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Sutter Co. CO2 Capture and Storage Project, Northern California (FE0032239) Kick-Off Meeting

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Project Overview

- **Key Objective:** This CarbonSAFE Phase-II project seeks to determine:
  - Storage complex feasibility of the central Sacramento basin in northern California
  - Store 50 million metric tons of anthropogenic CO2 from a nearby natural gas combined-cycle power plant in a 30 year period.

- **Project performance dates:** 24 months project, October 2023 to September 2025
- **Funding summary:** $9 million DOE, $2.9 million recipient cost share
- **Current Status:** DOE contract signed, working on subcontracts, Stratigraphic Well permit activities, etc…

Project Team

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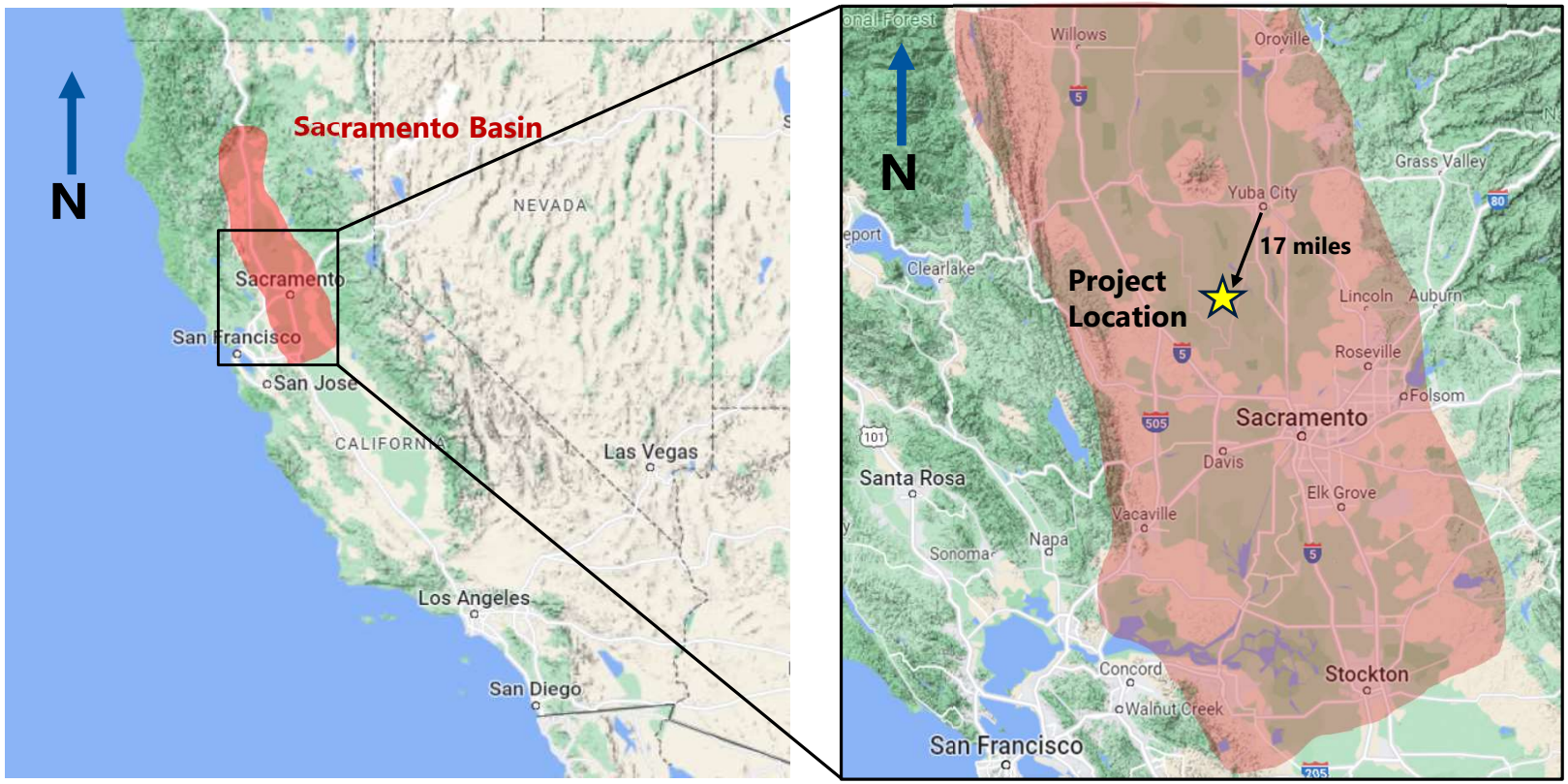
Relevance to DOE CO2 Program Objectives

