

A Geospatial Dashboard for Carbon Storage Transparency

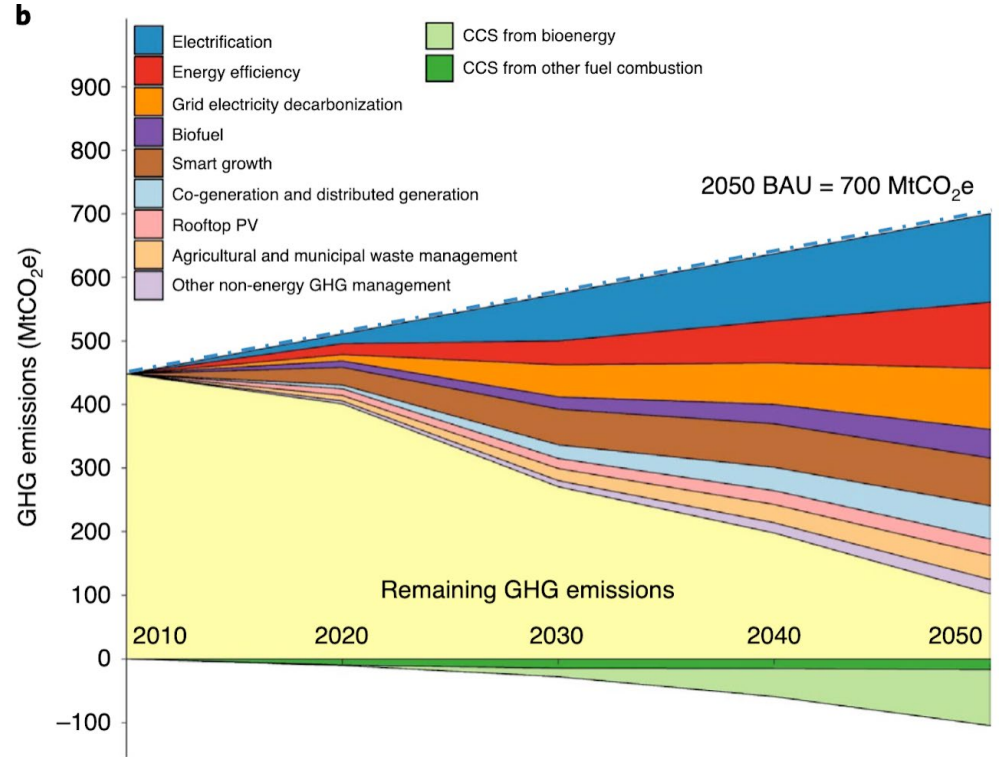
Samuel Desai

Nov 19, 2024



Stanford | Doerr | Stanford Center
School of Sustainability | for Carbon Storage

California's Net-Zero Goals Require Carbon Capture



Wang et al. (2023)

