



# **Geologic Sequestration Program Implementation Progress: *Class VI Permitting and Guidance***

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*January 21-23, 2014*



# Presentation Summary

- The GS Program and Guidance Development
- Class VI Permit Review
- Class VI State Primacy Progress
- Coordination with EPA Offices
- Lessons learned



# Fourteen Years!\*

*Technical workshops  
and evaluating laws &  
regulatory frameworks*

*Class VI Rule  
Implementation*

2007

2007

2008

2009

2010

2014

Class V Guidance

Proposed Rule

Notice of Data Availability

Final Rule



# Class VI Rule Background

## Considerations for GS

- Large Volumes
- Buoyancy
- Viscosity (Mobility)
- Corrosivity



## UIC Program Elements

- Site Characterization
- Area of Review (AoR)
- Well Construction
- Well Operation
- Site Monitoring
- Post-Injection Site Care
- Public Participation
- Financial Responsibility
- Site Closure

New well class established:  
Class VI in December 2010



# Class VI Guidance Progress

- Finalized (2011):
  - Financial Responsibility for Class VI Wells
- Finalized (2012-2013):
  - Site Characterization
  - Area of Review Evaluation and Corrective Action
  - Testing and Monitoring
  - Project Plan Development
  - Class VI Injection Well Construction



# Class VI Guidance Update

- Public comment period closed (2013):
  - Reporting, Recordkeeping and Data Management for Owners or Operators
  - Reporting, Recordkeeping and Data Management for Permitting Authorities
  - Well Plugging, Post-Injection Site Care, and Site Closure
  - Primacy and Implementation Manuals [now split]
- Public comment (2013-2014):
  - Draft Class II-Class VI Transition [public comment]
  - Draft Injection Depth Waivers [release soon]



# Well Plugging, PISC, and Site Closure Guidance Comments

- Numerous commenters: API, AWWA, Battelle, EEI, NACCSA, NRDC, more
- Comments included edits, seeking more clarity, inconsistency with other guidance documents
- Extends regulations too far, guidance is piecemeal, plans are onerous, Class VI will not work
- Analyze and evaluate comments, work with involved Offices, OGC, prepare responses, revise guidance, post final on EPA GS website (sometime 2014  $\pm$ )



## Class II-VI Transition Guidance

- Developed to provide additional clarity to the GS regulations at 40 CFR 144.19
- Explains how the factors outlined in the rule and site specific conditions should be considered when determining if Class II ER should transition to Class VI based on risk to USDWs
- Does not preclude acknowledgement of GS of CO<sub>2</sub> as Class II well
- Allows continued oil and gas production as Class VI
- Draft is out for public comment until March 1, 2014



