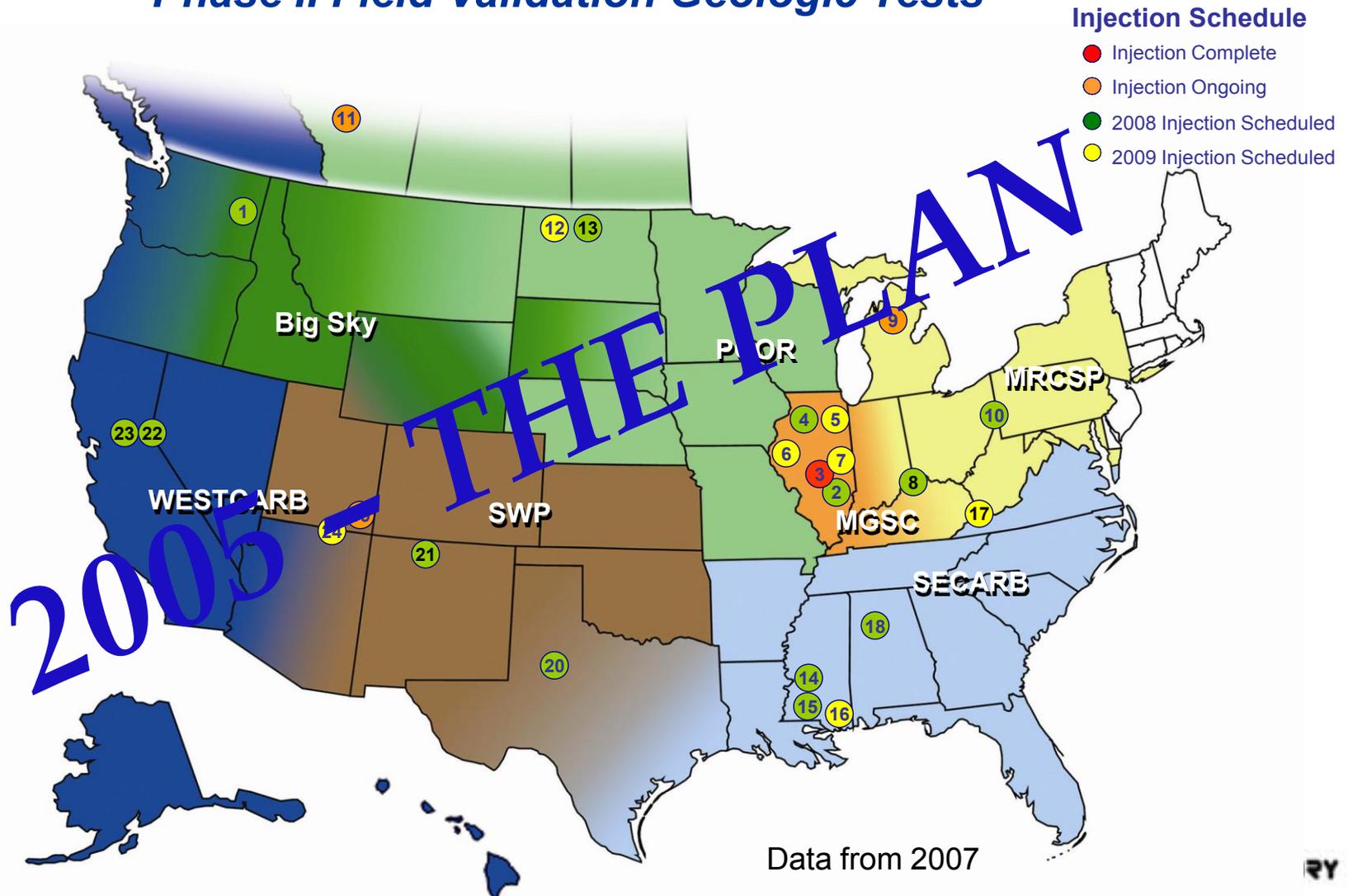
- **Data compiled from a multitude of sources**
 - Websites, factsheets, reports, news postings, etc...
- **To date, ~195 projects projects**
 - Includes active, developing, proposed, on hold, or completed)
 - USA: ~ 80 projects
 - International: ~ 115 projects
- **Approximately 125 projects active**
 - Either capturing, injecting, developing infrastructure, site characterization/selection, designing, or in the permitting process.
 - USA Projects: ~ 50 projects
 - International Projects: ~ 75 projects



