

CCUS in Wyoming and Wyoming CarbonSAFE

Scott Quillinan, Senior Director of Research,
School of Energy Resources

Scott Quillinan
scottyq@uwyo.edu
(307) 766-6697



School of
Energy Resources

THE WORLD NEEDS MORE COWBOYS.

Mission

Wyoming Energy Strategy (North Star):

*EmPowering Our Nation with an All-of-the-Above Net-Zero
Energy Mix*

Decarbonization through innovation

1. Low carbon electricity

- Fossil Fuels with carbon capture utilization and storage
- Renewables and integration
- Nuclear

2. Low carbon fuels

- Low-carbon oil and gas
- Hydrogen
- Biofuels
- Renewable natural gas

3. Electrification

- Electric vehicles
- Energy storage

4. Carbon removal

- Direct Air Capture
- Bio-energy with carbon capture and storage

5. New narratives for coal

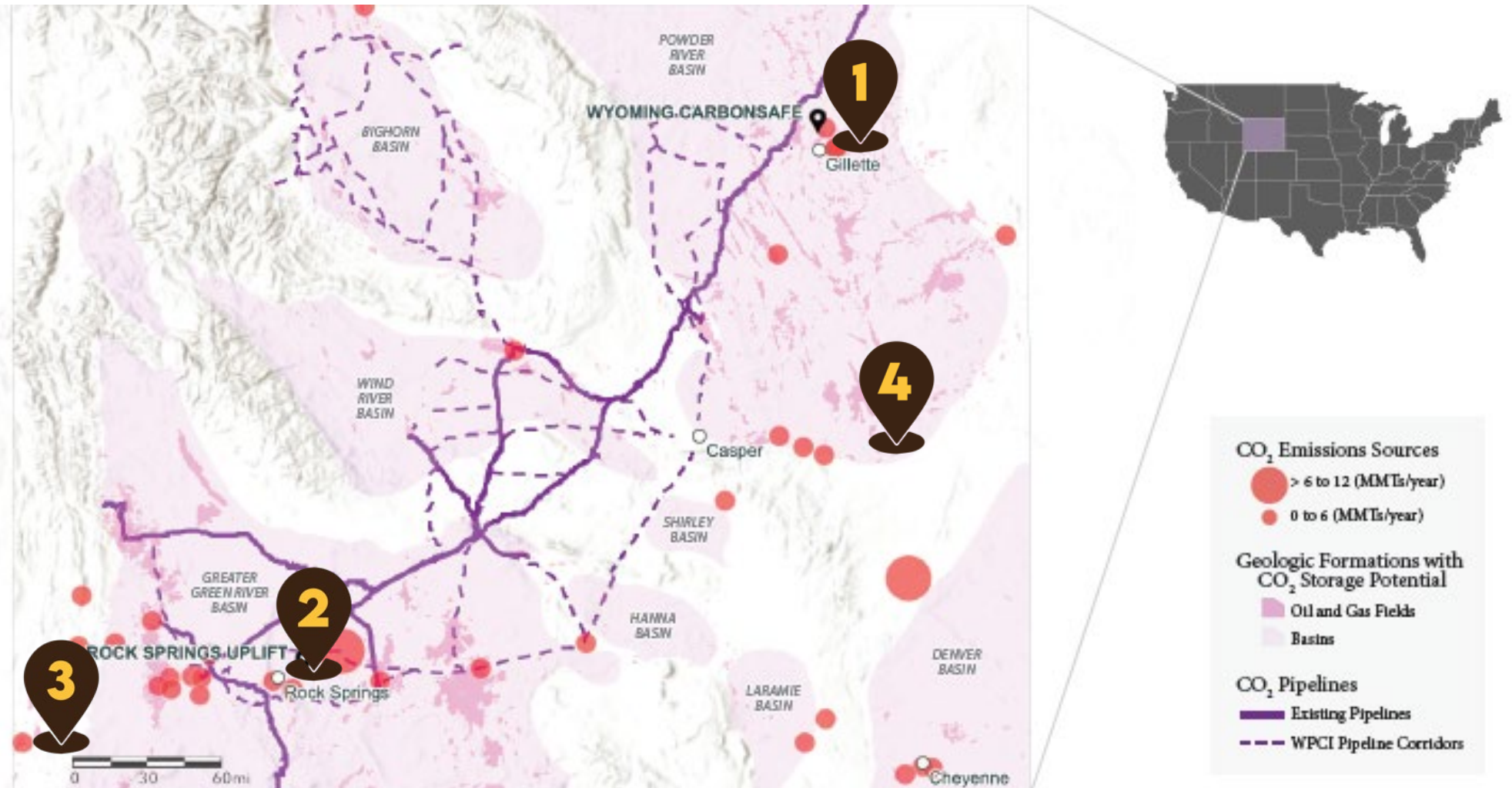
- Coal to products
- Rare earth elements

Modified from Gaffney Cline and Associates 2020

Carbon Storage Landscape

Carbon Capture and Storage (CCS) projects in Wyoming

1. Wyoming CarbonSAFE Project at Dry Fork Station
2. Rock Springs Uplift-Regional CCUS Hub
3. Depleted Gas Fields (Fold and Thrust)
4. Southern Powder (Blue Hydrogen)



