

Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

VIA ELECTRONIC SUBMISSION

Re: Seeking Feedback on Carbon Capture, Removal, Utilization, and Storage in the Cap-and-Invest Program

Columbia Law School’s Sabin Center for Climate Change Law (“Sabin Center”) and Meghan Gavin, an attorney experienced in carbon dioxide removal (“CDR”) law and policy, respectfully submit these comments in response to the Washington State Department of Ecology’s (“Ecology’s”) request for input on the document titled, “Seeking Feedback on Carbon Capture, Removal, Utilization, and Storage in the Cap-and-Invest Program.”

An academic think tank housed at Columbia Law School, the Sabin Center works to develop innovative legal tools to combat the climate crisis and advance climate justice. Through its initiative on carbon management and greenhouse gas removal, the Sabin Center analyzes legal issues associated with point-source carbon capture, utilization, and storage (“CCUS”) and atmospheric CDR, both domestically in the U.S. and internationally.¹ Much of our recent work has focused specifically on the role that U.S. states—including Washington—can and should play in regulating CCUS and CDR activities.² Drawing on the lessons from that work, below,

¹ For more on the Sabin Center’s recent work on CCUS and CDR, *see* <https://climate.law.columbia.edu/content/carbon-management-and-greenhouse-gas-removal>.

² *See, e.g.*, ASHWIN MURTHY ET AL., REGULATION OF OCEAN ALKALINITY ENHANCEMENT IN WASHINGTON STATE (2025), https://scholarship.law.columbia.edu/sabin_climate_change/242/; ASHWIN MURTHY ET AL., REGULATION OF COASTAL ENHANCED WEATHERING IN MASSACHUSETTS (2025),

we offer responses to several of the questions posed by Ecology.

Question 5: What are the greatest obstacles to implementing engineered carbon management in Washington and how can the state remove those barriers?

Across our research into the state legal frameworks for carbon management activities, we have identified the cost and complexity of navigating permitting processes as key obstacles to advancing necessary research and development. Ecology rightly identified the need for permitting harmonization and standardization in its Carbon Dioxide Removal Evaluation Study submitted to the state legislature.³ We echo that report’s findings that the state should “streamline the [permitting] process,” establish a process for pre-application meetings, and “develop a one-stop permitting portal” for CDR projects.⁴ We comment here to emphasize these points and add further detail on how these improvements might be implemented.

To streamline the permitting process and establish a one-stop permitting portal, Ecology should draw lessons from the state’s Joint Aquatic Resources Permit Application (“JARPA”) process. JARPA is available for certain aquaculture and other projects in Washington, and allows project proponents to use a single form to apply for the federal, state, and local permits that they need. The Governor’s Office for Regulatory Innovation and Assistance (“ORIA”), provides support to applicants in navigating the application process, such as by offering free services through its

https://scholarship.law.columbia.edu/sabin_climate_change/270/; ASHWIN MURTHY ET AL., THE LEGAL FRAMEWORK FOR ENHANCED ROCK WEATHERING IN MINNESOTA (2025),
https://scholarship.law.columbia.edu/sabin_climate_change/263/; ASHWIN MURTHY ET AL., REGULATION OF SARGASSUM REMOVAL AND SINKING IN FLORIDA (2025),
https://scholarship.law.columbia.edu/sabin_climate_change/247/; ASHWIN MURTHY ET AL., SEAWEED CULTIVATION AND SINKING FOR CARBON DIOXIDE REMOVAL IN ALASKA (2025),
https://scholarship.law.columbia.edu/sabin_climate_change/246/; ASHWIN MURTHY ET AL., STATE AUTHORITY TO REGULATE OCEAN ALKALINITY ENHANCEMENT (2024),
https://scholarship.law.columbia.edu/sabin_climate_change/237/; KOREY SILVERMAN-ROATI ET AL., PERMITTING SEAWEED CULTIVATION FOR CARBON SEQUESTRATION IN CALIFORNIA: BARRIERS AND RECOMMENDATIONS (2022),
http://scholarship.law.columbia.edu/faculty_scholarship/3523.

³ STATE OF WASHINGTON DEPARTMENT OF ECOLOGY, CARBON DIOXIDE REMOVAL EVALUATION STUDY 74-80 (2025), <https://apps.ecology.wa.gov/publications/documents/2514066.pdf>.

⁴ *Id.* at 80.

website.⁵ ORIA, together with several state agencies, updates and maintains JARPA, in addition to its broader mission to provide support to people and businesses in meeting environmental regulatory requirements. Ecology should consider establishing a joint permit application for CDR projects modeled on JARPA, and could utilize ORIA's resources to aid applicants and to maintain the application portal. This should be paired with guidance on which permits apply to a specific CDR technology, given the novel nature of these technologies.