Regional Carbon Sequestration Partnerships

Progressing Ahead to Injection

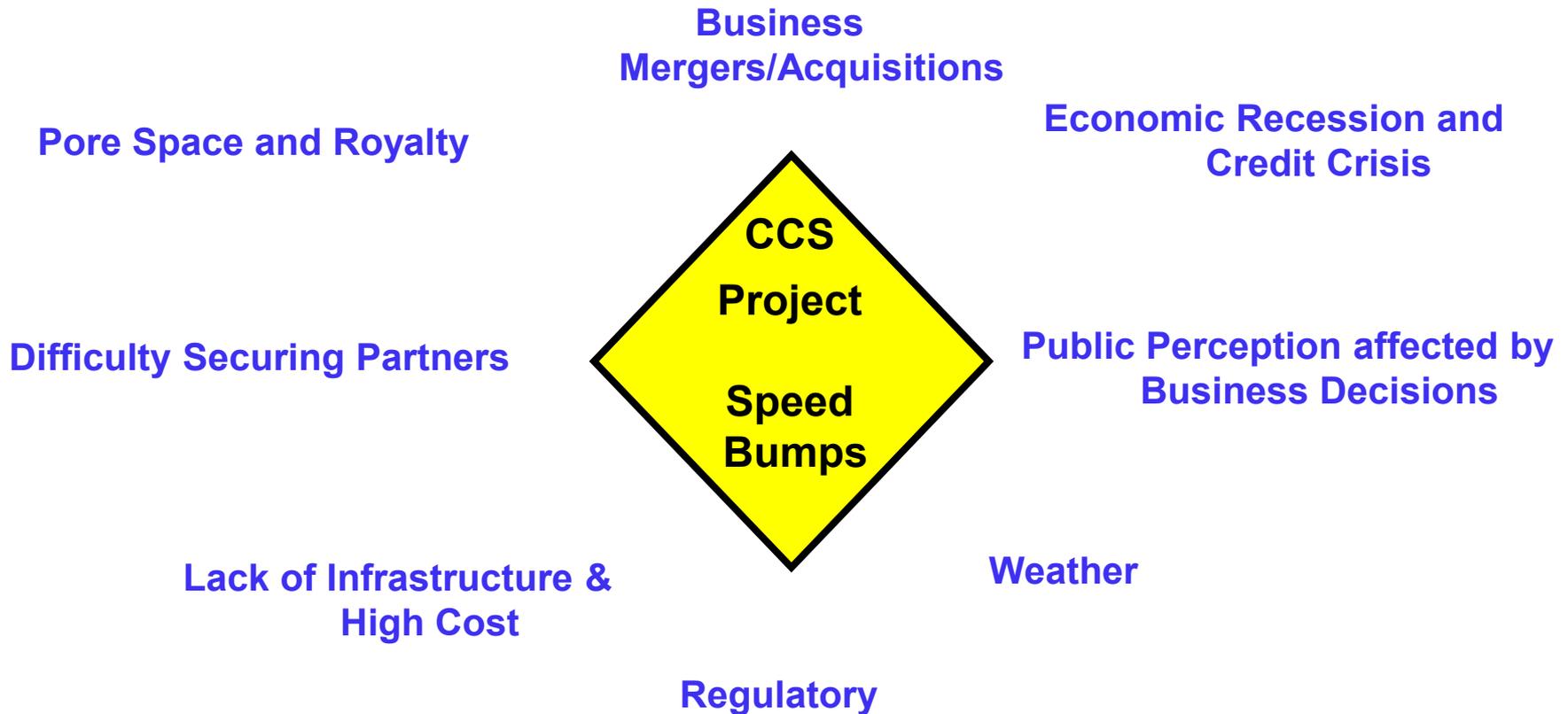
Phase II Field Validation Geologic Tests