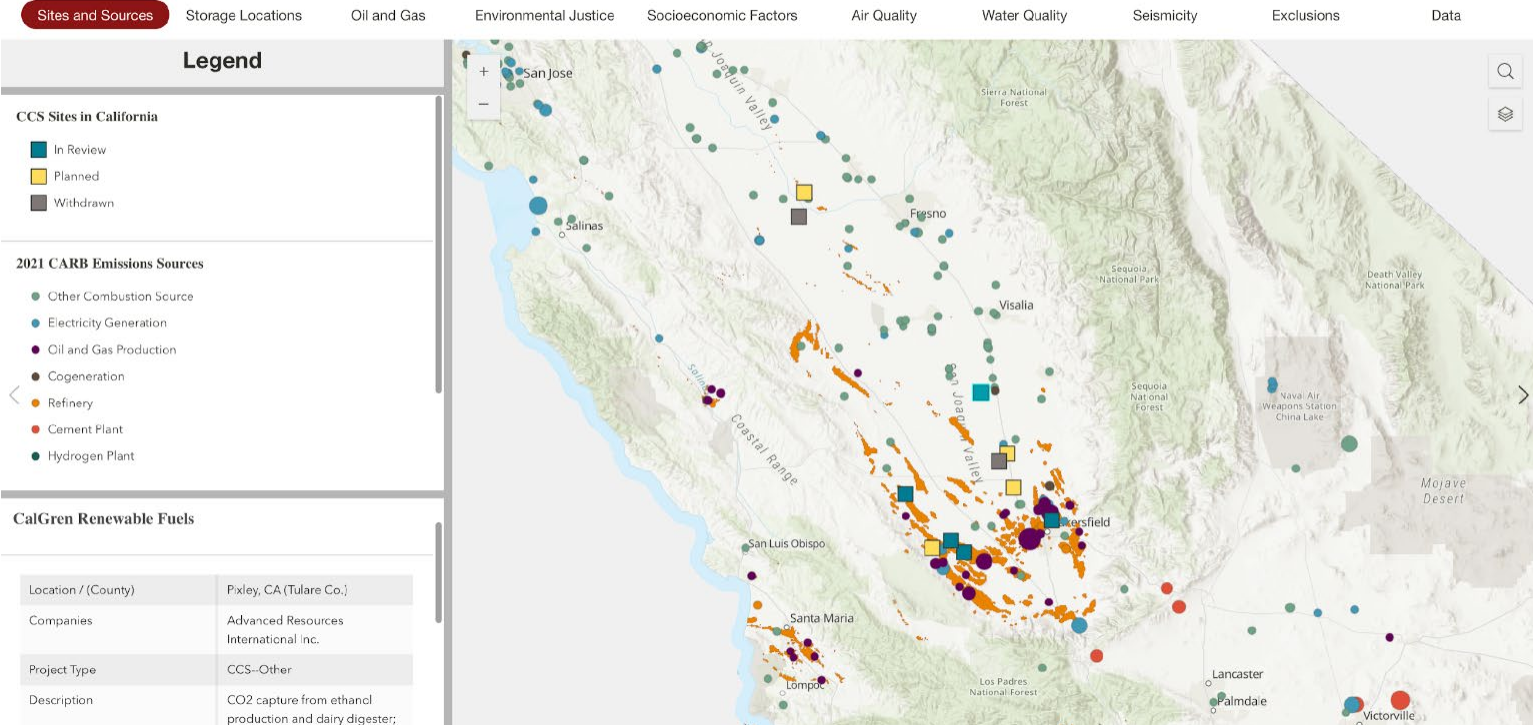
Only 19%

Percent of Americans have heard of CCS (Pianta et al. 2021)