Wyoming CarbonSAFE: CO₂ Source and Capture

1. Wyoming:

- ✓ CCUS legal Framework
- ✓ Statewide CO₂ transportation network
- ✓ Class VI Primacy



**BASIN ELECTRIC
POWER COOPERATIVE**
A Touchstone Energy® Cooperative

2. Dry Fork Station:

- ✓ Built in 2007, on-line in 2011
- ✓ 385 MW Coal-fired plant
- ✓ 3.3 Million tons of CO₂/year
- ✓ Operating life span through 2078

3. Wyoming Integrated Test Center:

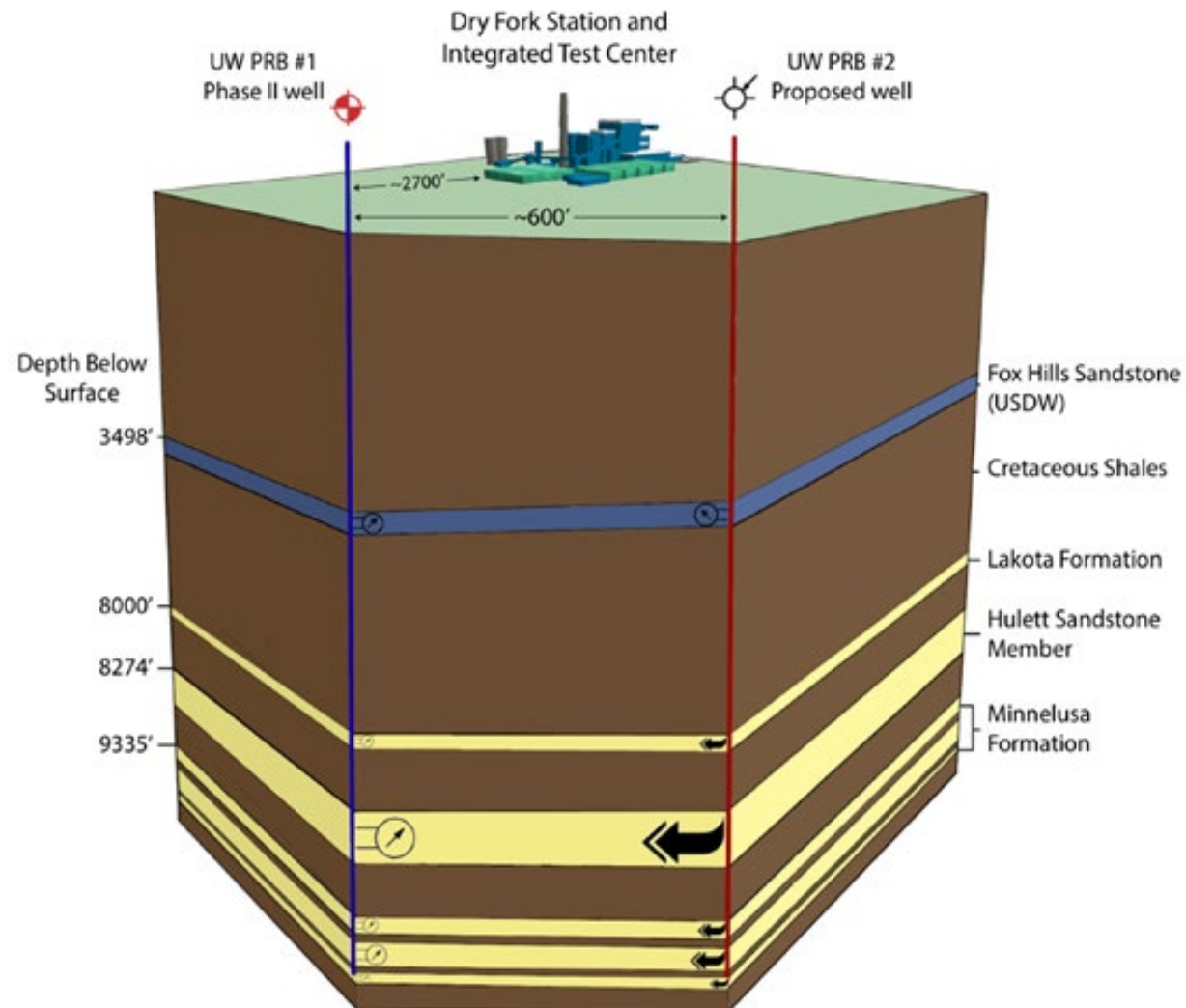
- ✓ Commercial-Scale Front-End Engineering Study for MTR's Membrane CO₂ Capture Process (DE-FE0031846)
- ✓ UKY-CAER Heat-Integrated Transformative CO₂ Capture Process for Pulverized Coal Power Plants (DE-FE0031583)
- ✓ Novel Next Generation Sorbent System for Post-Combustion CO₂ Capture – TDA Research, Inc. (DE-FE0031734)
- ✓ Kawasaki Heavy Industries and JCOAL novel solid technology



