



MEMORANDUM

To: Oregon Water Resources Department (OWRD) and Leadership

From: Neyda Maymi
Decarbonization Projects Leader - Oregon Department of Geology and Mineral Industries

Date: June 11th, 2026

Subject: DOGAMI Carbon Capture and Storage Initiative Update

PURPOSE

This staff report provides an overview of geological carbon dioxide (CO₂) sequestration as a climate change mitigation strategy, describes the relevance and opportunity for Oregon, and presents a status update on DOGAMI's Carbon Capture and Storage (GCS) initiative and test well. It also summarizes community engagement activities conducted in connection with ongoing work.

BACKGROUND: CO₂ SEQUESTRATION AND CLIMATE CHANGE

GCS can reduce net greenhouse gas emissions and is recognized as a potentially important component of decarbonization pathways for Oregon. To reach net-zero carbon emissions goals, the state has directed DOGAMI to investigate the potential for GCS in the Columbia River Basalt Group (CRBG).

GCS is the process by which CO₂ is captured at the source or directly from the atmosphere and injected, or sequestered, into subsurface geological formations for permanent storage. Oregon's geological setting offers strong GCS potential, particularly through:

- CRBG formations which include mafic basalts capable of mineralizing CO₂ into stable carbonate minerals over decadal timescales, with demonstrated feasibility in the Pacific Northwest.
- deep saline aquifer systems across Willamette Valley and Eastern Oregon.
- proximity to major industrial CO₂ point sources including power generation, data centers, agricultural processing, and manufacturing facilities in the region.

DOGAMI's current project is focused on GCS storage and CO₂ mineralization as a sequestration pathway. This process permanently locks carbon in solid form, eliminating risks of leakage and offering one of the most secure forms of long-term storage. Oregon's extensive basalt formations across the CRBG create a rare geologic setting where mineralized carbon storage can be responsibly tested and advanced.



PROJECT UPDATE: DOGAMI GCS INITIATIVE

DOGAMI is actively developing its capacity to support GCS in Oregon through site characterization, subsurface geological assessment, engagement with interested parties and community members, engagement with Tribal governments, and technical partnerships with state agencies and industry partners.

Current activities and recent milestones include:

- Subsurface geological characterization of CRBG target formations in Morrow County.
- Continuous coordination with Department of State Lands (DSL) in parcel and site selection.
- Interdepartmental coordination and collaboration to support project planning and implementation.
- Publication of a request for proposals to drill a test well, which closes on June 25th, 2026, at 3:00 PM PST (Solicitation S 63200 00016863).
- Exploration of potential industry partnerships to enhance technical and financial project capacity.
- Advancement of staffing and key position recruitment to support the growing GCS program.

COMMUNITY ENGAGEMENT AND OUTREACH

DOGAMI has engaged with community members, local governments, Tribal nations, and other interested parties to ensure that GCS activities in Oregon are conducted transparently and with meaningful public input. Engagement has focused on communicating project goals, gathering local knowledge, and addressing community concerns related to subsurface activities and land use.

Engagement activities conducted to date include:

Tribal Engagement

- Presentation at LCIS Culture Cluster and Natural Resource Workgroup meetings.
- Joint meetings with DSL and the Confederated Tribes of the Umatilla Indian Reservation for project updates and feedback.
- Meeting with Burns Paiute Reservation scheduled for June 9th, 2026.
- Ongoing engagement with Yakima and Nez Perce Nations; meetings to be scheduled.
- Preliminary cultural surveys were completed for all three potential sites.

Community Outreach

- Demographic and background research for affected communities.
- Initial outreach and letters to state legislators.
- Initial outreach and letters to lessees on DSL-owned lands identified as potential drill sites.
- Outreach to Morrow County Commissioners and continued correspondence with community groups.



Oregon

Tina Kotek, Governor

Department of Geology and Mineral Industries

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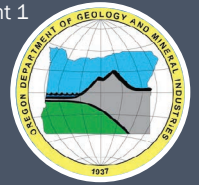
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NEXT STEPS

- Continue to broaden community engagement efforts to strengthen trust, support equity, and incorporate local and Indigenous knowledge into project planning and decision-making.
- Complete proposal review and select a drilling contractor through the current competitive process.
- Advance subsurface characterization and targeted data collection to improve GCS site suitability evaluations across priority geologic formations in Oregon.



