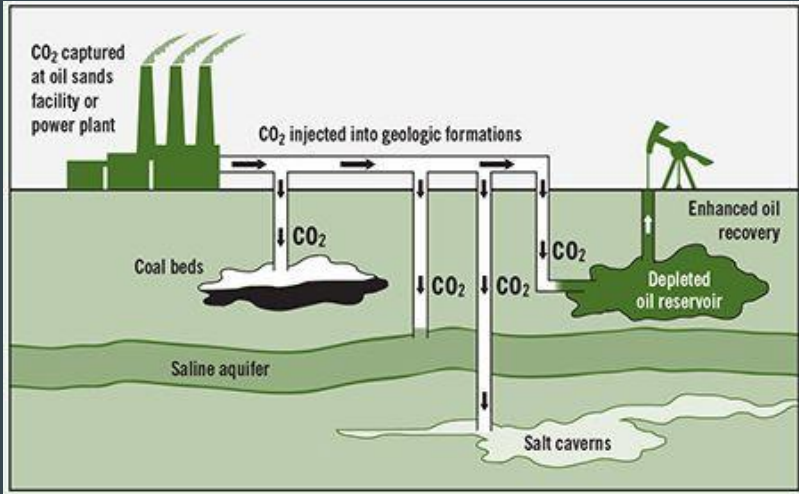


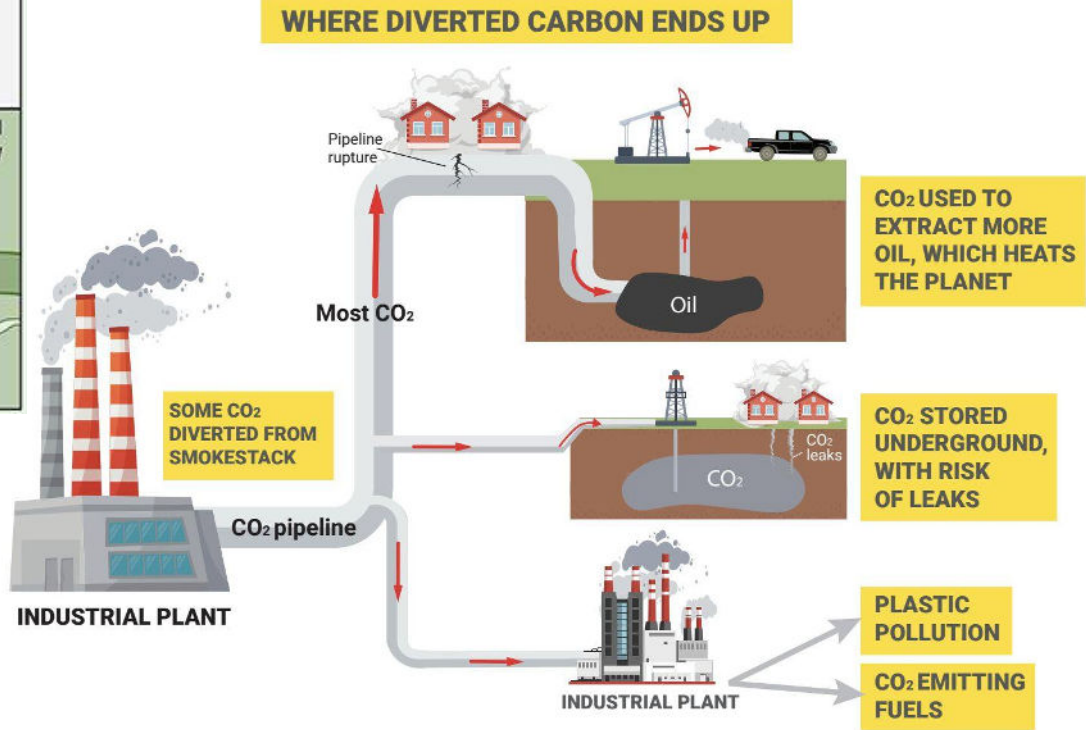
An aerial photograph of a rugged mountain range. The peaks are covered in snow and partially obscured by low-hanging clouds. The lower slopes are covered in dense forest with some autumn-colored trees. A small lake is visible in the valley, with a stream flowing into it.

