

Federal Regulation of

Presented to the UT Law Carbon and Climate

Geologic Storage

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Change Conference February 10, 2011



# GHG Permitting Guidance

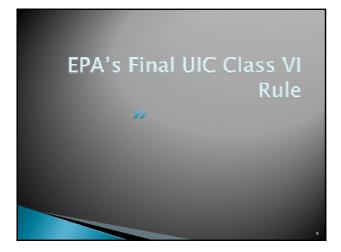
- BACT and CCS under the Guidance
  Step 1: CCS is "available"
  - Step 2: CCS may be "technically infeasible" if capture, transportation and storage are not all feasible for a specific project

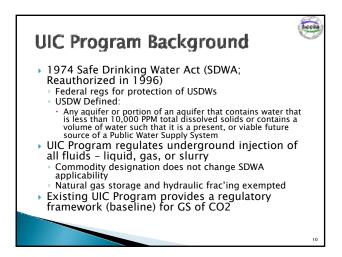
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- e.g., no space available for CO2 capture equipment; right of ways prevent building pipeline infrastructure; no access to suitable geology for sequestration or other storage options
- Step 3: Rank remaining options by effectiveness
  Step 4: Currently CCS may be too expensive and .: likely to be eliminated as an option

"There are now cases where the economics of CCS are more favorable, e.g. enhanced oil recovery"

# Conclusions Currently CCS is considered an expensive technology, potentially making price of electricity for a given facility uncompetitive Therefore, CCS will often be eliminated from consideration in Step 4 of the BACT analysis based on cost CCS may become less costly and warrant greater consideration in Step 4 in the future As capital and parasitic costs decrease Value of CO2 increases





# Class VI Rule Background Final rule builds on the existing UIC Program criteria and standards to address GS The final Class VI rule requires owners or operators that choose to inject CO2 for the purpose of GS to comply with tailored requirements to ensure USDW protection from injection-related activities. Proposed Rule for CS of CCB Published: July 25, 2008 So day public comment period ended: December 24, 2008 Pat received 400 comment letters Notice of Data Availability and Request for Comment Published: August 31, 2009 Sa day public comment period ended: October 15, 2009 Pat received 67 comment letters Final Rule Signed: November 22, 2010

# Goals of the Class VI Rulemaking 🥮 Process

### Ensure protection of USDWs

- Tailor existing UIC Program Requirements for GS of CO2
- Use a clear and transparent process
- Use an adaptive approach to incorporate new data and project information
- Capitalize on existing EPA, State, Trive and industry injection experience
- Involve, inform, and educate the public

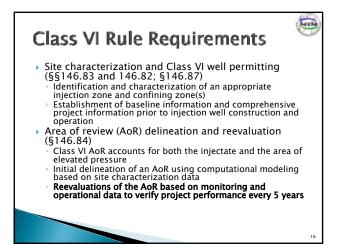
### heesa heesa EPA's Approach to Class VI Final Class VI Requirements Rulemaking Permit valid for the life of the well Special Considerations **UIC Program Elements** Site characterization and Class VI well permitting for GS AoR delineation and reevaluation Class VI well construction and operation Testing and monitoring of the Class VI injection Large Volumes •Site Characterization project Buoyance •Area of Review Site-specific project plan development Viscosity (mobility) •Well Construction •Well Operation Financial responsibility for the life of the Class VI Corrosivity •Site monitoring project Public Participation Post-injection site care monitoring - 50 yr default •Financial Responsibility Injection depth waiver •Site Closure Consideration for wells transitioning from Class II ER to Class VI injection of CO2 Established a new well class Class VI 13 14

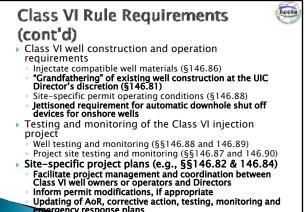
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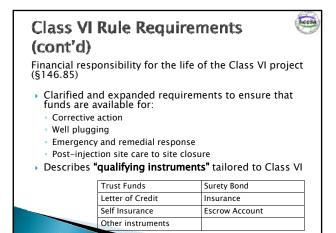
# State Primacy Considerations

### Primacy under the SDWA

- Section 1422 of the SDWA
- Primacy for well Classes I, III, IV, V and VI State regulations must meet or exceed minimum federal requirements
- States allowed Independent Class VI Primacy New! Section 1425 of the SDWA
- Regulations must be effective in protecting USDWs Primacy standard for Class II
- While applying for primacy
- States (Texas) with existing UIC primacy under 1422 may issue permits under existing authority Class I or Class V; can be re-permitted later as Class VI States without existing UIC primacy must submit any Class VI GS permit application to the EPA Region.