Our project informs communities about Carbon Capture

Carbon Storage in California

Download Data



Methodology for the Project



Gathered data
layers to create
the dashboard

Storage Locations

Ultramafic Areas



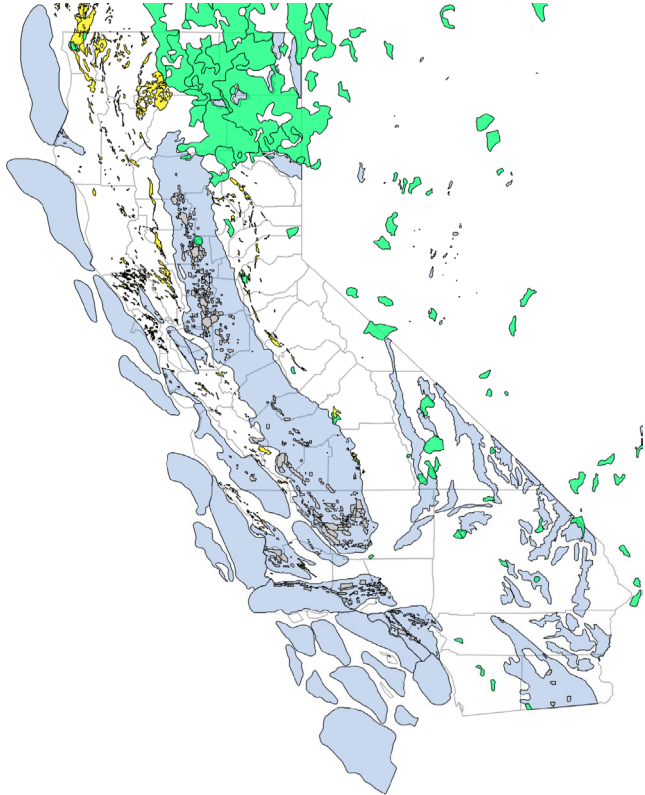
Mafic Areas



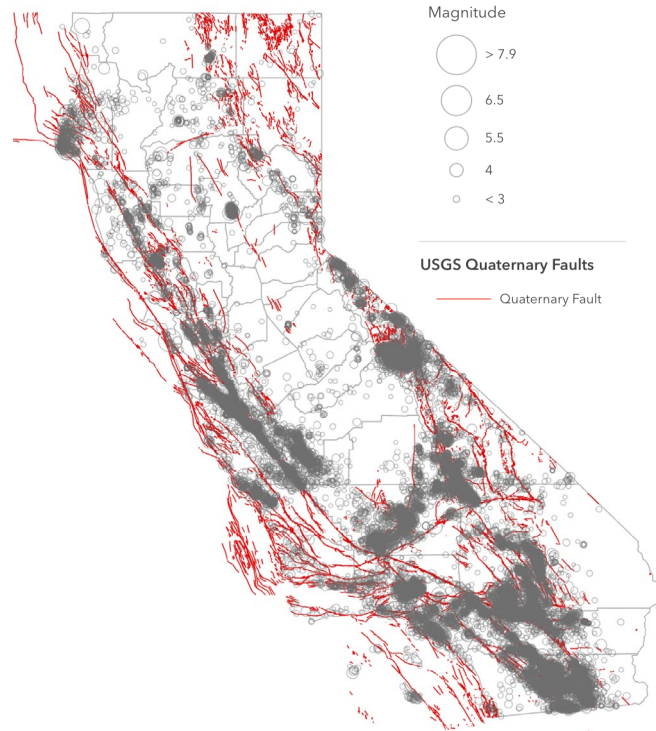
Oil & Gas Fields



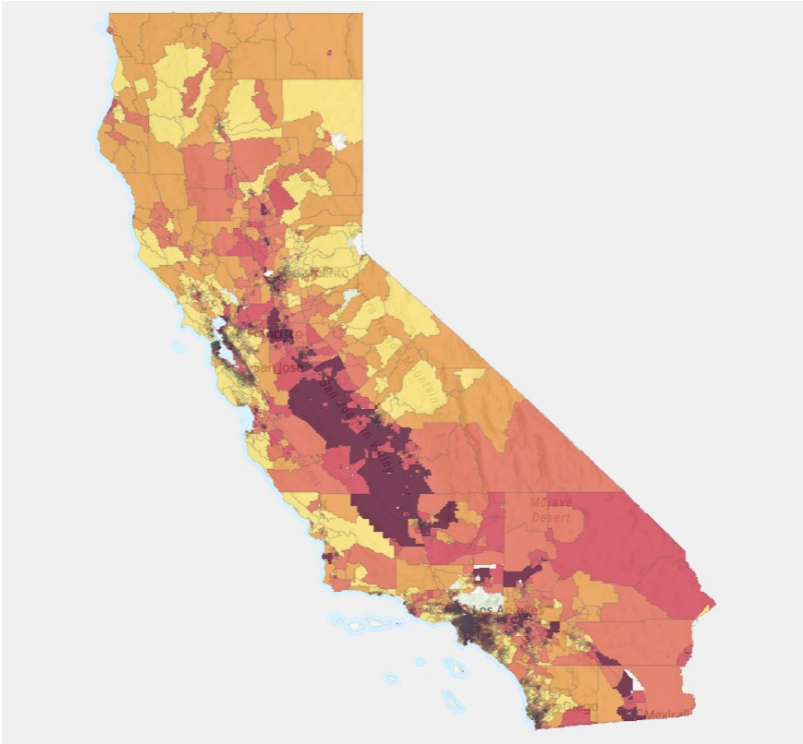
Saline Aquifers



Faults and seismicity

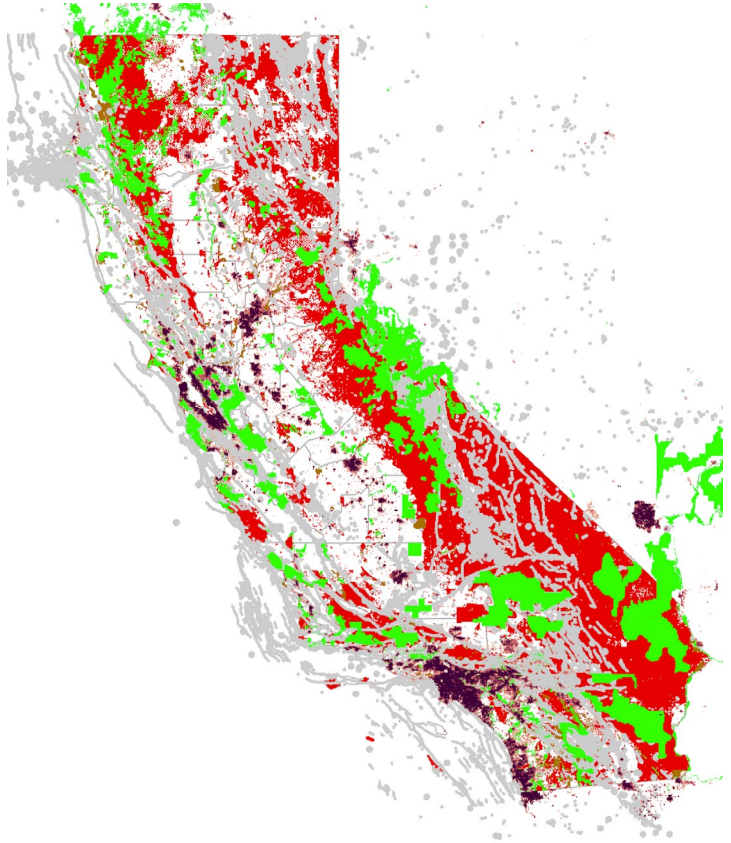


Environmental Justice



Exclusion Zones

Category zone		Exclusion area/conditions
Risk	Quaternary Faulting	4 km wide “buffer zone” around all quaternary faults
	Seismic activity	10 km diameter for $M > 5$ (from 1769 – present), 5 km diameter for $1.5 < M < 5$ (from 2015 – present)
Population density		Above 75 persons/ km ² (including city boundary)
Restricted lands		National landmarks, conservation lands, all military installation zones, Federal lands, state lands, and Native American lands
Sensitive zones/habitats		Cultural sites (national park/monument, national register properties), Ecology habitats, Wildlife habitat

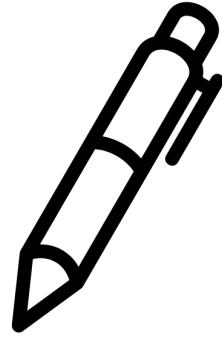


Kim et al. (2022)

