

CCS Regulatory Developments at US EPA



CCS Regulators' Network
May 13, 2008



Outline



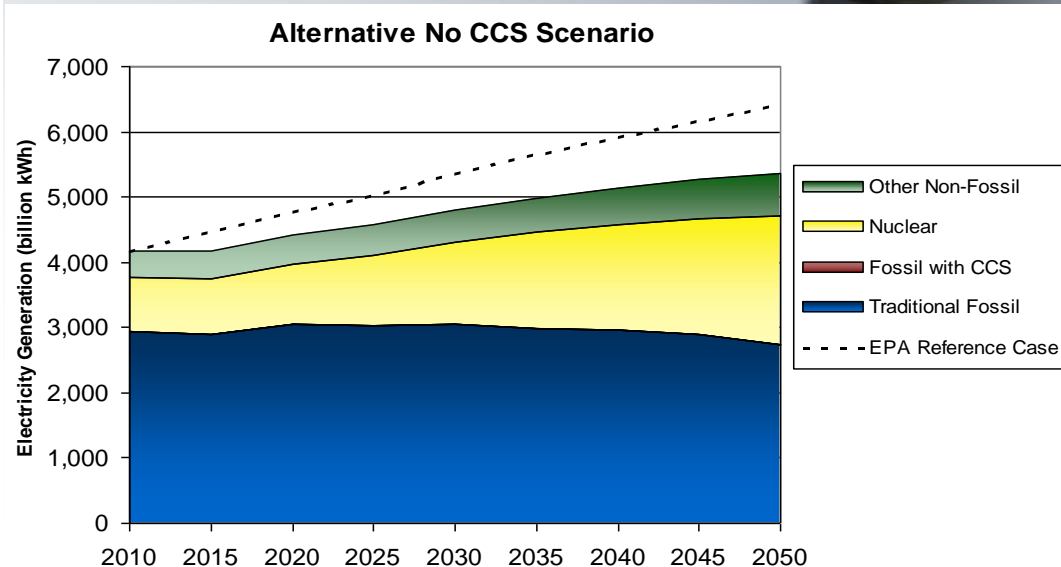
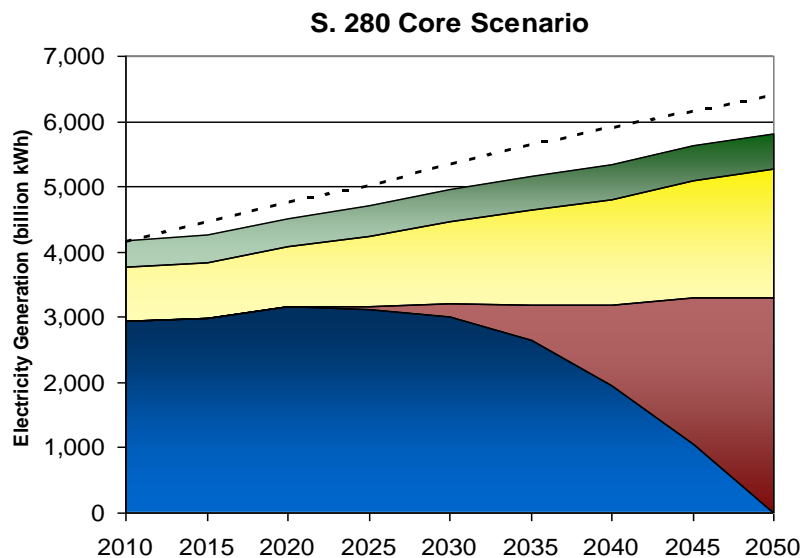
- Overview of Roles and Activities
- Role of CCS in Climate Policy
- Developing a Regulatory Framework
- Broader CCS Issues

Overview of Roles and Activities



- DOE
 - Leading the US R&D Effort on CCS
- EPA
 - Working with DOE on CCS Issues Related to Public Health and the Environment
 - Establishing Key Elements of the Regulatory Framework
- States
 - In many cases, implementing environmental regulations
 - In some cases, promoting the technology

Illustrative Role of CCS in Climate Policy



	2030		2050	
	S. 280 Senate Scenario	S. 280 No CCS Scenario	S. 280 Senate Scenario	S. 280 No CCS Scenario
GDP (% change from BAU)	-0.55%	-0.97%	-1.07%	-1.82%
Allowance Price (2005 \$/tCO ₂ e)	\$26.59	\$39.90	\$70.33	\$105.23

- Assumes no CCS technology is available
- Results in 50% higher allowance prices
- Results in reduced electricity generation

Note: Other non-fossil includes hydro, geothermal, wind, solar, biomass and municipal solid waste.