# **Carbon Capture & Storage in Alaska**

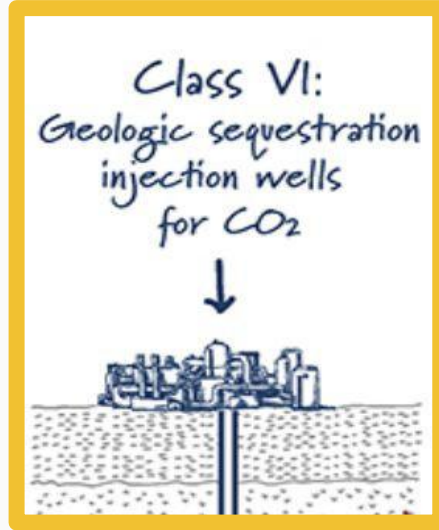
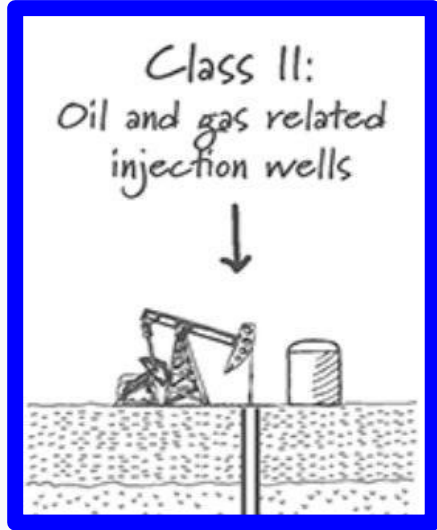
2025  
Center for Biological Diversity



**Carbon capture & storage (CCS)**  
 = capturing *some* CO<sub>2</sub> pollution from an industrial smokestack



# Types of CO<sub>2</sub> Injection Wells



**Underground Injection Control  
wells under the federal Safe  
Drinking Water Act (EPA)**

**CA Class VI applications**

*(updated regularly):*

<https://www.epa.gov/uic/class-vi-wells-permitted-epa>

# CCS is driven by the same big polluters who created the climate emergency

- CCS bolsters the "social license" of fossil fuel companies
- Tax credits make CCS viable, with CO<sub>2</sub> as the commodity
- Federal agencies are giving away access to public lands for CCS—another type of subsidy

The "Pathway to Forever Producing Fossil Fuels"



Campaigners protest outside a carbon capture and storage conference in Torquay, Australia, in 2021. Credit: Matt Hrkac, CC BY 2.0

<https://www.desmog.com/2023/02/13/exxon-shell-bp-api-concerns-carbon-capture/>

# Public Health Risks

- ***Relying on CCS allows fossil fuels companies to continue “business as usual”, delaying the transition to clean energy.***
- Transport: pipelines, highly pressurized liquid at risk of rupture extremely cold plume of CO<sub>2</sub>, would then expand into ground-hugging clouds of gas and small particles that continue to spread until the supply is turned off.
- CO<sub>2</sub> has the potential to be immediately life-threatening.
- Injection site: risk of earthquakes, leakage, groundwater contamination
- When leaks are present:
  - **danger of asphyxiation, toxicity;**
  - **failure of internal combustion engines in cars, trucks, rescue vehicles**
  - **first responders will need an independent air supply**

# Carbon Dioxide

- **Colorless, odorless, non-flammable, heavier than air**
- **Asphyxiant—displaces O<sub>2</sub>; also toxic when > acidosis**
- **Classified as a hazardous substance** by the Occupational Safety and Health Administration (OSHA) and National Institute for Occupational Safety and Health (NIOSH)
- Dangerous when in contact with water, which is common for oil and gas production >>> becoming carbonic acid
- **Carbonic acid** is destructive to waterways; acidifies water, soil and disrupts the pH balance; affects plant and animal life in and around watersheds
- **Carbonic acid** can compromise pipelines leading to leaks

LOCAL

# 'Foaming at the mouth': First responders describe scene after pipeline rupture, gas leak

**Sarah Fowler** The Clarion-Ledger

Published 11:23 a.m. CT Feb. 27, 2020

[View Comments](#)



## Story Highlights

- Approximately 300 people were evacuated and 45 treated at area hospitals after a pipeline rupture.
- The pipeline, which ruptured Saturday in Yazoo County, belonged to Denbury Resources out of Texas.
- The pipeline released CO<sub>2</sub> into the air, making people "act like zombies," said first responder.
- First responder rescued three people before he too was overtaken by the gas.