Methodology for the Project



Gathered data layers to create the dashboard

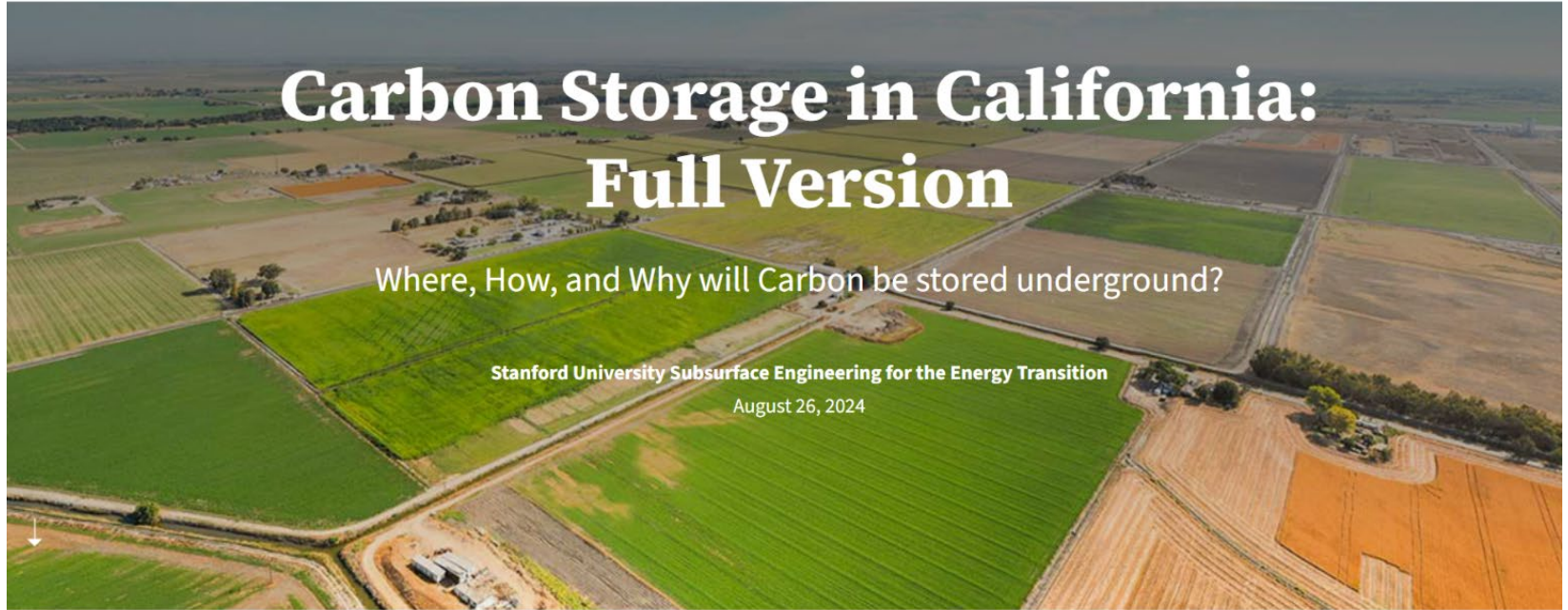


Wrote an ArcGIS story map

Website with Visual and Textual Information

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Carbon Storage in California: Full Version



[Climate Change in California](#)

[What is Carbon Capture?](#)

[Carbon Capture in California](#)

[Risks](#)

[Environmental Justice](#)

[Risk Mitigation](#)

[Data Access](#)

Site provides information about Carbon Capture

This guide is for communities, developers, and interested policymakers to provide objective information and access to geospatial data related to the risks and opportunities of carbon storage.

To view the executive summary, click [here](#).