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## Class VI Rule Requirements (cont'd)

Post-injection site care monitoring and site closure (§146.93)

- 50 year default timeframe for post-injection site care after injection ceases or
- Demonstration, during the permit application process, that an alternative post-injection site care timeframe is appropriate and will ensure protection of USDWs (§ 146.84(a)(18))
- Authorization of site closure based on a demonstration of non-endangerment of USDWs



(cont'd)

(§146.95)

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## Class VI Rule Requirements (cont'd)

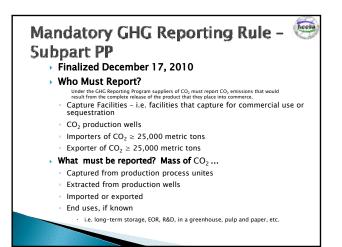
Wells transitioning from Class II EOR to Class VI GS - A.K.A. Class IIb (§144.19)

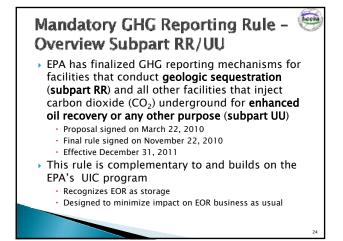
- Owners or operators of Class II EOR wells transitioning to Class VI injection must consider the risk profile and other factors of a specific project in coordination with UIC Directors
  - Increase in reservoir pressure
  - Increase in CO2 injection rates
    Decrease in production
  - Decrease in production Suitability of the Class II AoR delineation
- Allows existing well construction requirements to be "grandfathered" at Director's discretion
- Class II "business as usual" well owners or operators are not impacted by the final Class VI requirements



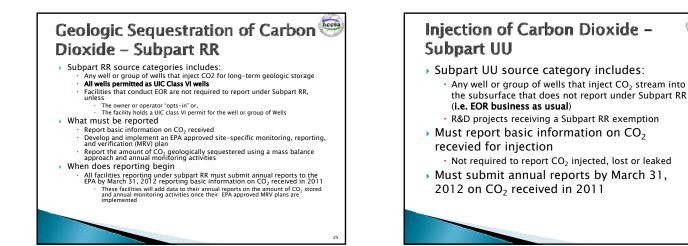
Class VI Rule Requirements

Injection depth waiver allowance for Class VI wells

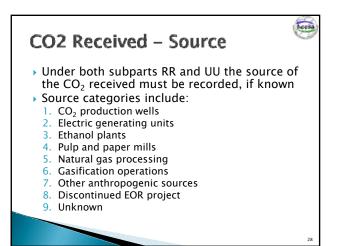


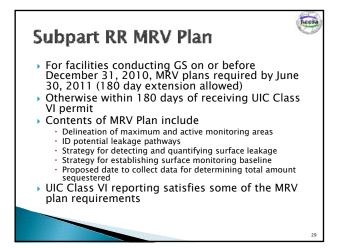


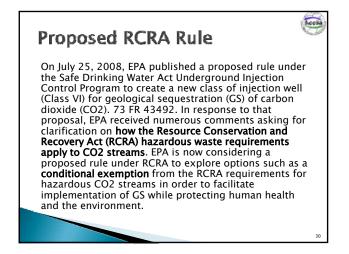
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	GHGs Reported	Subpart RR	Subpart UU
1	Mass of CO2 received	Х	Х
2	Mass of CO2 injected	Х	
3	Mass of CO2 produced and recycled	Х	
4	Mass of CO2 emitted by surface leakage	Х	
5	Onsite CO2 from equipment leakage and vented CO2 emissions	Х	
6	CO2 sequestered in subsurface formations	х	
7	Cumulative CO2 sequestered in all years since facility required to report under subpart RR	Х	







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### heesa What does this suite of **Regulations Mean?** > As a carbon management technology, CCS is "real" - and $\rm CO_2$ EOR may be "more real" for Darrick W. Eugene the time being General Counsel So called "regulatory gaps" are quickly closing Texas Carbon Capture CCS will be considered in new source and & Storage Association major modification stationary source proceedings going forward (512)423.4266 deugene@txccsa.org 1005 Congress Ave., Austin, Tx. 78701 Expect litigation CO<sub>2</sub> EOR appears to have a special compliance path, the contours of which www.txccsa.org remain uncertain