

# A way forward for CCUS in unconventionalals



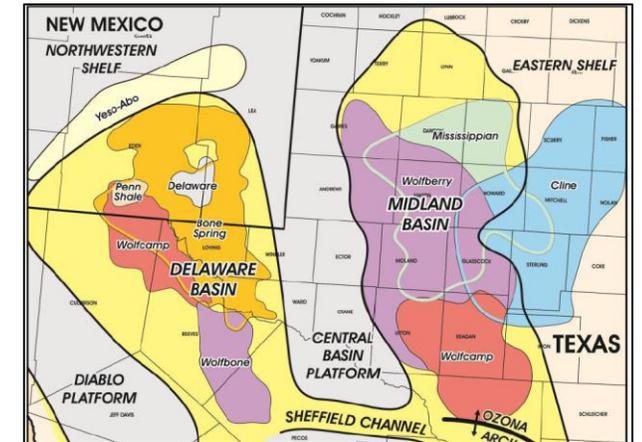
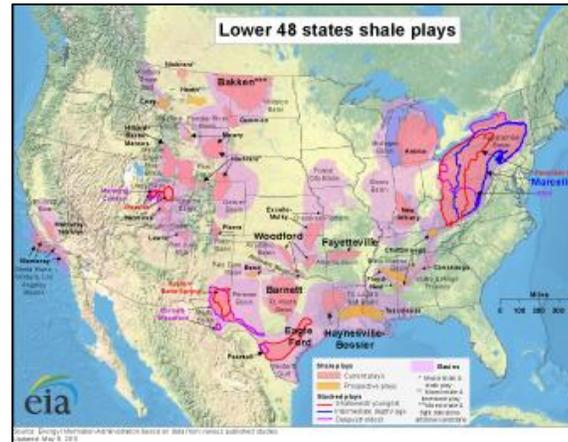
Group 3  
2019 CCUS Workshop

# CCUS in unconventional

- Large resources with high potential for CCUS utilization
- Permian Basin in West Texas is a large, active market with lots of infrastructure

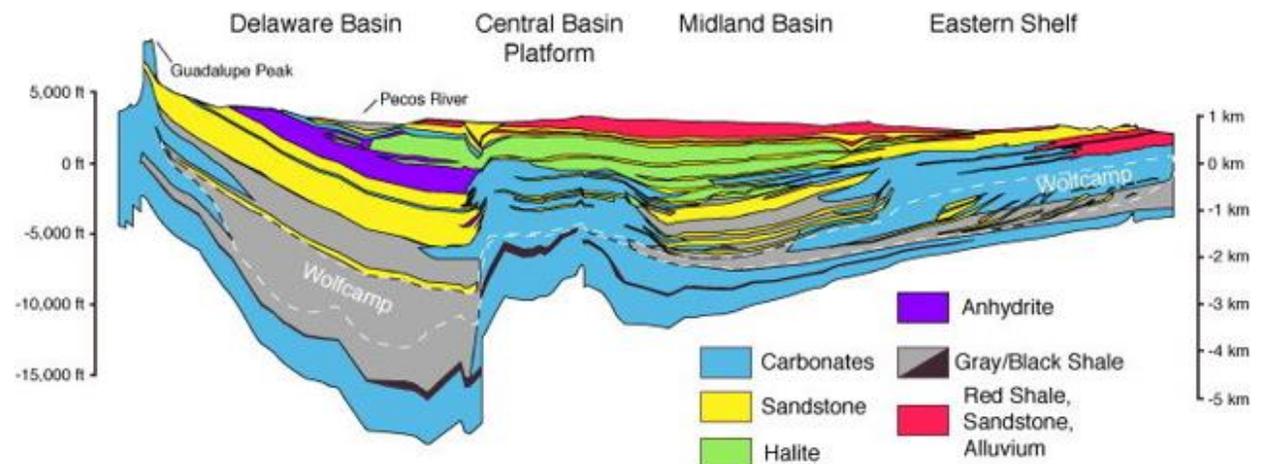
## Approach:

- More efficient storage of the CO<sub>2</sub> due to the low permeability
- Cyclic miscible CO<sub>2</sub> injection
- Main mass transport mechanism molecular diffusion in unconventional oil reservoir
- Additional storage potential after EOR



<https://www.eia.gov/analysis/studies/usshalegas/>

<https://www.shaleexperts.com/plays/wolfcamp-shale/Overview>



<https://seekingalpha.com/article/4250516-shell-prowling-around-permian-acquisition>

# The advantages of using unconventional CCUS

- Lower the emissions
- Better public relation
- Increase the oil recovery
- Geological analysis less extensive



<https://www.desmogblog.com/2018/05/29/flip-well-fracking-shale-halcon-resources-floyd-wilson>

# Technological problems

- Pricing of separation is still too high, can be optimized
- Improve simulator for CO<sub>2</sub> in unconventional reservoirs
- Energy efficient technology (eg: use of AICV)
- Monitoring techniques, what do we need to monitor?



<https://www.airseparation-plant.cn/product/co2-plant/>

# Economy and business

- Identify and provide a good business case for investment
- 45Q – kickback from the government.
  - EOR: 35 dollars pr ton stored
  - CCS: 50 dollars pr ton stored
- CO2 pricing ranging from 100-700 \$ pr ton
- Beneficial with an extra cycle with CO2
- Improve loans for CCUS
- Make sure insurance is designed for CCUS

# Regulation

- We find that government should play a large role
  - Focus on taxes and incentives
  - Require portion of kickback to be put back into R&D
  - Special leases CCUS, ie. Improve type 6



<https://abcnews.go.com/Politics/chief-justice-john-roberts-rebuts-trump-obama-judge/story?id=59344259>

# Communication strategies

- Communication strategies important
  - Proactive
  - Reactive
- Look back to working examples and learning
- Possibly a committee or a consortium
- Reach out to education



# Lastly

This is a challenge for everyone. Let's work together!



<https://www.teachingenglish.org.uk/article/monthly-lesson-plan-earth-hour>

# Questions

- Thank you!