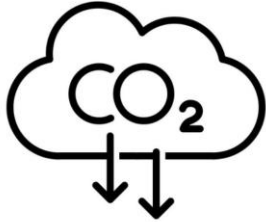


Illustration by Hokyong Kim for HuffPost

**The Gassing Of Satartia**

# CO<sub>2</sub> Pipelines are “dangerous and under-regulated”

Carbon Dioxide Pipelines: Dangerous and Under-Regulated



**Pipeline  
Safety**  
TRUST

- CO<sub>2</sub> pipelines are susceptible to “zipper fractures” that can run down a significant length of the pipe, releasing immense amounts of CO<sub>2</sub>.
- Water, notoriously difficult to eliminate from CO<sub>2</sub> pipelines, allows the formation of carbonic acid in the pipeline which erodes carbon steel.
- Current federal CO<sub>2</sub> pipeline regulations do not sufficiently address these risks.
- The U.S. Department’s pipeline safety agency PHMSA (Pipeline and Hazardous Materials Safety Administration) is re-doing its CO<sub>2</sub> pipeline safety rules after the Satartia, MS incident.

Experimental explosion of a carbon dioxide pipeline.

- 2013, United Kingdom

[www.drivgl.com/spadeadam](http://www.drivgl.com/spadeadam)  
Dense Phase CO2

Experimental explosion of a carbon dioxide pipeline.

- 2013, United Kingdom

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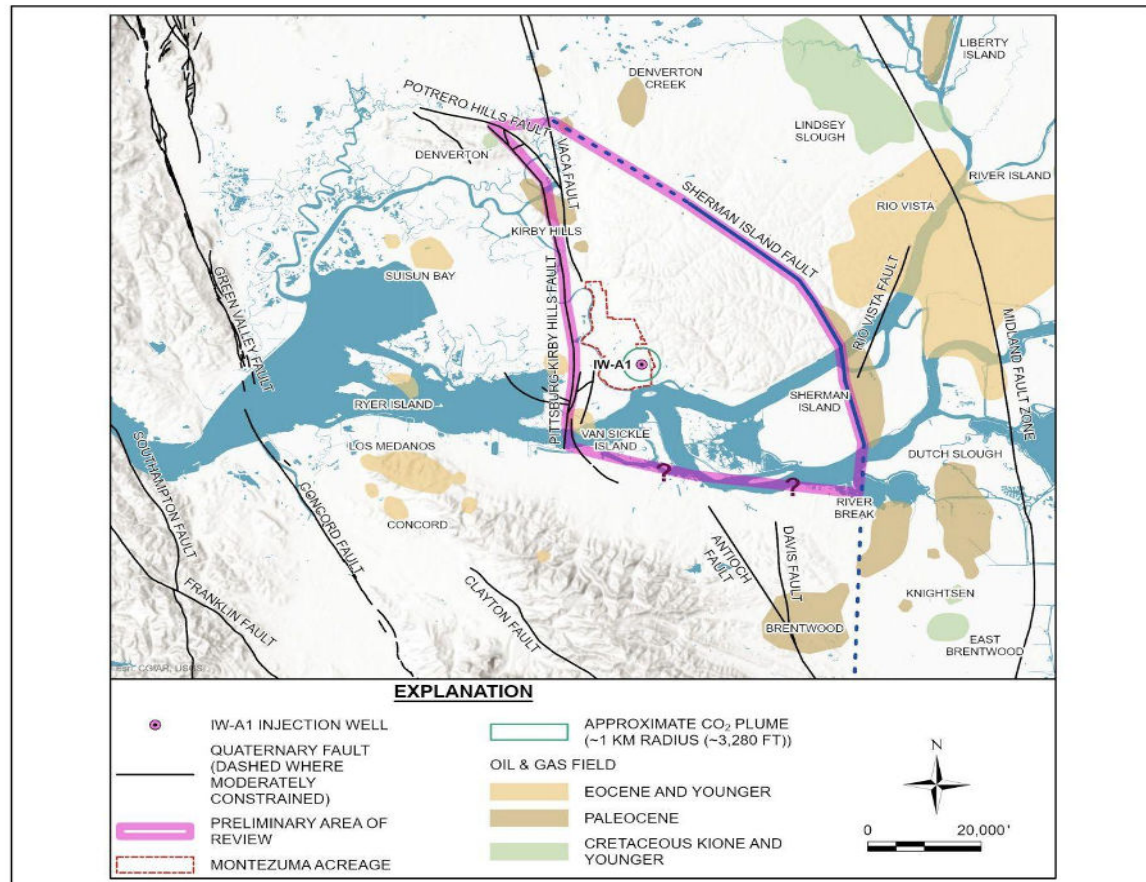
***CO2 pipeline leak test***