Aquaculture permitting in other states can also provide instructive parallels, given that such projects often involve complex permitting approvals from multiple state and federal agencies. Alaska⁶ and California⁷ have published detailed guides on aquaculture permitting with step-by-step instructions to help applicants navigate the process. Ecology could prepare a similarly detailed guide for CDR permitting, utilizing a flowchart with expected timelines for permitting decisions, and explaining where each relevant agency fits into the process. As occurred in California, that guide should be developed in consultation with all relevant state agencies.

Ecology should consider two more proposals to help applicants navigate CDR permitting processes: (1) designating a liaison and (2) establishing a permitting database. A representative from Ecology or ORIA could act as a liaison between the applicant and staff at permitting agencies and could support government-to-government consultation in collaboration with a representative from the Governor's Office of Indian Affairs. This liaison could ensure that agency questions about an application reach applicants in a timely manner, and vice versa, and that the applicant is providing all relevant information. Further, establishing a permitting database could help future applicants and the public better understand the permitting process, including the required stages, how long each one typically takes, and opportunities for comment. The database could be modeled on the U.S. Environmental Protection Agency's ("EPA's") database of Class VI well projects which, among other things, provides information on the projects currently under review, the final

⁵ Joint Aquatic Resources Permit Application, GOVERNOR'S OFFICE FOR REGULATORY INNOVATION AND ASSISTANCE, https://www.oria.wa.gov/site/alias_oria/4217/jarpa.aspx.

⁶ A. Bishop et al., *Alaska Aquaculture Permitting Guide*, ALASKA SEA GRANT 8 (2021), <http://akaquaculturepermitting.org/>.

⁷ *Guide to Leasing, Permitting, and Authorizing Commercial Aquaculture Operations off the California Coast*, NOAA (2025), <https://www.fisheries.noaa.gov/s3/2025-06/guide-commercial-aquaculture-operations-californiacoast.pdf>.

permit decisions, and details on specific projects.⁸

Question 6: What potential impacts or harms could engineered carbon management have on communities and Tribes in Washington? How can Washington proactively mitigate these?

Deployment of engineered carbon management solutions at commercial scale could adversely impact federally recognized Indian Tribes and local communities if inadequately researched or improperly permitted. Washington can prevent these potential harms by engaging in government-to-government consultation with all federally recognized Indian Tribes in the state. The aim would be to develop a statewide siting strategy that pre-approves certain field sites for small- to medium-scale research and deployment.⁹

Engineered carbon management solutions, like all infrastructure projects, include potential environmental and cultural harms that must be reduced or mitigated. For example, inadequately researched or improperly permitted geologic carbon sequestration projects could risk contaminating potable water,¹⁰ and ocean alkalinity enhancement projects could risk disrupting ecosystems.¹¹ Engineered carbon management solutions, particularly new facilities, could also threaten traditional cultural properties and landscapes if permitted in the traditional lands or usual and accustomed waters of an Indian Tribe over the Tribe's objection. Even if a Tribe has no objection, engagement between a project developer and an Indian Tribe about potential carbon management projects on an ad hoc basis can cause capacity constraints and unfairly place the onus of opposing development on the Tribe.

⁸ *Underground Injection Control (UIC) Class VI Permit Tracker*, EPA, <https://www.epa.gov/uic/current-class-vi-projects-under-review-epa>.

⁹ See, e.g., ROMANY M. WEBB & KOREY SILVERMAN-ROATI, DEVELOPING MODEL FEDERAL LEGISLATION TO ADVANCE SAFE AND RESPONSIBLE OCEAN CARBON DIOXIDE REMOVAL RESEARCH IN THE UNITED STATES (2023), https://scholarship.law.columbia.edu/sabin_climate_change/199/ (describing how pre-approval of certain areas for ocean-based CDR might work at the federal level).

¹⁰ Manchao He et al., *Risk assessment of CO₂ injection processes and storage in carboniferous formations: a review*, 3 JOURNAL OF ROCK MECHANICS AND GEOTECHNICAL ENGINEERING 45 (2011), <https://www.sciencedirect.com/science/article/pii/S1674775515300822#s0030>.

¹¹ NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE, A RESEARCH STRATEGY FOR OCEAN-BASED CARBON DIOXIDE REMOVAL AND SEQUESTRATION 185 (2022) [<https://perma.cc/Z7FD-P844>].