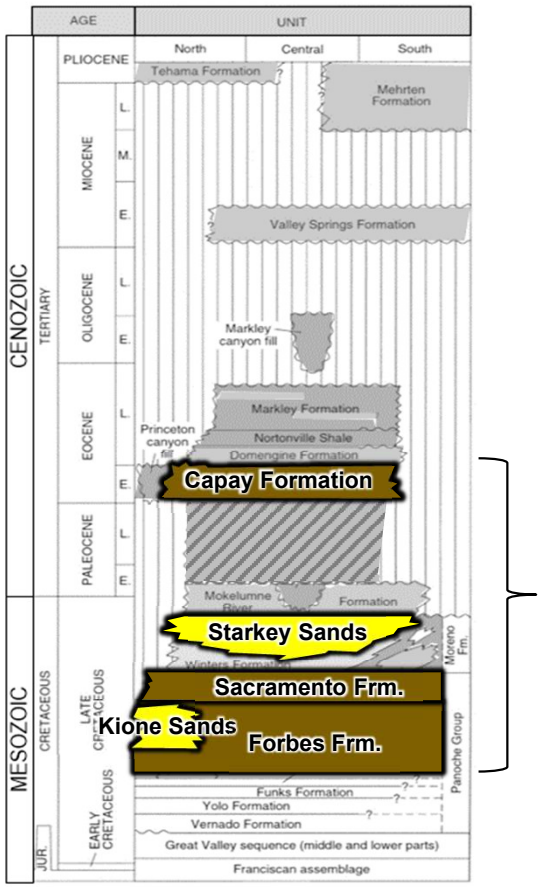
- The Proposed Project:
  - Enables and supports the rapid, widespread deployment of CCUS to help address the Nation's decarbonization goals.
  - Assesses geologic resources along the pathway of becoming contingent carbon storage resources.
  - Performs research in the form of CarbonSAFE Phase-II feasibility assessments for onshore projects within the U.S.
  - Targets a site having commercial-scale CO2 geological storage in a geographic areas/geologic settings lacking previously supported geologic carbon storage projects.
  - Creates a public engagement plan specifically addressing Diversity, Equity, Inclusion & Accessibility, Justice40 Initiative, Community and Stakeholder Engagement, and Economic Revitalization and Job Creation.

Project Location, Sutter Co. CA

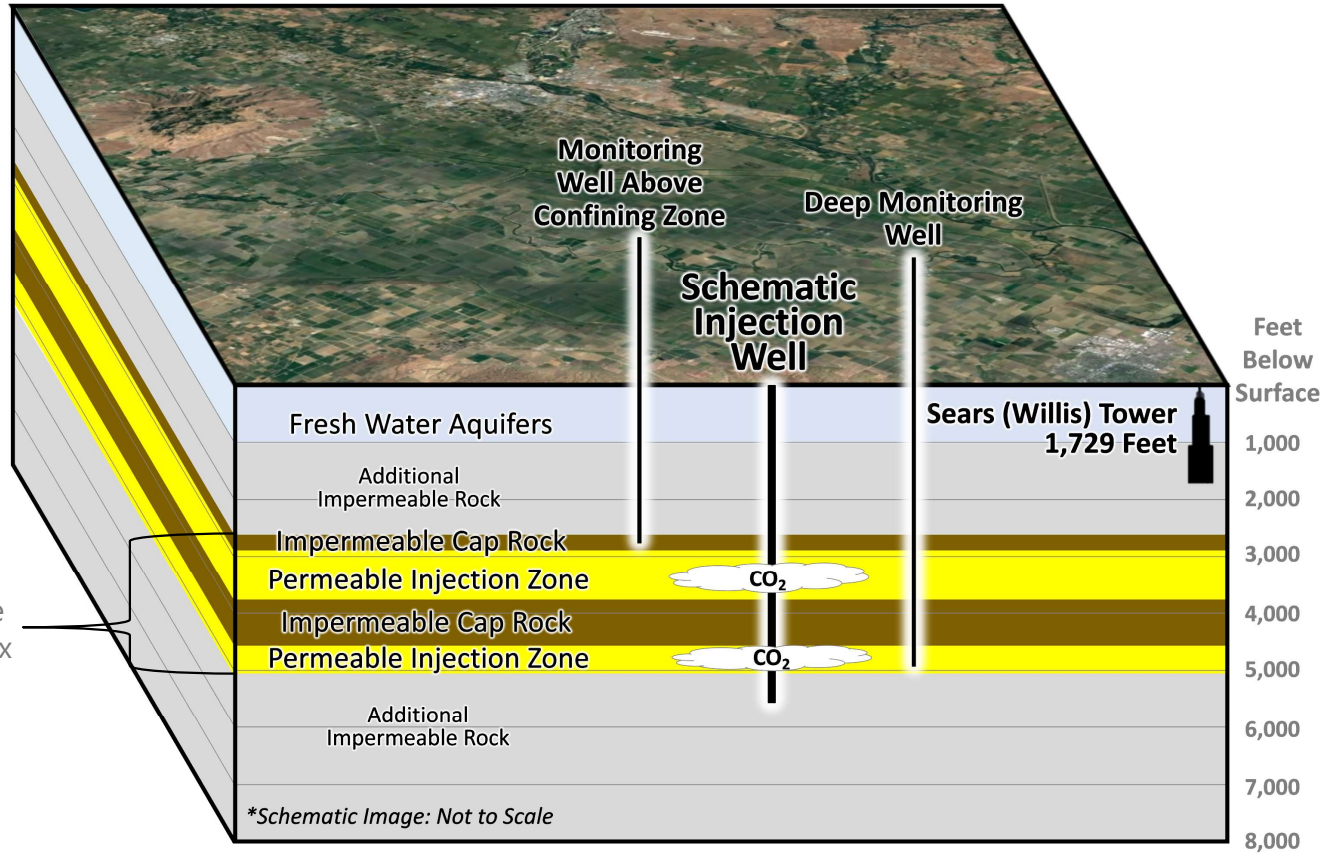
17 miles from Yuba City, 20 miles from Sacramento



