

Carbon Management Policy Team
Department of Ecology
Climate Pollution Reduction Program
PO Box 47600
Olympia, WA 98504

Comments on Integrating Carbon Management into Cap-and-Invest

Thank you for the opportunity to provide comments on the proposed updates to Washington's Cap-and-Invest program.

We are collectively writing to express our support for the Department of Ecology's (Ecology) efforts to improve the program by integrating carbon management into cap-and-invest. In particular, this rulemaking is a key opportunity to address a long-standing question in climate policy, which is how to distinguish durable carbon dioxide removal (CDR) from short-duration biological carbon storage and incorporate those differences into program design.

Context on Net Zero and Durable CDR:

Washington's own Carbon Dioxide Removal Evaluation Study "*establishes the compelling need for Washington to invest in CDR to meet its statutory greenhouse gas limits*"¹ This is consistent with guidance from the Intergovernmental Panel on Climate Change (IPCC) which has stated, repeatedly and unequivocally, that there is no credible pathway to maintaining global temperatures within acceptable levels without large-scale carbon dioxide removal.²

It is important to note that in the context of achieving "Net Zero", the term CDR refers to **durable** CDR. Across the IPCC, Oxford Net Zero, and the peer-reviewed literature, net zero is defined as the point at which residual emissions are equally balanced by durable (long-lived, permanent) CDR. This reflects the physical reality that CO₂ persists in the atmosphere for centuries to millennia, and therefore only equally durable removals can neutralize the warming effect of fossil fuel emissions.

We wish to be clear that improved forest management and regenerative agriculture are important strategies and should be encouraged as much as possible, as they are immediately scalable at low cost. But living biological storage of carbon is inherently non-durable because living things die, and burn, and get cut down. That's a simple physical reality. Buffer pools can alleviate some of the relatively near-term uncertainty for accidental reversals, but in a world with a changing climate, no buffer pool can guarantee "permanent sequestration" for 1,000 years as defined by the WAC³.

¹ [Carbon Dioxide Removal Evaluation Project](#) page 1, paragraph 3

² https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf

³ [WAC 173-407-110](#)

The problem of the durability and price gap:

For quite some time, the CDR community has struggled to find a way to differentiate between these two good things:

1. Biological carbon storage – which is cheap and scalable in the near term, but faces practical limits to global scalability and is not durable, and
2. Durable carbon removal – which is new and *not* cheap (yet) but offers certainty that the carbon will stay out of the atmosphere for climate-relevant timescales.

When the voluntary carbon market lumps these two things into one category called “offsets” it creates confusion among credit buyers. The result has been that only a few forward-thinking buyers (notably Microsoft and the Frontier coalition) have purchased durable CDR to provide a demand signal and support the early scale-up of durable CDR. Meanwhile, the vast majority of buyers have chosen to purchase low-cost biological carbon offsets rather than durable CDR. If all forms of carbon removal are generically classified as “offsets,” and nobody knows the difference, why should they buy the more expensive durable CDR credits? This has resulted in setbacks and delays in the development and deployment of important new durable CDR technologies that are desperately needed in order to meet the targets outlined by the IPCC.

Fortunately, the RCW offers a good solution to this problem! The RCW already recognizes that “offsets” can include non-durable biological solutions, and that a separate category called “exemptions” is reserved for solutions that can demonstrate certainty that the captured carbon will be sequestered permanently.

This presents an opportunity to finally give each of these two good things its own category. “Offsets” can include non-durable carbon storage in living organic material. “Exemptions” can include activities that provide certainty of 1,000-year sequestration.

Essentially, this allows durable CDR to be used as a book-and-claim system to clean up emissions in situations where point-source carbon capture and storage (CCS) is not feasible. Long-haul air travel is a good example of this. We presently have no way to fly large jets long distances without fossil fuels, and there is no way to install point-source CCS on a plane. Over time, perhaps SAF can grow to meet the full demand for jet fuel. But until then, we can clean up those emissions with durable CDR and, from a climate perspective, that is effectively the same as installing a CCS system on the jet. From nature’s perspective, it doesn’t matter **which** molecules of CO₂ get removed from the atmosphere, only that the total number of molecules remains below a certain level.