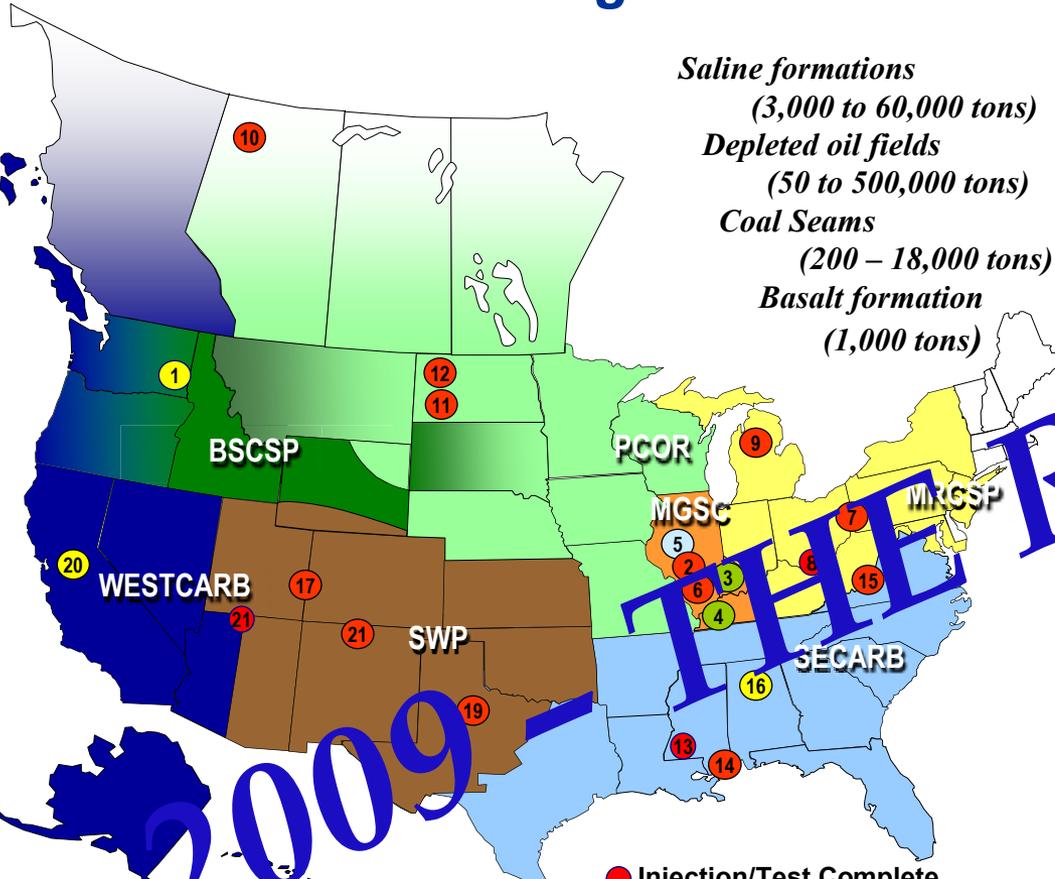


“Hard Knocks” Lessons Learned

....we are learning a lot



RCSP Validation Phase: Phase II Small-Scale Geologic Field Tests



- Injection/Test Complete
- Injection Ongoing
- 2009/early 2010 Injection
- Project moved to Phase III (Injection 2010/2011)

Completed 15 Injections

Over 1.35 M Tons injected

RCSP	Formation Type	Geologic Province
Big Sky	Saline ①	Columbia Basin
MGSC	Oil-bearing ② ③ ④ Saline ⑤ Coal seam ⑥	Illinois Basin
MRCSP	Saline ⑦ ⑧ ⑨	Cincinnati Arch, Michigan Basin, Appalachian Basin
PCOR	Oil-bearing ⑩ ⑪ Coal seam ⑫	Keg River, Duperow, Williston Basin
SECARB	Oil-bearing ⑬ Saline ⑭ Coal seam ⑮ ⑯	Gulf Coast, Mississippi Salt Basin, Central Appalachian, Black Warrior Basin
SWP	Oil-bearing ⑰ ⑱ Coal seam ⑲	Paradox Basin, Aneth Field, Permian Basin, San Juan Basin
WESTCARB	Saline ⑳ ㉑	Sacramento Valley, Colorado Plateau

CCS Best Practice Manuals

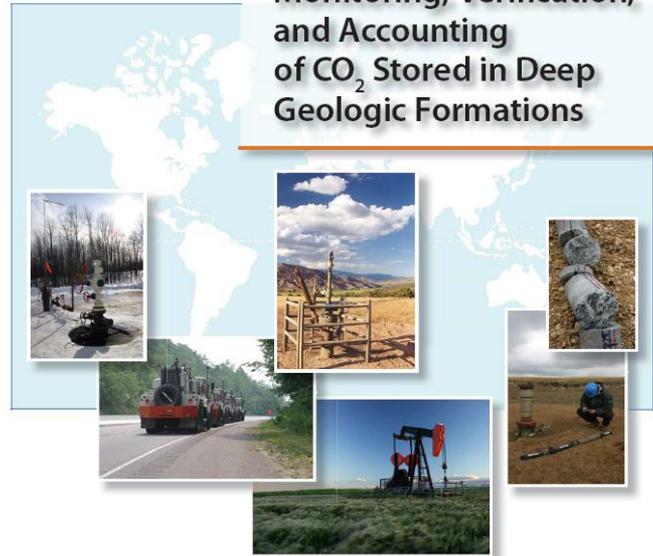
Critical Requirement For Significant Wide Scale Deployment
Capturing Lessons Learned

the **ENERGY** lab

Best Practice Manual	Version 1 (Phase II)
Monitoring Verification and Accounting	2009
Site Characterization	2010
Simulation and Risk Assessment	2010
Well Construction and Closure	2010
Regulatory Compliance	2010
Public Education	2009
Terrestrial Sequestration Practices	2010



Monitoring, Verification,
and Accounting
of CO₂ Stored in Deep
Geologic Formations



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