Key Takeaways:

1. **Carbon Capture and Storage (CCS) takes emissions from power plants and industrial sources and stores them in geologic reservoirs.**
2. **CCS, alongside Carbon Dioxide Removal (CDR) are key strategies to reduce emissions from hard-to-abate sources**
3. **Although CCS carries risks of induced seismicity, leakage, and environmental justice, those risks can be partially mitigated by Measurement, Monitoring, and Verification (MMV), and Community Benefits Agreements.**

Navigable Graphics






Legend

CCS Sites in California

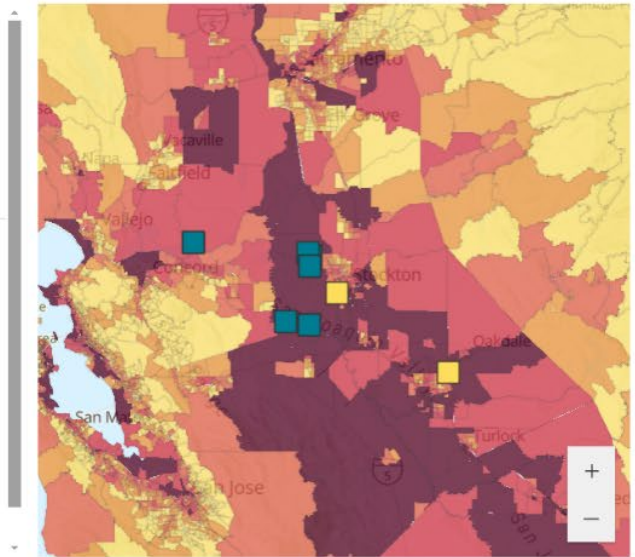
-  In Review
-  Planned
-  Withdrawn

Pollution Burden

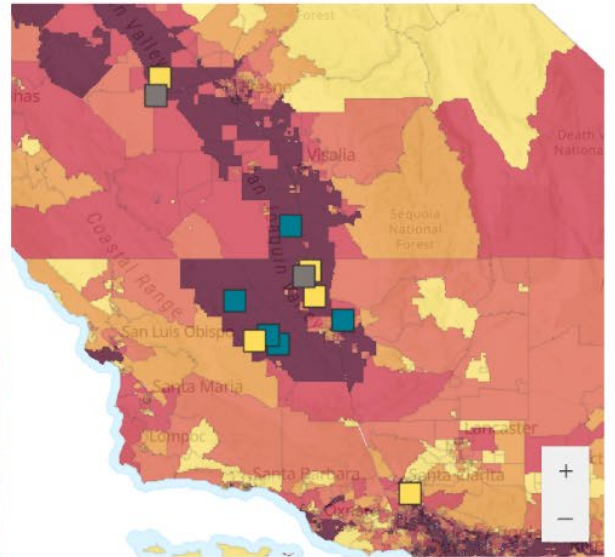
Percentile

-  > 80 - 100 percentile
-  > 60 - 80 percentile
-  > 40 - 60 percentile
-  > 20 - 40 percentile
-  0 - 20 percentile