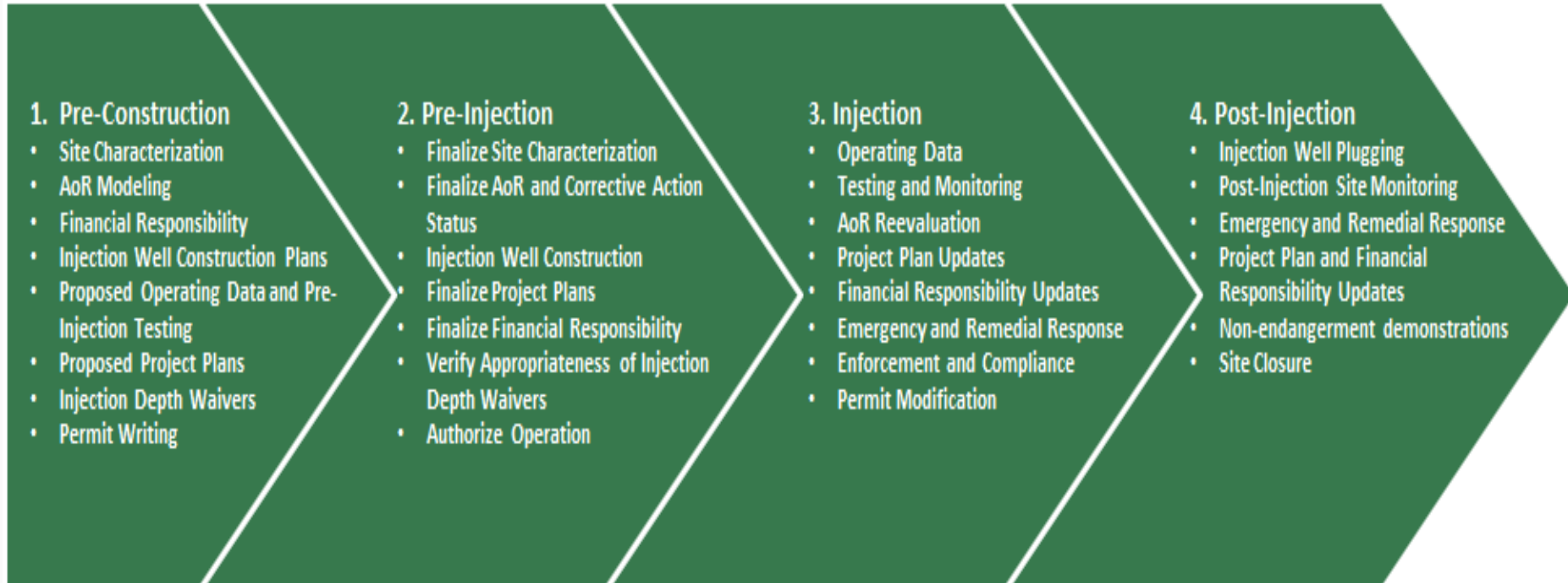


## **Transition Factors (40 CFR 144.19(b))**

- Increase in reservoir pressure\*\*\*
- Increase in carbon dioxide injection rate
- Decrease in hydrocarbon production rate
- Injection zone/USDW separation
- Suitability of Class II AoR delineation
- Quality of abandoned well plugs
- Plan to recover injected CO<sub>2</sub> post-injection
- Source and properties of injected CO<sub>2</sub>
- Additional factors as determined by Director



# Class VI Permitting Process



- Iterative and flexible
- Accommodates new information and reduces uncertainty
- *A new process for everyone*



# Class VI Permitting Support

- EPA HQ and Regions are providing support for:
  - AoR delineation and computer modeling
  - Financial responsibility demonstrations
  - GS Project Plan development
  - Post-injection site care and site closure timeframe determinations
  - Permit application information reviews
  - Permit condition development assistance
- EPA is also continuing development of a GS Data Tool to assist permit applicants and reviewers in submitting and evaluating data electronically



# Class VI Permitting

- EPA Region 5: Permit Applications
  - Archer Daniels Midland: Decatur, Illinois
    - Proposed 4.75 million tons of CO<sub>2</sub> over 5 years (2 Class VI applications)
  - FutureGen Alliance 2.0: Morgan County, Illinois
    - Proposed 22 million tons of CO<sub>2</sub> over 20 years (4 Class VI applications)
- Other EPA Regions: Additional projects in development and applications anticipated
  - Region 7: Wellington, KS RCSP Project
  - Region 8: Kevin Dome, MT RCSP Project