Geologic Carbon Sequestration in Oregon

An Update on State Investigations: September 2025

PROJECT OVERVIEW

Oregon has the potential to develop a thriving carbon-negative economy, attracting innovative technologies like direct air capture, point-source removal, and geologic carbon sequestration, that capitalize on Oregon's Climate Protection Program, robust renewable energy grid, and widely distributed geologic storage system.

The State of Oregon has established ambitious climate goals aimed at significantly reducing greenhouse gas emissions by 2035, and achieving net-zero carbon emissions by 2050. Realizing those goals will require a multi-faceted approach. Establishing regional carbon-management hubs across the State, capable of safely and permanently storing carbon dioxide (CO₂) could play an important role.

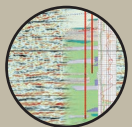
The State has directed the Department of Geology & Mineral Industries (DOGAMI) to investigate the potential for geologic carbon sequestration in the Columbia River Basalt Group (CRBG, as shown on the right).

NEAR-TERM PROJECT GOALS



COMMUNITY ENGAGEMENT

- Listening to Tribal Nations, regional stakeholders, and nearby property owners
- Educational program development
- Assessment of community workforce and economic needs



TECHNICAL FEASIBILITY

- Install 1-3 stratigraphic wells on Department of State Lands (DSL) property
- Surface-based geologic mapping
- Subsurface geophysical mapping
- Hydrologic and chemical data collection
- Seismic-hazard analysis

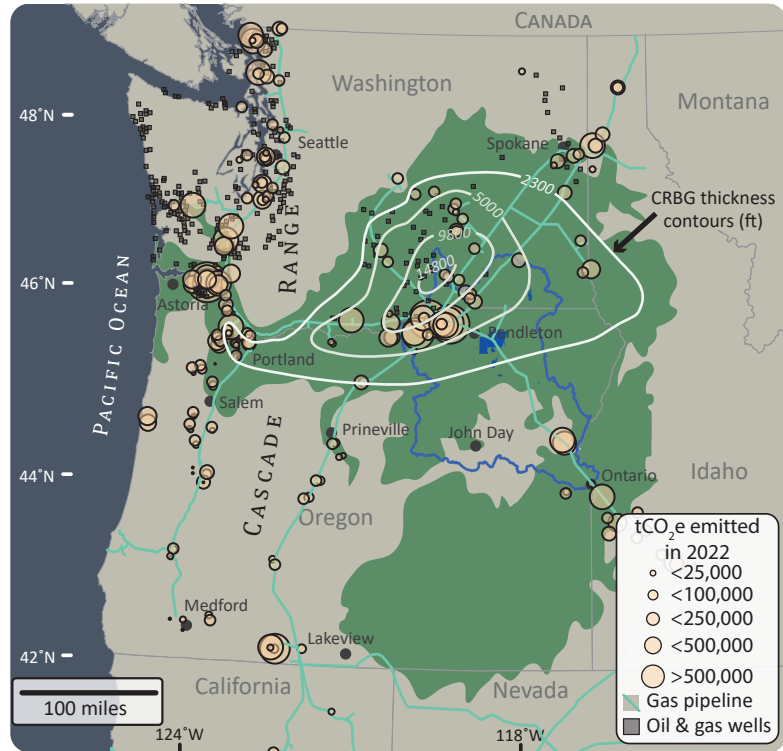


REGULATORY STRUCTURE

- Investigation of Class VI underground injection well (UIC) regulatory primacy
- Development of permitting pathways for carbon sequestration and geothermal exploration.

NEXT STEPS FOR THE PROJECT

1. Establish agreements with academic, workforce, and community partners
2. Engagement and outreach with all potentially affected communities
3. Stratigraphic well site-selection and well installation
4. Geologic models using surface and underground data
5. Development of state regulations
6. Legislative considerations



The Columbia River Basalt Group (CRBG)

KEY EPA REGULATIONS FOR CLASS VI CARBON DIOXIDE INJECTION WELLS

Protecting groundwater and other natural resources is of the utmost importance to any carbon storage project. The US Environmental Protection Agency (EPA) has strict standards under the *Clean Water Act*, that must be met for any carbon injection to be permitted, including:

1. Geologic characterization of the storage reservoir and identification of a robust seal
2. Water quality and aquifer protection assessment
3. Well construction requirements, and well materials corrosion monitoring
4. Long-term financial liability and stewardship requirements
5. Community engagement, including a period of public consultation prior to permitting

CONTACT INFORMATION

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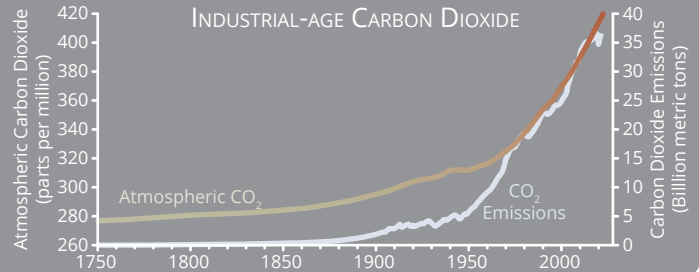
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CLIMATE CHANGE: THE NEED FOR ACTION

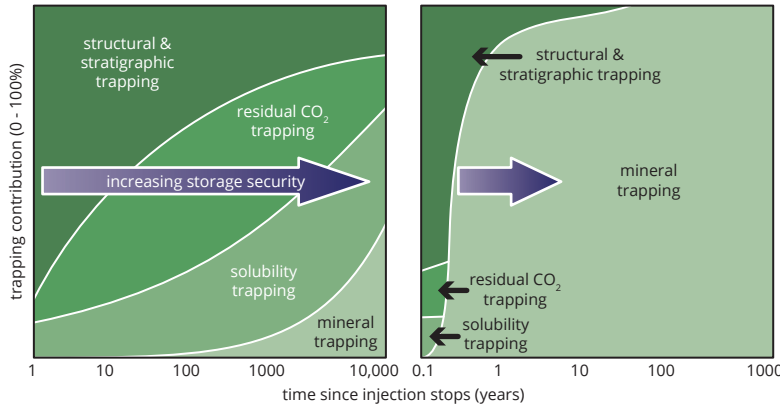
- 1.3°C** rise since pre-industrial era
- 2.0°C** target set in the Paris Climate Agreement
- 800 GtCO₂** remaining budget to exceed targets
- 40 GtCO₂ / year** in global emissions
- 20 years** remaining to meet targets



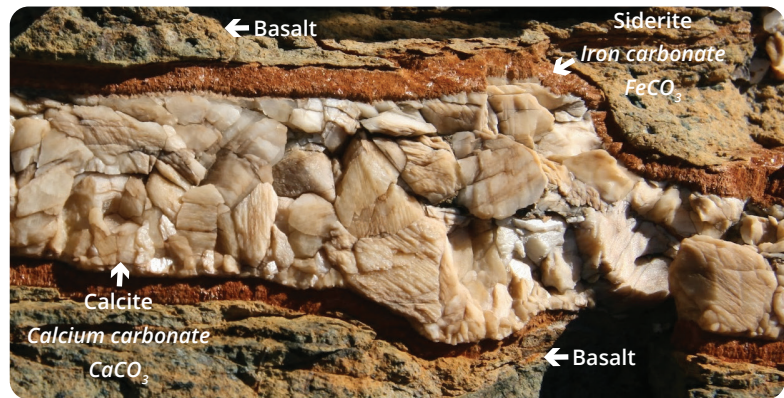
WHAT IS MINERAL STORAGE?

Geologic carbon storage (GCS) is the process of capturing carbon dioxide (CO₂) from industrial sources or the atmosphere, compressing it into a fluid, and injecting it deep underground into suitable geological formations to be permanently stored.

Most types of GCS system store CO₂ as a fluid in the subsurface, and require long-term monitoring to ensure that fluid does not leak in the future. However, CO₂-rich fluids will react with the minerals in basalt, turning that CO₂ into stone over time (*mineral trapping*). This process occurs slowly in nature, and is accelerated with the addition of higher CO₂ concentrations in the fluid.