To overcome these challenges, Washington should develop a statewide siting strategy that prioritizes pre-approval of certain field sites for small- to medium-scale research. This should be developed in collaboration with Tribes to guarantee they have an early opportunity to consider and announce where ocean- and land-based research into carbon management would be welcomed. Jointly developing and implementing such a strategy would respect Tribes' sovereignty, preserve the confidentiality of Treaty and cultural resources, reduce the risk of adversely impacting those and other protected resources, and lower the time and economic burden caused by project-by-project outreach and negotiations. Furthermore, the state could enter into a programmatic agreement with Tribes under the National Historic Preservation Act to ensure continued Tribal consultation and agency accountability, as well as to streamline the review process for carbon management research projects developed at these sites.

Questions 9 and 10: Models and frameworks for CCA Program Rule implementation

Questions 9 and 10 deal with related issues, so we will provide comments for both together. As a general matter, Ecology can leverage the existing federal regulations on Class VI wells when implementing the Climate Commitment Act ("CCA") Program Rule. However, Ecology should strongly consider obtaining Class VI well primary enforcement authority, or primacy. This would provide an opportunity for Ecology to develop regulations with at least two advantages over the existing EPA Class VI well regulations.

First, Ecology should clarify that the Class VI well regulations apply to wells used to sequester carbon dioxide captured from the atmosphere or ocean, in addition to carbon dioxide captured from an emission source. EPA regulations on Class VI wells apply to wells used for "geologic sequestration" of carbon dioxide, which is defined as "the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations."¹² EPA regulations define "carbon dioxide stream" as "carbon dioxide that has been captured from an emission source (e.g., a power plant), plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve

¹² 40 C.F.R. § 146.81.

the injection process.”¹³ This definition notably excludes sequestration of carbon dioxide removed from the atmosphere or the ocean (i.e., because it is not captured from an emission source).

EPA’s definition could prevent or complicate the issuance of Class VI permits for wells used to sequester carbon dioxide obtained via processes like direct air capture and direct ocean capture. But there is no valid policy reason for distinguishing between sequestration operations based on the source of the carbon dioxide. Instead, the exclusion of carbon dioxide obtained via CDR processes from the definition of “carbon dioxide stream” is likely a vestige of the time in which they were written, 2010, when direct air capture and direct ocean capture were not yet in significant development. Seemingly recognizing this, EPA’s website indicates that that it will apply the regulations to sequestration of carbon dioxide removed from the atmosphere,¹⁴ and EPA has issued a Class VI permit for sequestration of carbon dioxide from a direct air capture plant in Texas.¹⁵ It has not, however, formally amended its regulations and thus uncertainty and risks remain.

Ecology should address these risks by developing its own regulations that explicitly include sequestration of carbon dioxide removed from the atmosphere or the ocean. At least one state—Texas—has defined “carbon dioxide stream” more broadly than the EPA regulations. The Texas Class VI well regulations define carbon dioxide stream to mean “[carbon dioxide] that has been captured from an emission source or the atmosphere.”¹⁶ This shows that EPA has given states latitude to permit sequestration of carbon dioxide captured in facilities that are not themselves emissions sources.

Second, Ecology should adopt transfer restrictions in addition to the financial responsibility requirements already in EPA’s regulations. Current EPA regulations require operators to provide financial assurances that are sufficient to cover the costs of corrective action, injection well plugging, post injection site care and site closure, and emergency and remedial response (among other things).¹⁷ These requirements should help reduce the risk that the state will have to bear costs

¹³ *Id.*

¹⁴ EPA, *Class VI - Wells used for Geologic Sequestration of Carbon Dioxide*, <https://perma.cc/8664-7KMX>.

¹⁵ EPA, *EPA Issues Final Permits for Geologic Sequestration of Carbon Dioxide in Texas* (April 7, 2025), <https://perma.cc/MB3B-9FR5>.

¹⁶ 16 Tex. Admin. Code § 5.102.

¹⁷ 40 C.F.R. § 146.85

for decommissioning and remedial work. However, to further reduce that risk, we recommend adding provisions restricting the transfer of carbon dioxide sequestration operations, unless and until the new operator provides a replacement financial assurance and meets other requirements.

The history of operations in the oil and gas industry demonstrates why transfer restrictions are so important. Absent such restrictions, oil and gas wells are often transferred multiple times throughout their useful lives to new operators, who may lack the financial resources needed for decommissioning, and thus the state is forced to bear that cost. Recognizing this issue, during the Biden Administration, the Department of the Interior proposed a “Fitness to Operate” standard that was “intended to weed out [oil and gas] companies unable to cover cleanup costs or guilty of safety and environmental infractions.”¹⁸ While the standard was never finalized, it aimed to establish “safety, environmental, and financial responsibilities” that oil and gas companies would have to meet in order to operate in the U.S. Outer Continental Shelf.¹⁹

Ecology should incorporate similar transfer restrictions into its regulations, establishing minimum standards for incoming operators. To that end, operators should be required to demonstrate financial, safety, and environmental competency sufficient to manage operational cleanup, and prevent safety and environmental infractions. The standards could be flexible, reflecting the early stage of development of the carbon sequestration industry, and could include tailored requirements with respect to corporate structuring, revenue projections, history of environmental compliance, and emergency management protocols. The regulations could also include some form of trailing liability, such that if carbon sequestration operations change hands, the original operator is liable until their financial assurances are replaced by sufficient financial assurances by the buyer.