Stratigraphy of Sacramento Basin AOI



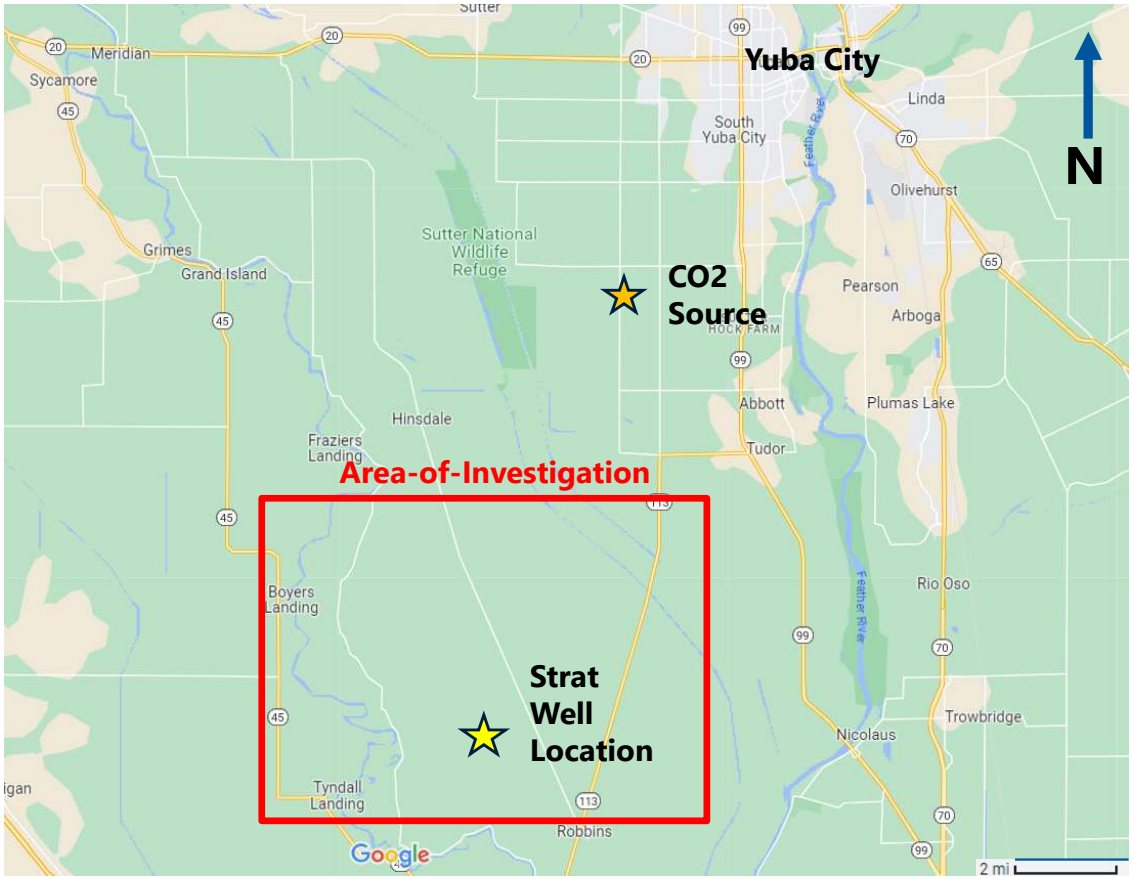
Storage Complex



Images courtesy of 1PointFive

Area-of-Investigation and Proximity to Source

- 6x7 mile storage complex AOI ~17 miles from Yuba city
  - Legacy oil/gas wells
- New stratigraphic well
  - Logs and cores
- CO2 Source 10 miles SW of Yuba City
  - NG combined cycle power plant