Types of Geologic Carbon Storage (GCS)



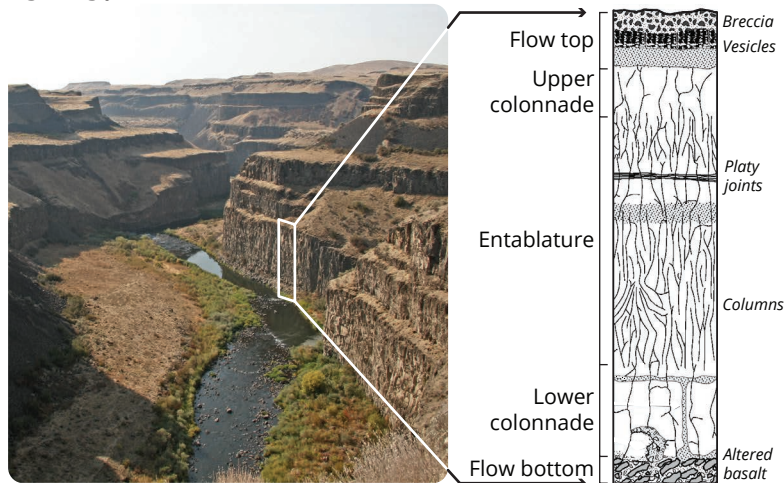
Natural carbon mineralization in basalt

WHERE COULD CO₂ BE STORED IN THE COLUMBIA RIVER BASALTS?

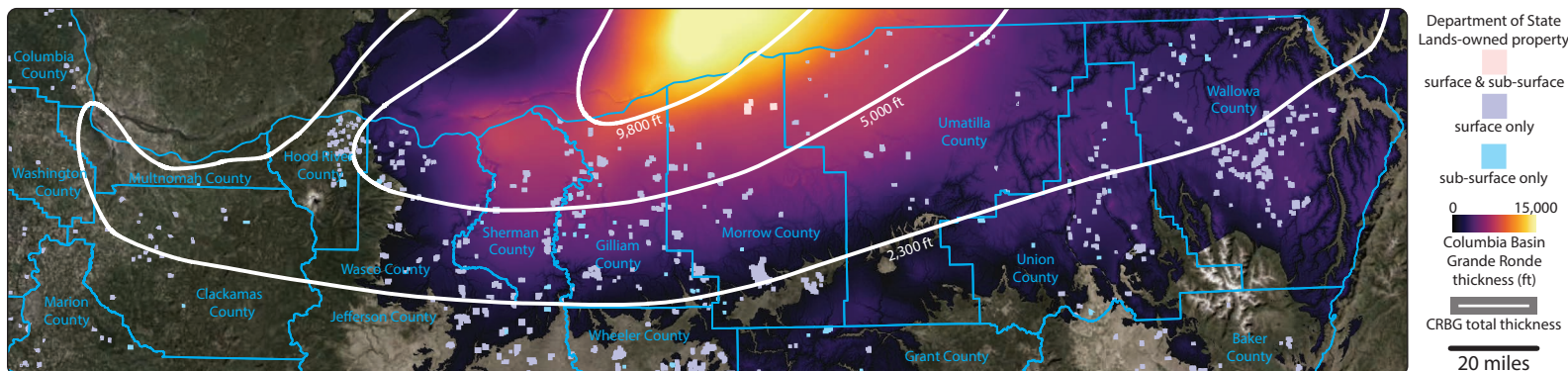
Potential CO₂ reservoirs in the CRBG reside in the *Grande Ronde Basalt*, far below the potable water zone in the Columbia Basin. The Grande Ronde includes ~100 individual lavas, with a total thickness up to 14,760 feet and covering ~65,600 square miles. It is estimated that the Grande Ronde may be capable of storing 40 billion metric tons (Gt) of CO₂.

Grande Ronde lavas consist of fractured, weathered, fragmented, and vesicular top and base zones, and denser interior zones that often have columnar joints. Lava tops and bottoms can have porosity up to ~40%, whereas unit interior porosity is typically 1-3%. Lava tops and bases may be good reservoirs for CO₂ storage, with lava interiors acting as seals.

The *stratigraphic research well* will allow characterization of rock properties, to determine the suitability of the basalts for CO₂ mineral storage, at great depth.



Lavas of the Columbia River Basalt Group



Thickness of the Grande Ronde Basalt within the Columbia River Basin. A Department of State Lands property in northern Oregon will be selected for the stratigraphic research well. No CO₂ will be injected during this project.