Successful Deployment



- CCS must be demonstrated at scale
 - EPA is working closely with Department of Energy to leverage existing efforts and technical expertise
- Public acceptance is critical
- Ensuring that permitting regulations are in place will enable commercial-scale CCS projects to move forward
- Clear guidelines will reduce uncertainty for project proponents
- Past experience gives EPA confidence that we can work closely with key stakeholders to develop well-designed regulatory approaches

Primary Regulatory Authorities



- Capture
 - US EPA-Clean Air Act
- Transport
 - US Department of Transportation
- Storage
 - US EPA- Safe Drinking Water Act
- Potential Future Legislation?

Developing a Regulatory Framework



- EPA's Offices of Water and Air are collaborating on all activities at EPA related to geologic sequestration to:
 - Ensure that cross-programmatic goals are achieved
 - Clarify relationship between various statutes (Safe Drinking Water Act, Clean Air Act, etc.) and EPA regulations

Developing a Regulatory Framework (continued)

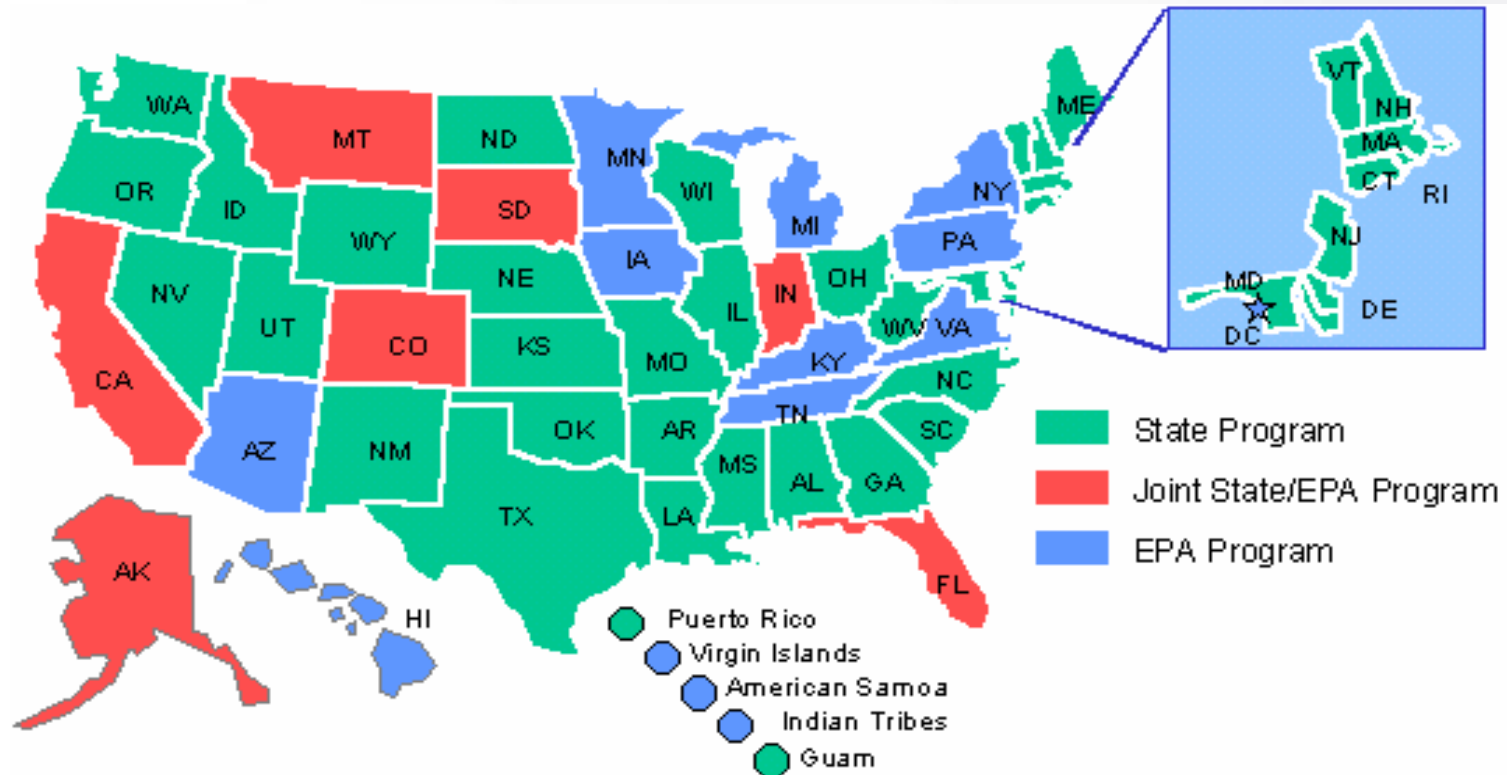


- The 1974 Safe Drinking Water Act (SDWA) requires EPA to develop minimum federal regulation for state underground injection control (UIC) programs to protect underground sources of drinking water
 - The UIC program regulates underground injection of *all* fluids—liquid, gas, slurry
 - Natural gas storage, oil & gas production, and some hydraulic fracturing are exempt from UIC requirements
- The existing UIC program provides a regulatory framework for geologic sequestration of carbon dioxide

UIC Program Implementation



- Thirty-three states have primary enforcement authority (primacy) for the UIC program
- EPA and states share implementation of programs in 7 states
- EPA directly implements the program in 10 states



UIC Activities



- EPA published UIC Class V Experimental Technology Well Guidance (March 2007)
- EPA and primacy states are receiving, reviewing and issuing UIC permit applications for pilot-scale GS projects (2007 and ongoing)