Key Project Activities

- Data collection to supplement key missing geologic and reservoir data (i.e., drilling of a stratigraphic test well within the AOI and associated testing)
- Geologic, Reservoir and Geomechanical Modeling
- Risk Assessment and Mitigation/Monitoring Planning
- CO2 Source and Transport Planning
- Analysis of Contractual and Regulatory Requirements
- Technical and Economic Feasibility Assessment
- Community Benefits
- Phase-III and UIC Class VI Application Planning and Verification

Tentative Project Schedule and Tasks

		2023			2024													2025								
		Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3		
Task	Description	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1.0	Project Management and Planning		A																						FR
1.1	Integration with Related DOE Initiatives																								
2.0	SCI Assessment and Planning				B																				
2.1	DEIA, Justice 40, Community Engag. Plan				C																				
2.2	Public Engagement				D																				
3.0	Data Collection														E										
3.1	Strat Well Design																								
3.2	Strat Well Permitting																								
3.3	Strat Well Drilling																								
3.4	Strat Well Core Analysis																								
4.0	Geologic and Reservoir Modeling																				F				
4.1	Update Geologic Model																								
4.2	Reservoir Modeling																								
4.3	Geomechanical Modeling																								
5.0	Risk Assessment & Mitigation/Monitoring Planning																	G							
5.1	Risk Assessment																								
5.2	Mitigation/Monitoring Planning																								
6.0	CO2 Source and Transport Planning																						H		
7.0	Analysis of Contractual & Reg. Requirements																						I		
8.0	Technical and Economic Feasibility Assessment																						J		
9.0	Phase III & UIC Class VI Application Planning																								K

Expected Outcomes

- Affirmation of Storage Complex Feasibility for 50-million metric tons of CO2 within a 30-year time frame
- Clarification of projects risks including mitigation/monitoring planning
- CO2 source and transport planning
- Understating of contractual and regulatory requirements, and assessment of technical and economic feasibility
- Phase-III work plan and UIC Class VI application verification and planning
- Demonstration of storage complex feasibility in a geographic region and a geologic setting not previously attained

Project Risks and Mitigation Strategies

Perceived Risk	Risk Rating (Low, Med, High)			Mitigation/Response Strategy
	Probability	Impact	Overall	
Cost/Schedule Risks:				
Cost Overruns	Low	Med	Low	Cost control, fixed price contracts for well drilling and data collection. In the event costs rise above budget, the scope will be adjusted accordingly. Partners may also be able to cost-share cost increases. Drilling plans and best practices such as DWOP (Drilling Well on Paper) will be utilized during drilling and remedial protocols will be followed in the event of complications.
Delay in Strat well permitting	Low	Med	Low	Partner is a major independent Oil and Gas producer with significant experience in well permitting and has internal resources and knowledge to work through permitting processes with various permitting agencies
Technical/Scope Risks:				
Construction Isues of Strat well and data collection	Low	High	Med	The operational details for drilling, coring and logging the Strat well are well defined in the drilling prognosis and are routine in nature for this project. The drilling prognosis includes a list of key technical and management personnel who can be contacted during well construction and data acquisition to aid in resolving any issues.
Management, Planning, and Oversight Risks:				
Poor response (pushback) from Community Engagement efforts	Low	Med	Med	Project team members are experienced in diverse community engagement and planning methods. In the case of a negative response from the community, the team will respond accordingly with engagement methods preferred/amendable by the community and convey the content of the negative response to the project team to be addressed, if possible
ES&H Risks:				
Injury/accident at Strat well site	Low	High	Low	All personnel present at the Strat well site is required to wear the minimum amount of safety equipment as prescribed by 1PointFive. Each vendor and subcontractor has their own corporate ES&H protocols which they have been trained on and are required to follow. All field operations are performed according to local/state/federal safety and env regulations

Community Benefits Plan (CBP)

Build a framework to engage community stakeholders, develop a ready workforce, and optimize project benefits

CSE → IAW → DEIA → J40

Community and Labor Engagement

- CBP Panel building on Calpine's existing relationships
- CLE communication and engagement strategy
- Community and stakeholder analysis

Investing in Job Quality & Skilled Workforce

- Skills, certification, educational needs analysis for future CCUS jobs and local workforce hiring needs
- Health and safety (HSE) plans for CCUS-related work
- CCUS-skills training and education partnership pipeline

DEIA

- Diverse hiring and contracting strategy
- Accessible CCUS-skills training and education pipeline
- Public dissemination of project information on website

Justice40

- CCUS J40 data gathering
- Identification of J40 metrics for CCUS
- Database development on CCUS J40 data to facilitate future work

Next Steps

- Finalize subcontracts and commence project activities
- After project completion: Phase-III and UIC Class VI Application Planning and Verification

Acknowledgements

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Questions