Including durable CDR in the exemptions category effectively creates a multi-layered approach to hit Washington’s net-zero target:

1. Layer 1 is fuel switching. Electrification and circular fuels are the preferred options whenever possible.
2. Layer 2 is “Offsets”. A covered emitter can retire up to 5% of its emissions through non-durable offset pathways that also have other environmental benefits.

3. Layer 3 is “Exemptions” which includes point-source CCS where it is practical, and durable CDR for situations where point-source CCS is not a viable option.

Of these options, durable CDR will almost always be the most expensive, at \$300 to \$1,200 per ton of CO₂ currently. Therefore, durable CDR will only be used to counterbalance truly hard-to-abate emissions where none of the other options are economically feasible

With all of that as context, we wish to offer the following recommendations:

Recommendation 1: Include durable CDR as an exemption option

Current Washington Law already reflects an understanding that residual fossil emissions can only be counterbalanced by durable sequestration. That is one reason why biological carbon offsets are limited to 5% of emissions, whereas exemptions are reserved for processes that effectively erase the emissions by sequestering them for climate-relevant timescales.

Furthermore, durable carbon removal solutions are the only way to address legacy emissions, making them a critical component of a holistic climate strategy. In the (now very likely) event that the world exceeds our global carbon budget, and thus temperatures exceed the targets set forth in the Paris Agreement, we will need even more durable CDR to correct that overshoot. We must support the development of durable CDR capabilities as soon as possible to ensure that we have the requisite capacity for large-scale removals by mid-century and beyond.

Based on the observed behavior of carbon credit buyers, putting durable carbon removal in a distinct category is the only effective way to stimulate the purchase of durable CDR, thereby enabling the growth of the industry. The recent experience of today’s VCM demonstrates that when inexpensive biological offsets and expensive durable CDR are in the same category, most buyers will consistently choose the less expensive option. Therefore, we strongly recommend including durable CDR as an option under the exemptions pathway.

We realize that economic growth is not in Ecology’s remit, but we feel compelled to mention that durable CDR is projected to become a trillion-dollar industry over the next few decades. Encouraging the growth of durable CDR in Washington will create good jobs, mostly in rural areas, and will position Washington as a leader in this rapidly emerging sector. However, we can only encourage that growth here if we place durable CDR in a category distinct from inexpensive biological storage “offset” pathways.

Recommendation 2: Keep the policy technology-agnostic to the greatest extent possible.

Massive innovation is underway in the carbon removal domain, so it is important to create policy that sets clear criteria and assures high integrity, while also allowing innovative new approaches that have not yet been imagined.

We wish to be clear that durable CDR does not mean just direct air capture (DAC) and bioenergy with carbon capture and storage (BECCS), nor does it mean only geologic storage or only storage as inorganic carbon. Durable CDR can be accomplished in many ways, including:

- DAC and BECCS (coupled with secure storage in geologic formations or long-lived products like cement)
- Enhanced weathering and ocean alkalinity enhancement (OAE), where the carbon gets durably sequestered as bicarbonate that remains in the ocean for ten thousand years.
- Biomass carbon removal (bio-oil injection, biomass burial, and some biochar approaches), where non-living organic material is securely stored in a facility that guarantees it will remain inert and not decay for the next 1,000 years
- Mineralization of CO₂ sourced from the atmosphere in artificial limestone or cement
- Surficial mineralization of CO₂ using mine wastes or other reactive feedstocks
- There are undoubtedly many other approaches that have not been invented yet

What all of these solutions have in common is that they provide **inherently** durable sequestration. In other words, once the work is done (and done right), the carbon will stay put for 1,000 years unless some future generation does something to disturb it. To be clear, inherently durable sequestration systems do require long-term monitoring in many cases, but the sequestration itself does not rely on active maintenance or replacement by future generations hundreds of years from now. Inherently durable sequestration relies on some form of stable storage that will not naturally decay and is scientifically expected to remain intact unless it is purposely disturbed.

This still leaves plenty of room for a completely tech-agnostic protocol. The only policy criteria for durable CDR should be that it removes carbon from the biosphere and reliably sequesters it in some inherently durable way.

Recommendation 3: Remain collaborative on protocols and avoid protocol paralysis.