# Class VI permits require modeling the project's “Area of Review”

## AOR = Area of Review

- Pressure & CO<sub>2</sub> plume model
- Often extends *miles* out from injection well

FIGURE B-15. MODEL PREDICTED AOR FOR THE MC PROJECT

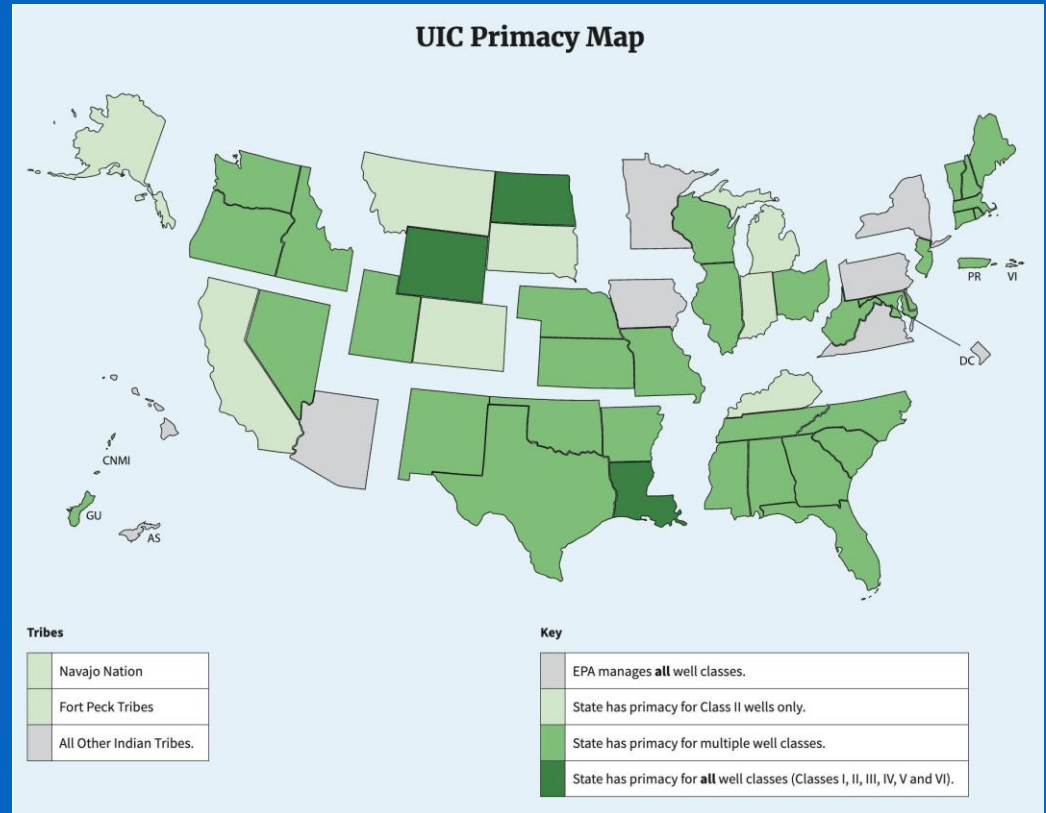


# Overview: CCS Project Permitting

Permit	Agency
<b>Carbon injection &amp; storage</b> (Class II or Class VI well)	EPA Region 10 (Class VI) or State (Class II)
<b>Land use</b>	Local municipality
<b>CO2 capture</b>	State (via Clean Air Act)
<b>CO2 Pipelines</b>	Federal standards (PHMSA) apply as “floor”