- <http://www.epa.gov/safewater/uic/index.html>

UIC Activities (continued)



- EPA Administrator announced *proposed rule for commercial-scale geologic sequestration (GS) of CO₂* will be published by summer 2008
- Agency workgroup was initiated in November to develop a set of regulatory alternatives to address GS of CO₂
 - EPA Offices of Air and Water and DOE are working closely on CO₂ analysis of impacts of geologic sequestration on USDW
 - Includes ~48 representatives from EPA (program offices and regions), 4 state co-regulators, and the Department of Energy

Scope of Proposed Rule



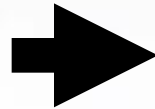
- The rule will propose minimum federal requirements for GS of CO₂
- Builds on the existing regulatory framework for the underground injection of carbon dioxide (UIC) and adapts to accommodate new information
- Scope of the proposed rule will be guided by Safe Drinking Water Act - authorizes EPA to develop minimum federal requirements for state UIC programs to protect underground sources of drinking water (USDWs)

Proposed Rule Development



Special Considerations for GS

- Large Volumes
- Buoyancy
- Viscosity
- Corrosivity



UIC Program Elements

- Site Characterization
- Area Of Review
- Well Construction
- Well Operation
- Monitoring
- Post Closure Care
- Public Participation

Schedule for Rulemaking



Activity	Milestone
Information Collection and Analysis	Ongoing
Two Stakeholder Meetings	December 2007/February 2008
Interagency Review of Proposed Rule	Late May - Early June 2008
Administrator's Signature of Proposed UIC Rule for GS of CO ₂	July 2008
Public Comment Period for Proposed Rule	July – October 2008
Notice of Data Availability (if appropriate)	2009
Final UIC Rule for GS of CO ₂	Late 2010 / Early 2011

Broader CCS Issues



- Treatment under the Clean Air Act
- Accounting for Injection and Any Leakage
- Long-term Liability
- Other Legal Issues

Contact Information



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