Humanity urgently needs to learn the best ways of doing durable CDR at a very large scale. To hit the targets suggested by the IPCC, durable CDR must grow faster than the Internet or smartphones ever did. Regulatory markets are seen as the ultimate growth engines for durable CDR. The voluntary market experience has made it clear that most buyers will not buy durable CDR until they are mandated to do so – or at least not until they can see the regulatory writing on the wall. By creating a clear regulatory category for durable CDR, Washington can provide the proverbial “writing on the wall” that will encourage more buyers to get off the fence and start supporting durable CDR.

However, one major threat to the necessary pace of growth is an inability to agree on new protocols quickly. It would be disastrous if every state government (or even every national

government) had to create its own protocols or conduct a detailed public review of every proposed protocol with all of the delays inherent to formal rulemaking processes.

To counteract that, we suggest the department establish a rule allowing for fast-tracked review of existing published protocols that meet certain criteria. The criteria might include that the protocol was developed using best practices, including an open, transparent, public process and a credible scientific peer review process. The criteria might also include that the protocol has received approval from an independent quality assurance entity other than the sponsoring organization (for example, approval by the Integrity Council for the Voluntary Carbon Market - ICVCM or the ISO or a similar authority).

For protocols that have already been peer-reviewed, tested in practice, and then reviewed again by an outside authority, there should be a fast-tracked approval process where the details of the protocol are taken as valid. Minted credits would also therefore be deemed valid, and the only question to consider would be what fraction of the credits would count as 1,000-year durable “exemptions” and what fraction of the credits would be classified as non-durable “offsets”. Creating a definition of a “Qualified Protocol” might reduce the workload associated with protocol review and allow the department to leverage the vast body of scientific and policy work that has already been done within the VCM.

It is also worth considering a review of known CDR pathways to determine which of them are known to result in durable CDR that meets the 1,000 year requirement. Perhaps the department could maintain a whitelist of “Qualified Pathways” that are known to result in durable CDR, such that reviews of “Qualified Protocols” within those pathways can be further simplified and expedited.

We further recommend that the department consider entering into a collaborative review process with the other members of the Western Climate Initiative to jointly review and approve protocols or pathways. Having a patchwork of different protocols across different jurisdictions would represent another barrier to the difficult task of quickly finding the best ways to accomplish durable CDR, so approval by a consortium is highly desirable. This also could allow the multiple parties in this process to share the load of protocol review and approval, lessening the burden on each.

This letter’s signatories represent a range of interests from the swiftly-growing carbon removal ecosystem, including concerned NGOs and academic research centers as well as buyers, brokers, registries, consultancies, and project developers. The IPCC CDR Fact Sheet defines CDR as a “collection of technologies, practices and approaches that remove and **durably** store carbon dioxide (CO₂) from the atmosphere.”⁴ As described above, this can be accomplished by a wide diversity of approaches, and new approaches are still being discovered. Together, our organizations are committed to tackling climate change by addressing residual emissions that are difficult to abate, as well as legacy emissions, through methods that are durable, additional,

⁴ IPCC, 2023. https://www.ipcc.ch/report/ar6/wg3/downloads/outreach/IPCC_AR6_WGIII_Factsheet_CDR.pdf

net-negative, and verifiable. We look forward to working with Ecology to clearly define and advance the role of durable carbon removal in meeting the state's climate goals.

Sincerely,



Mike Robinson
mike@pacclean.org



Wil Burns, Ph.D.
wburns@american.edu



Francesca Hillery
fhillery@iggrc.org



Brad Warren - brad@globaloceanhealth.org



Peter Minor, Ph.D.
p@absoluteclimate.com



Clément Georget -
clement@rainbowstandard.io



Danny Broberg, Ph.D.
dbroberg@stripe.com



Nora Brown
nora@charmindustrial.com



Andrew Fishbein
andrew.fishbein@climeworks.com



Vikrum Ayer
vikrum@heirloomcarbon.com



Jeanine Ash, Ph.D.
jeanine@capture6.com



Diana Philip
diana@planetarytech.com



Heather Langsner
heather@basicdust.com



Mallory Ringham, Ph.D.
mallory@ebbcarbon.com