Washington’s regulations should also account for situations in which the financial assurance provided by the carbon sequestration operator is insufficient and the State is required to bear the cost of decommissioning or remedial action. For example, the regulations could include an explicit provision stating that the regulator can proceed against the operator for cost recovery, in the event

¹⁸ Heather Richards, *Long Delayed Biden Rule Could Shake Up Offshore Well Cleanups*, POLITICO E&E NEWS (Dec. 11, 2023), <https://www.eenews.net/articles/long-delayed-biden-rule-could-shake-up-offshore-oil-well-cleanups/>; see also DEP’T OF INTERIOR, REPORT ON THE FEDERAL OIL AND GAS LEASING PROGRAM, (2021), <https://www.doi.gov/sites/doi.gov/files/report-on-the-federal-oil-and-gas-leasing-program-doi-co-14008.pdf>.

¹⁹ *Id.*

that the regulator has to undertake decommissioning or other work.

Question 12: As Ecology works to provide clarity on the CCA Program Rule implementation, what strategies could mitigate potential harms to communities and Tribes?

The CCA distinguishes between offset projects built on or off Tribal lands to encourage revenue from these projects to flow to Indian Tribes.²⁰ We commend Ecology’s effort to benefit Tribal communities by incentivizing placement of projects on Tribal lands. However, considering the breadth of the definition of “Tribal lands,” the state could inadvertently place Tribal cultural resources at risk until the impacts of carbon management technologies are better understood.

The CCA has the potential to direct approximately 30% of all offset projects to Tribal lands by conditioning the availability of offset credits. During the first compliance period, a covered or opt-in entity may use offset credits to meet eight percent of its compliance obligation provided that at least three percent comes from projects “on federally recognized tribal land.”²¹ During the second compliance period, a covered or opt-in entity may meet up to six percent of its obligation with offset credits provided that at least two percent comes from projects on “federally recognized tribal land.”²² “Tribal lands” means reservation lands, allotments, lands set aside and under federal superintendence, sacred sites, traditional cultural properties, burial grounds, and “other tribal sites protected by federal or state law.”²³

Some of these sites and landscapes are no longer owned by the Tribe that they are sacred to. In those cases, the Tribe’s influence over siting—its ability to protect its cultural resources from potential project impacts—is constrained to its ability to successfully appeal to the federal or state government during government-to-government consultation or consultation under the National Historic Preservation Act. In both cases, the Tribe’s perspective is received, but might not be

²⁰ See generally Sophie Daudon & Jordan Wildish, *Tribal Carbon Offset Assistance Grant Program 2025–2027: Guidance for Grants to Provide Assistance for Tribal Nations to Develop Carbon Offset Projects*, Washington State Department of Ecology (2025), <https://apps.ecology.wa.gov/publications/summarypages/2514010.html>.

²¹ R.C.W. §§ 70A.65.170(3)(a),(e).

²² R.C.W. §§ 70A.65.170(3)(b),(e).

²³ See R.C.W. § 70A.65.010(66) (citing R.C.W. § 70A.02.010).

adopted. Ecology could lawfully approve projects on Tribal lands that, for example, alter the significance of viewsheds or disturb plant gathering practices, perpetuating historical injustices.

Ecology can mitigate against this potential harm by explicitly requiring that projects sited on Tribal lands be owned or co-developed by the relevant Tribe. This approach would promote self-determination and free, prior, and informed consent.

We also suggest that Ecology and Washington state explore more ways to ensure that the benefits of carbon management projects flow directly to Tribes. One way to do so would be to condition the availability of extra offset credits on Tribal ownership rather than the location of the project. This would involve crediting as a Tribal offset project any project co-developed or owned by a federally recognized Indian Tribe with Treaty rights in Washington, regardless of the project's geographic siting within Washington, California, or Quebec. Revisions of the CCA Program Rule for linkage with California and Quebec would provide an opportunity to make this change. Centering Tribal ownership and co-development, rather than location, would: (1) avoid the pitfalls outlined above, (2) further Ecology's desire to encourage revenue from these projects to flow to Tribes, and (3) ensure more projects proceed in alignment with Tribes' traditional ecological knowledge, intergenerational stewardship practices, and cultural, economic, and social priorities.

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Thank you for the opportunity to submit these comments. Please contact us if you require any further information.

Sincerely,

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