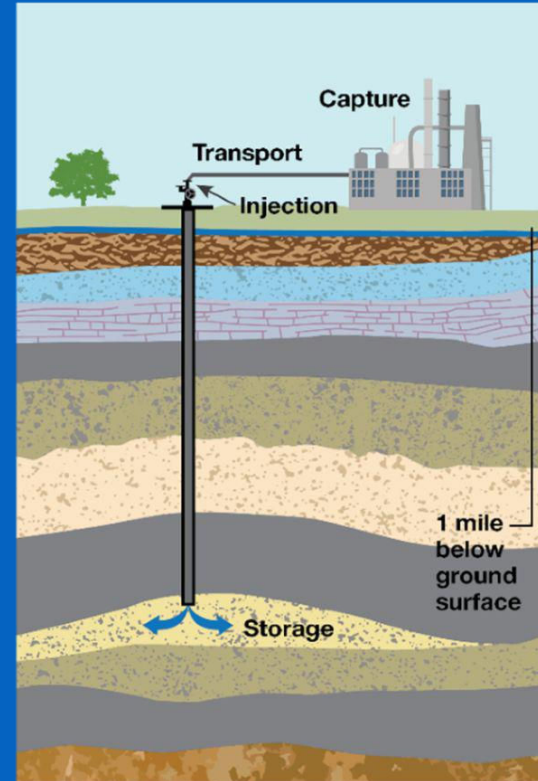
# Class VI Primacy: 101

- **Primacy** = state takes over permitting from federal government
- **For CCS, most states have primacy over Class II wells**, used for enhanced oil recovery
  - *This includes Alaska via the AK Oil and Gas Conservation Commission*
- **Only Wyoming, North Dakota, and Louisiana** have primacy for Class VI wells, used for CO<sub>2</sub> storage



# Class VI Primacy: 201

- States can adopt *more stringent* regulations than what EPA requires
- **The state must *apply for primacy*** from EPA, and the notice is published in the Federal Register
  - The public is given 30 days to comment
  - Public hearings can be requested
- **FYI:** “Permanent storage” under Class VI regulations is ~ 50 years (CA requires 100 years)



# Possible Class VI Primacy Demands / Issues to Consider



Source: Petra Nova, a joint venture between NRG Energy and JX Nippon Oil & Gas Exploration

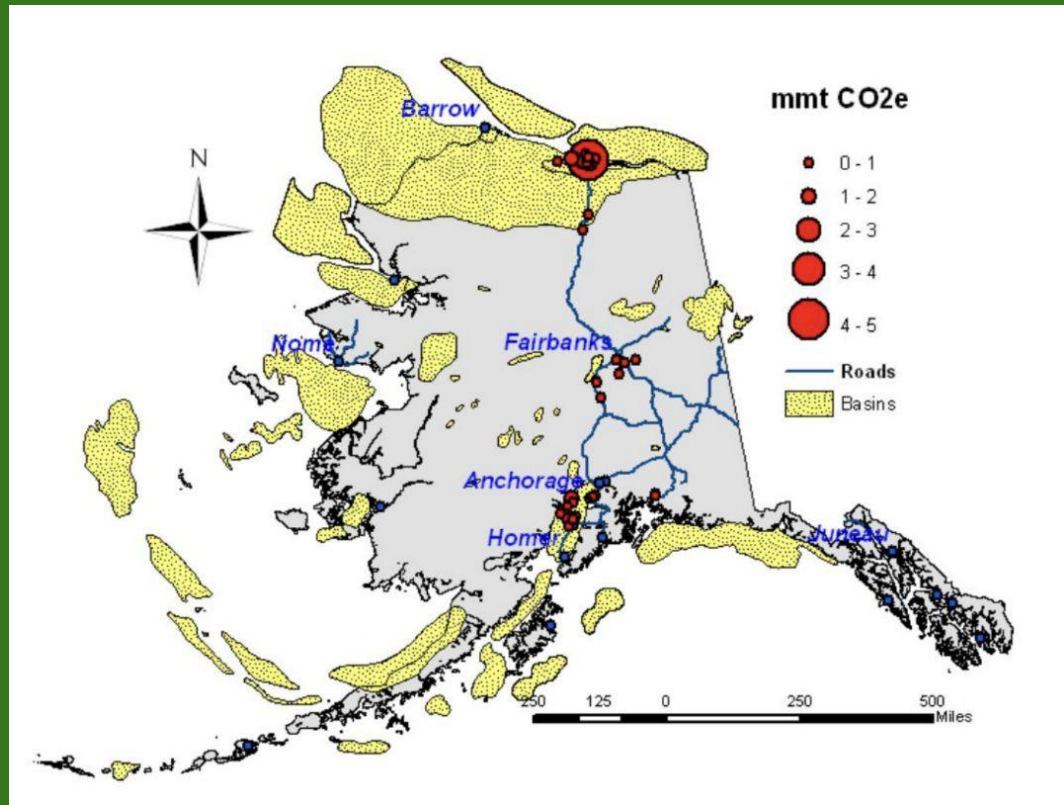
- Area of Review
  - *E.g., WV ¼ mile (too small)*
- Seismicity review required?
  - *E.g., WV made optional*
- Enviro justice review required?
  - *E.g., LA and EPAMOU*
- Setbacks/buffer zones?
- Required emergency response plan/funding?
- Public notice, comment, etc.?
- Enforcement?
- Liability costs for life of well (including decades post-injection)?