**WYOMING
INTEGRATED
TEST CENTER**

Wyoming CarbonSAFE: Storage

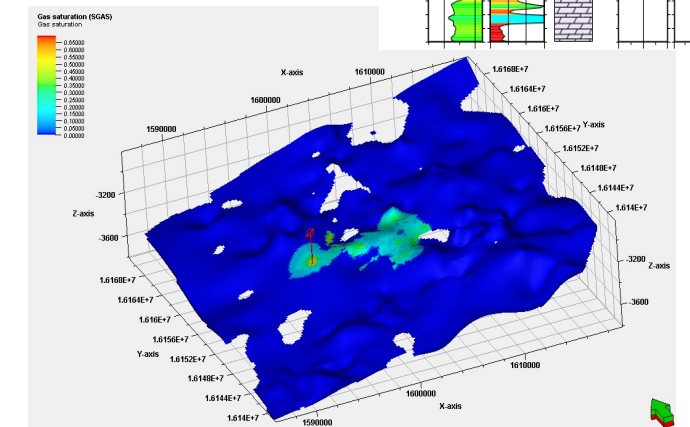
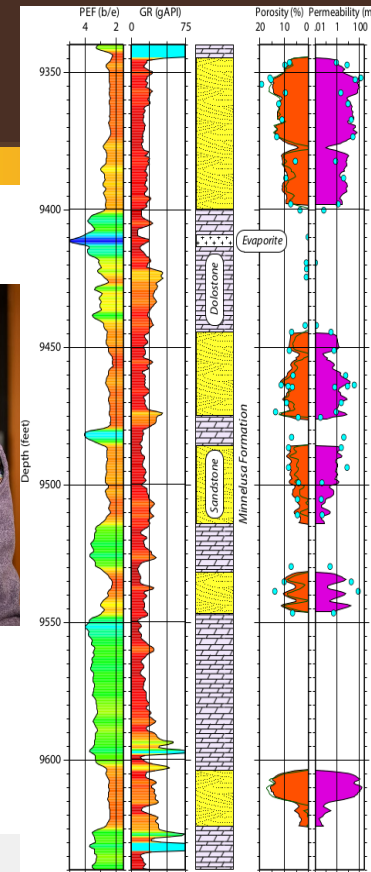
Conceptual model



Wyoming CarbonSAFE

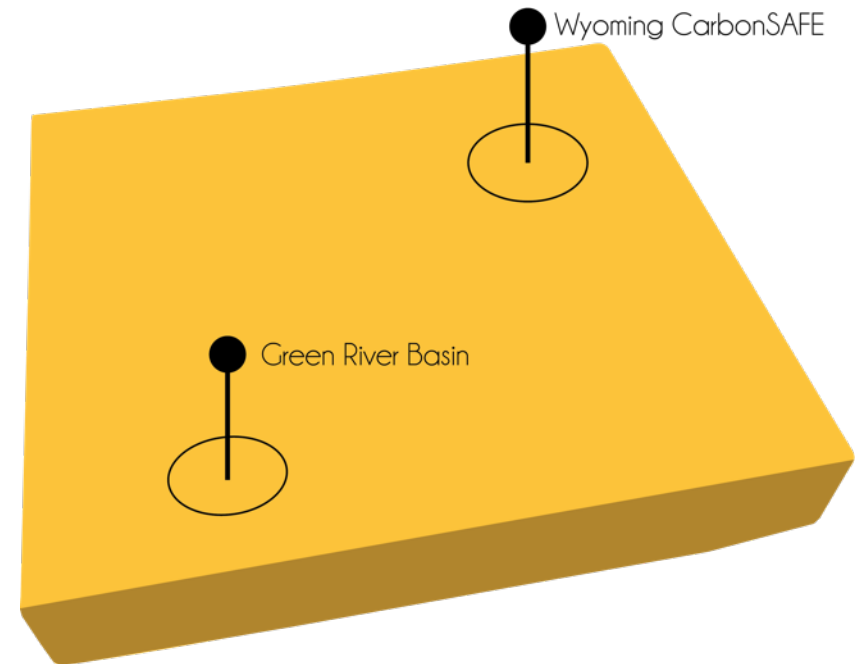
Work completed to date:

- Geologic characterization: *Stratigraphic test well, 3D seismic, geologic modeling, risk analysis*
- Monitoring network: *Soil and water baselines established*
- Legal and regulatory analyses: *Model pore space leasing agreements, model CO₂ off-take, Environmental Information Volume (EIV)*
- Economic modeling: *Web-based tool*
- Public Outreach: *Workshops, webpages, webinars, public presentations*



Why CCUS in Wyoming?

- Favorable geology
- Regulatory primacy for Class VI permits
- CO₂ transportation infrastructure
- Wyoming Pipeline corridor initiative (WCPI)
- CCUS friendly regulatory framework
- Potential CO₂ targets identified in every Wyoming geologic basin
- Storage capacity for over 25 billion tons of CO₂ storage
- Wyoming Integrated Test Center
- National and international leaders in CCUS



University of Wyoming, School of Energy Resources-Low carbon technologies

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