North San Joaquin



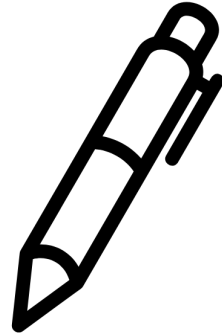
South San Joaquin



Methodology for the Project



Gathered data layers to create the dashboard

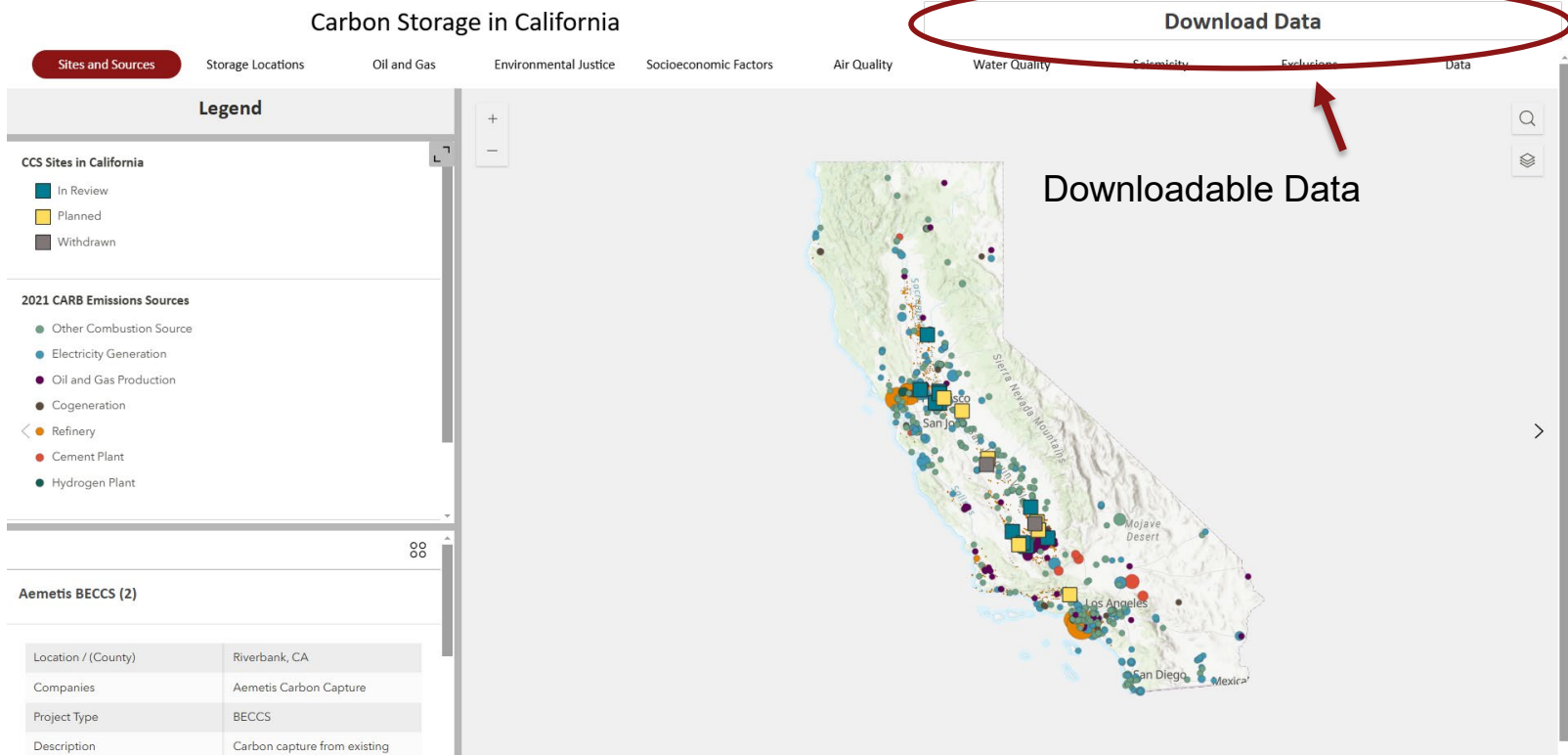


Wrote an ArcGIS story map



Compiled the data into the dashboard

The Dashboard



Why is transparency important?

Opposition and misinformation is growing

Over 500 Organizations Call on Policymakers to Reject Carbon Capture and Storage as a False Solution

On July 19th, over 500 organizations across the United States in Canada expressed deep concerns about the US and Canadian governments' support for carbon capture utilization, and storage (CCUS) technologies in an open letter.

Carbon Capture: The Fossil Fuel Industry's False Climate Solution

A massive buildout of carbon capture facilities is not the way to avert the climate crisis.