# Carbon Capture, Utilization, and Storage Act

## Alaska HB 50

*"Make Alaska's subsurface resources available for maximum use"*

- 1) Authorizes AK DNR to lease state lands for Class VI CO<sub>2</sub> storage and issue ROWs for pipelines;
- 2) Enables AOGCC to regulate CO<sub>2</sub> storage throughout the state (including by applying for Class VI primacy);
- 3) Expands regulatory authority over CO<sub>2</sub> pipelines;
- 4) Creates a new "Carbon Storage Closure Trust Fund"



# Alaska Railbelt Carbon Capture and Storage Project



*Alaska Railbelt Carbon Capture and Storage (ARCCS) Project* — **University of Alaska Fairbanks** (Fairbanks, Alaska) intends to determine the feasibility of developing a commercial-scale CO<sub>2</sub> geologic storage complex to store more than 50 million Mt of CO<sub>2</sub> safely and economically in south-central Alaska. The project will meet this objective by evaluating a CO<sub>2</sub> storage complex to determine its suitability for storing CO<sub>2</sub> emissions from the proposed Susitna Power Plant and aggregating emissions from two existing plants. The Beluga River Field, a nearly depleted unitized gas field, is proposed as the primary CO<sub>2</sub> storage horizon, with an estimated 157 million Mt of potential storage. Completion of the ARCCS project is expected to notably reduce the project risk profile by defining the carbon storage capacity in the northern Cook Inlet Basin. The project will promote energy security in Alaska, addressing the pending natural gas and electricity shortage in the Railbelt, which contains 75 percent of Alaska's population.

**DOE Funding:** \$8,880,349

**Non-DOE Funding:** \$2,220,101

**Total:** \$11,100,450

# Hypothetical Alaska CCUS Projects



## Regional Power Facility

- State revenue: hundreds of thousands of dollars per year
- Size: 250,000 metric tons/year
- Benefits: Investable, regulatorily compliant, and reliable power

## Major North Slope Facility

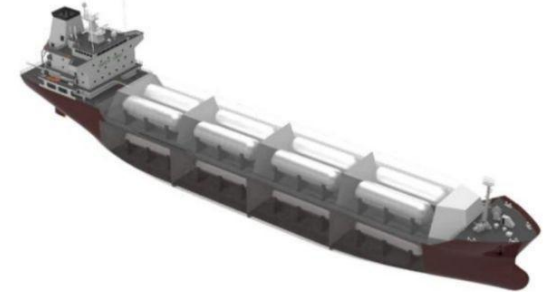
- State revenue: millions of dollars per year
- Size: 2,000,000 metric tons/year
- Benefits: Decarbonizing North Slope energy production makes it highly competitive and potentially priced at a premium, attracts new investors, and mitigates federal regulatory risk to Alaska

## CO<sub>2</sub> Import & Sequestration Facility

- State revenue: tens of millions of dollars per year
- Size: 10,000,000 metric tons/year
- Benefits: National priority project with major new investment, industrial capacity, and economic activity in Alaska



Chugach Electric Association, Inc. Southcentral Power Project



Conceptual design of CO<sub>2</sub> carrier.  
Comparison of CO<sub>2</sub> liquefaction pressures for ship-based carbon capture and storage (CCS) chain. Int J Greenhouse Gas Control, 52 (2016)

# Fiscal Note

State of Alaska  
2024 Legislative Session

Bill Version: HB 50  
Fiscal Note Number: \_\_\_\_\_  
( ) Publish Date: \_\_\_\_\_

Identifier: HB050CS(SFIN)-DOR-TAX-5-12-24  
Title: CARBON STORAGE  
Sponsor: RLS BY REQUEST OF THE GOVERNOR  
Requester: (S) Finance