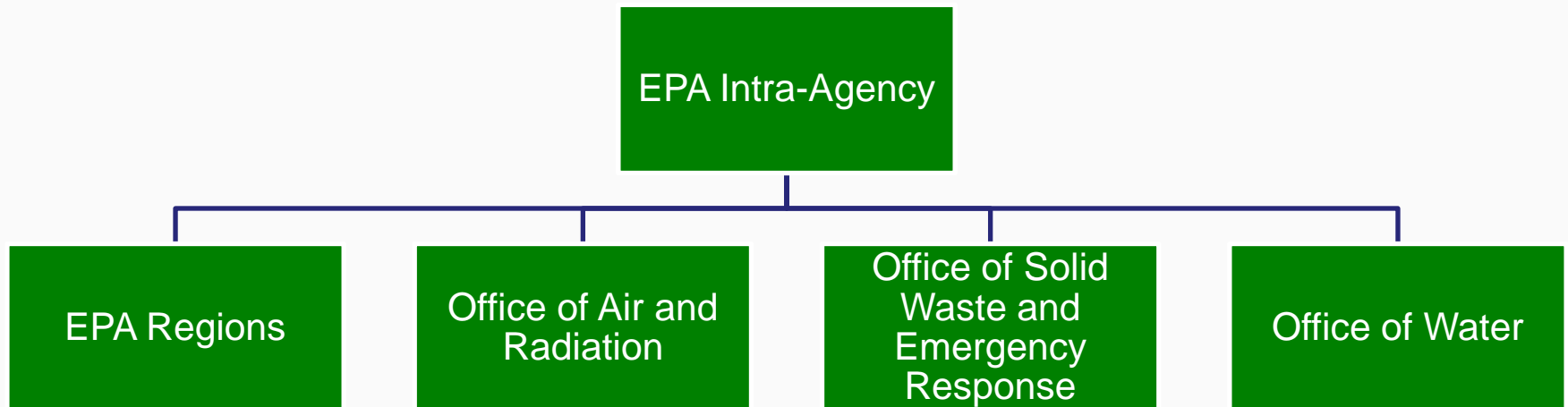


# Class VI Primacy

- As of September 7, 2011:
  - EPA directly implements the Class VI Program in all States, Tribes, and Territories
- States may apply for Class VI primacy at any time:
  - States without § 1422 primacy must apply to implement a new § 1422 Program
  - States with § 1422 primacy for Classes I, II, III and V, must submit a program revision to add Class VI
- State primacy applications
  - North Dakota application submitted in June 2013
  - Noticed in FR August 2013 and provided for 30-day comment
  - Currently initiating rulemaking package



# Coordination on CCS





# Coordination on CCS

## Office of Air and Radiation

- Subpart UU of the greenhouse gas reporting rule:  
Facilities that receive CO<sub>2</sub> for injection underground
  - EPA has two years of data from facilities subject to Subpart UU
    - RY2011 data was published on-line in January 2013
    - RY2012 data has just been received and is undergoing verification
- Subpart RR of the greenhouse gas reporting rule:  
Facilities conducting GS of CO<sub>2</sub>
  - Class II (“opt-ins”) or Class VI wells
  - No facilities are currently reporting (i.e., no MRV plans)
  - R&D exemptions for four projects have been submitted and approved



# Coordination on CCS

## Office of Solid Waste and Emergency Response

- Proposed Rule: August 2011
  - Conditional exclusion of CO<sub>2</sub> streams injected for geologic sequestration from the definition of hazardous waste provided the CO<sub>2</sub> streams meet specific conditions
- Final Rule: Published December 2013
  - Complementary to earlier EPA rules, CO<sub>2</sub> streams captured from emission sources, injected via Class VI wells, are excluded from EPA's hazardous waste regulations





# Coordination on CCS

## Federal Partners

- Department of Energy
  - Pacific Northwest National Laboratory (PNNL)
  - Lawrence Berkeley National Laboratory (LBNL)
- Department of Interior (i.e., USGS; BLM; BOEM)
- CCS Task Force Participants
- Internal Revenue Service

## State-Level Partners

- States
- Ground Water Protection Council
- Interstate Oil and Gas Compact Commission
- Association of American State Geologists

## Others

- Non-governmental and environmental organizations
- Academia
- Public stakeholders



# Opportunities for Stakeholder Involvement

Public comment on draft guidance documents

Public comment during the UIC Class VI Program primacy review and approval rulemaking(s)

Review and comment on draft Class VI permits

Review of publically available information from the GHG Program

National meetings, conferences and webinars



# Lessons Learned

- Research and knowledge building are ongoing to inform science-based decision-making
- Communication is extremely critical
  - Between EPA and owners or operators
  - Among Federal partners and with co-regulators
  - To the public, NGOs, and interested stakeholders
- Flexibility is needed
  - To accommodate project-specific differences
  - To adapt to evolving technologies
  - To process permit/primacy applications as expeditiously as possible



# Thank You!

[http://water.epa.gov/type/groundwater/uic/wells\\_sequestration.cfm](http://water.epa.gov/type/groundwater/uic/wells_sequestration.cfm)

<http://www.epa.gov/ghgreporting/reporters/subpart/rr.html>



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