Enabling CCUS Project Deployment through Carbon Markets

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CCS Methodology

- Initially published in 2015, expanded in 2022
  - Currently in public comment
- Atmospheric benefits
  - Net benefit to the atmosphere
- Enable projects
  - Expanding opportunities in more fields and industries
- Co-benefits
  - Local environmental benefits
  - Infrastructure and technology build out
  - Workforce and infrastructure transition
  - Sustainable Development Goals tracking

CO_2 Sources

- Carbon Dioxide Removal, Direct Air Capture
- BECCS/BiCRS
- Ethanol production
- Industrial sources, power generation and manufacturing
- Municipal sources, waste and water treatment
- Blue hydrogen and ammonia

Geologic Reservoirs

- Saline formations
- Depleted oil and gas reservoirs
- Offshore reservoirs
- CO_2 must be left undisturbed in perpetuity
- Pore space access and ownership requirements

Enhanced Oil Recovery

- EOR projects eligible for five years or until January 1, 2030
  - Produced oil will be considered process emissions
  - Transportation from field to refinery
  - Refining based on API gravity
  - Transportation to wholesale terminal or distribution center
  - End-use
  - Includes averages for exported crude and refined product
- Supports the development of technology and infrastructure in the short term
- Encourages transitional reservoirs that may absorb more CO_2

Ownership

- Only direct emissions reductions allowed
- Ownership of emission reductions
  - CO_2 Title must be clearly defined through contract
  - Chain of custody of CO_2 among parties involved in the capture, transport, and storage segments must be documented
- Pore space ownership
  - Being addressed by State laws which are still evolving
  - For EOR projects, the right to inject and use the oil and gas reservoir is contained in the oil and gas lease. Additional language may be needed to ensure security of CO_2 in perpetuity
- Surface access during post-injection period will be required to conduct monitoring

Data Collection, Monitoring, and Reporting

- Monitored Parameters include:
  - CO_2 flow rate and concentration
  - Fuel mass/volume and composition
  - Electricity and/or steam usage
  - Equipment blowdown events (volume, duration, GHG composition)
  - Major equipment counts (headers, separators, etc.)
  - Additional parameters per subsurface monitoring, reporting and verification (MRV) plan

- QA/QC
  - Calibrations of flow meters and analyzers consistent with USEPA requirements and industry best practices
  - Data collection procedures to include periodic data review checks for accuracy, completeness, and consistency

Quantification

- Calculation procedures
  - Baseline emissions (projection-based or intensity-based)
  - Project emissions (capture, transport, and storage segments)
  - Project emission sources include stationary combustion, vented and fugitive, electricity and steam usage
  - GHG gases include CO_2, CH_4, and N_2O
  - Consistent with industry practices and EPA reporting requirements

Permanence

- Permanence
  - MRV plan with site-specific monitoring and modeling
  - Post-injection phase monitoring and model predictions
  - Remediation should unintentional reversal occur
  - Intentional and unintentional reversals must be addressed
- Liability
  - Evaluate risks of leakage (migration through well bores, fractures, or faults)
  - CO_2 plume well-characterized through modeling and measurement during injection period
  - Small releases during injection period reconciled through accounting
  - Private insurance/Reserve account contribution to cover unintentional reversals in GHG emission reductions
  - Implementation of safety plan per permit requirements

Additionality Assessment

- Project is additional if:
  - It passes a regulatory surplus test
    - Project not mandated by existing laws, regulations, statutes, etc. that affect its GHG emission reductions
    - Project proponent must demonstrate that there is no existing regulation that mandates the project or emissions reductions
  - Exceeds a performance threshold
    - Practice-based: additional if project activity is not common practice
    - Technology Standard: additional if installed technology is uncommon
    - Emissions Rate or benchmark: additional if project's emissions are lower than an industry sector benchmark

Thank You!

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