Department: Department of Revenue  
Appropriation: Taxation and Treasury  
Allocation: Tax Division  
OMB Component Number: 2476

## Expenditures/Revenues

Note: Amounts do not include inflation unless otherwise noted below. (Thousands of Dollars)

	FY2025 Appropriation Requested	Included in Governor's FY2025 Request	Out-Year Cost Estimates				
			FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
<b>OPERATING EXPENDITURES</b>	<b>FY 2025</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>FY 2030</b>
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants & Benefits							
Miscellaneous							
<b>Total Operating</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

## Fund Source (Operating Only)

None							
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

## Positions

Full-time							
Part-time							
Temporary							

## Change in Revenues

None	***	***	***	***	***	***	***
<b>Total</b>	<b>***</b>	<b>***</b>	<b>***</b>	<b>***</b>	<b>***</b>	<b>***</b>	<b>***</b>

Estimated SUPPLEMENTAL (FY2024) cost: 0.0 (separate supplemental appropriation required)

Estimated CAPITAL (FY2025) cost: 0.0 (separate capital appropriation required)

Does the bill create or modify a new fund or account? Yes

“The Division of Geological & Geophysical Surveys does not anticipate any additional fiscal impact at this time.”



## CCUS Estimated Timeline

### ▼ Timeline Details

#### Current Update

Alaska continues to progress the drafting of regulations based on the Class VI Federal code and Alaska statute for carbon storage. A public notice for these regulations detailing the public hearing and public comment period will be coming soon. Everyone is encouraged to sign up to the [AOGCC Public Notices email list](#).

Listed below is the current status of each completed or remaining step in the AOGCC's primacy project at this time:

#### In Progress

Informal Crosswalk to EPA	February 27, 2025
Draft Regulations Legal Review (DOL) (estimated 1-2 months)	March 4, 2025

#### Next Steps

Carbon Storage Regulations Public Process	TBD
Alaska Primacy Application Public Process	TBD (ASAP after Regulations are finalized)
Alaska Primacy Application Submission to EPA	TBD (ASAP after Public Process)
EPA Primacy Process (estimated 12-18 months)	TBD

## Alaska Class VI Primacy Process

- State public notice and comment period for scoping in fall 2024.
- Currently awaiting state notice and comment period on primacy application.
- Then EPA will review and hold its own comment period before deciding whether to grant Alaska's primacy application.

ALASKA CENTER • ALASKA COMMUNITY ACTION ON TOXICS •  
CENTER FOR BIOLOGICAL DIVERSITY • COOK INLETKEEPER •  
NATIVE MOVEMENT • NORTHERN ALASKA ENVIRONMENTAL CENTER •  
SOVEREIGN INUPIAT FOR A LIVING ARCTIC

*Submitted via Email and Alaska ZendTo*

November 6, 2024

Jessie L. Chmielowski, Commissioner  
Alaska Oil and Gas Conservation Commission  
333 West 7th Avenue  
Anchorage, AK 99501

Re: Notice of Public Scoping  
Docket Number: R-24-002  
Carbon Storage Facility Regulations  
Class VI Primacy Application

Dear Ms. Chmielowski:

The Alaska Center, Alaska Community Action on Toxics, Center for Biological Diversity, Cook Inletkeeper, Native Movement, Northern Alaska Environmental Center and Sovereign Inupiat for a Living Arctic provide the following comments to Docket R-24-002, the Alaska Oil and Gas Conservation Commission's scoping period regarding its intent to pursue Class VI primacy for carbon dioxide (CO<sub>2</sub>) injection wells and the development of regulations related to CO<sub>2</sub> storage facilities.

We are writing to express our concern regarding the Commission's intent to apply for Class VI primacy from the Environmental Protection Agency (EPA). As a threshold matter, we reject the premise that carbon capture and storage (CCS) is a necessary—or even appropriate—approach to addressing the climate crisis and Alaska's pollution burdens. After billions of dollars of investment and decades of development, deployment of CCS has consistently proven to be ineffective, uneconomic, and unnecessary.<sup>1</sup> To that end, obtaining Class VI primacy would only needlessly burden the state's agencies and resources.

**Thank you**

**[mgoska@biologicaldiversity.org](mailto:mgoska@biologicaldiversity.org)**