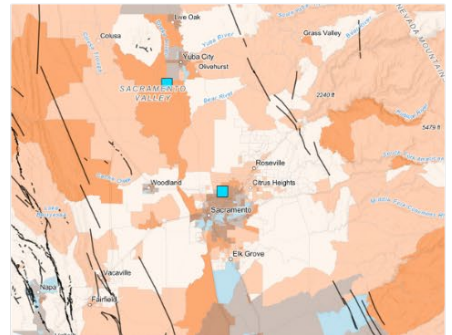
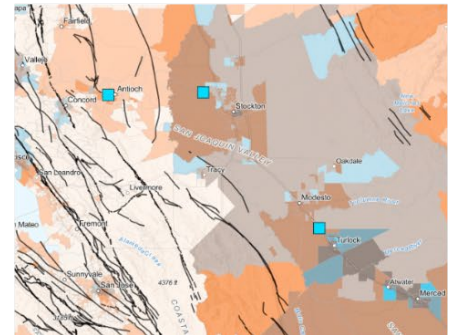
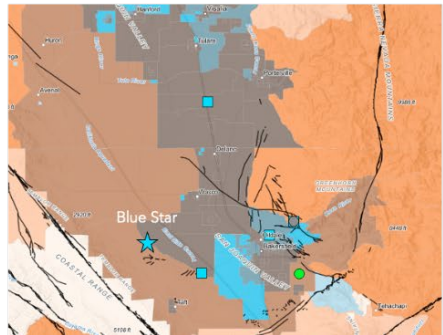
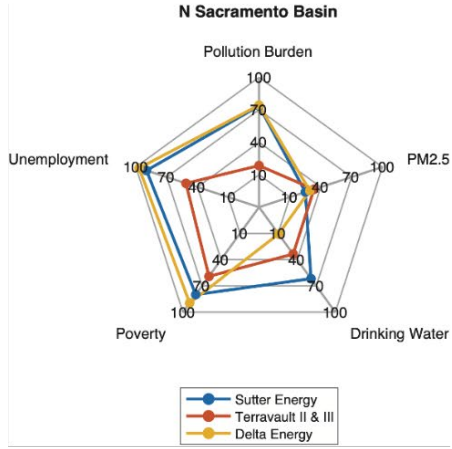
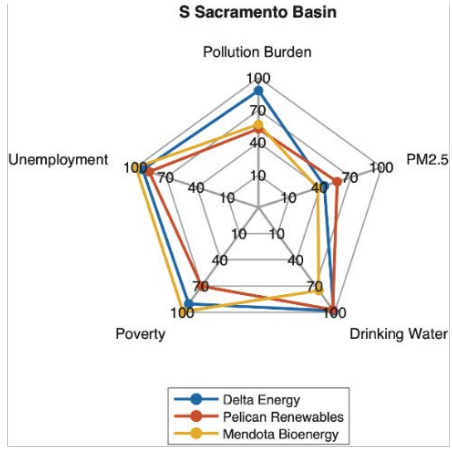
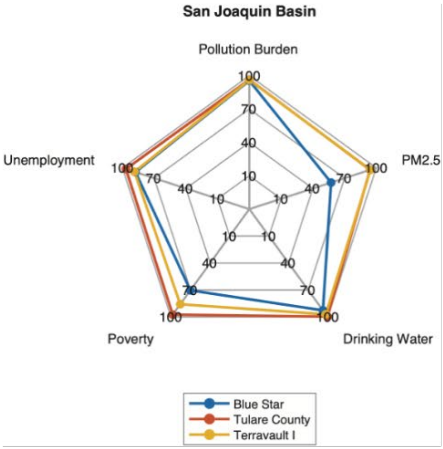
BY [EARTHJUSTICE](#) / [CLEAN ENERGY PROGRAM](#)

Public outcry against carbon capture in Louisiana growing

WWNO - New Orleans Public Radio | By [Terry L. Jones \(Floodlight\)](#)
Published January 2, 2024 at 3:39 PM CST



Proposed projects in historically burdened communities



Transparency leads to Informed Consent



UA SCIENCE
**ARIZONA
GEOLOGICAL SURVEY**

Geosciences serving Arizona since 1887



Conclusion

Carbon capture is needed
to meet California's goals

We informed communities
about carbon capture

Transparency will
accelerate carbon capture