



August 31, 2022

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State of Washington Department of Ecology
P.O. Box 47600 Olympia, WA 98504-7600

RE: Comments Regarding Chapter 173-424 WAC, Clean Fuels Program Rule

Thank you for the opportunity to provide comments on the proposed Clean Fuel Standard (CFS) rule. This comment follows up our previous comments on February 25, 2022, and November 3, 2021, and are hereby incorporated by reference.

Charm Industrial, Inc. (Charm) appreciates the Department of Ecology (Ecology) providing numerous opportunities to comment and Ecology's transparency throughout the process. We continue to believe that carbon dioxide removal technologies, such as Charm's, that result in permanent removal of CO₂ from the atmosphere will be critical to meeting Washington's target of net-zero greenhouse gas emissions by 2050.

While we broadly support the draft CFS rule, we remain concerned that the lack of an independent credit pathway for carbon dioxide removal projects excludes a critical tool for fighting climate change from Washington.

I. Background on Charm Industrial

Charm Industrial removes carbon from the atmosphere by converting plant excess biomass residue that contains carbon dioxide captured from the atmosphere into an injectable bio-oil. Then, Charm permanently sequesters this bio-oil underground in geological storage. Charm uses excess agricultural biomass and forestry biomass that would otherwise decompose or burn, releasing the embodied carbon dioxide back into the atmosphere. Charm also ensures that a share of biomass remains on the farm or in the forest to protect soil health and natural processes. Charm's mobile, fast-pyrolyzers can be transported to the field or forest to process excess biomass on-site. The bio-oil is then transported to existing EPA and state-regulated injection

wells, where it is pumped underground for permanent storage. Our process results in permanent carbon storage because bio-oil is denser than most fluids, including crude oil, and quickly solidifies, ensuring it remains deep within existing wells.¹

In 2021, Charm sequestered more than 5,400 metric tons of CO₂e for initial customers including Stripe, Shopify, and Microsoft. Over the next four years, Charm plans to sequester a cumulative total of ~200,000 metric tons of CO₂e through voluntary carbon removal markets. While this is an impressive start, it is only a fraction of the carbon removals needed to restore the climate to safe levels.

II. Statutory Basis for Including CDR in the CFS

The Washington State Legislature, in enacting the CFS sought to balance the need for carbon capture and sequestration (CCS) and carbon dioxide removal (CDR) technologies to ensure that aggressive CO₂ reduction targets are met while also ensuring the program has a technology-forcing effect in the transportation sector. In RCW 70A.535.030, the Legislature authorized several categories of greenhouse gas (GHG) reduction activities:

- (1) The rules adopted under RCW 70A.535.020 and 70A.535.030 may allow the generation of credits from activities that support the reduction of greenhouse gas emissions associated with transportation in Washington, including but not limited to:*
- (a) Carbon capture and sequestration projects, including but not limited to:***
- (i) Innovative crude oil production projects that include carbon capture and sequestration;*
 - (ii) Project-based refinery greenhouse gas mitigation including, but not limited to, process improvements, renewable hydrogen use, and carbon capture and sequestration;*
- or*
- (iii) Direct air capture projects.*

Specifically, the Legislature authorized a broad suite of GHG reduction activities and carbon capture pathways, including CDR. The Legislature did *not* limit the qualifying GHG reduction activities to just those carbon capture and sequestration projects integrated into fossil fuel production. This is shown by the explicit reference to the direct air capture form of CDR, which like Charm, is completely separate from process of producing fossil fuels.

The Legislature also required Ecology to establish an advisory panel for the “purpose of soliciting input on how to best **incentivize and allot credits** for the sequestration of greenhouse

¹ For more information regarding our efforts to transparently develop monitoring, reporting, and verification, see our webpage: <https://charmindustrial.com/blog/our-path-towards-monitoring-reporting-and-verification>.

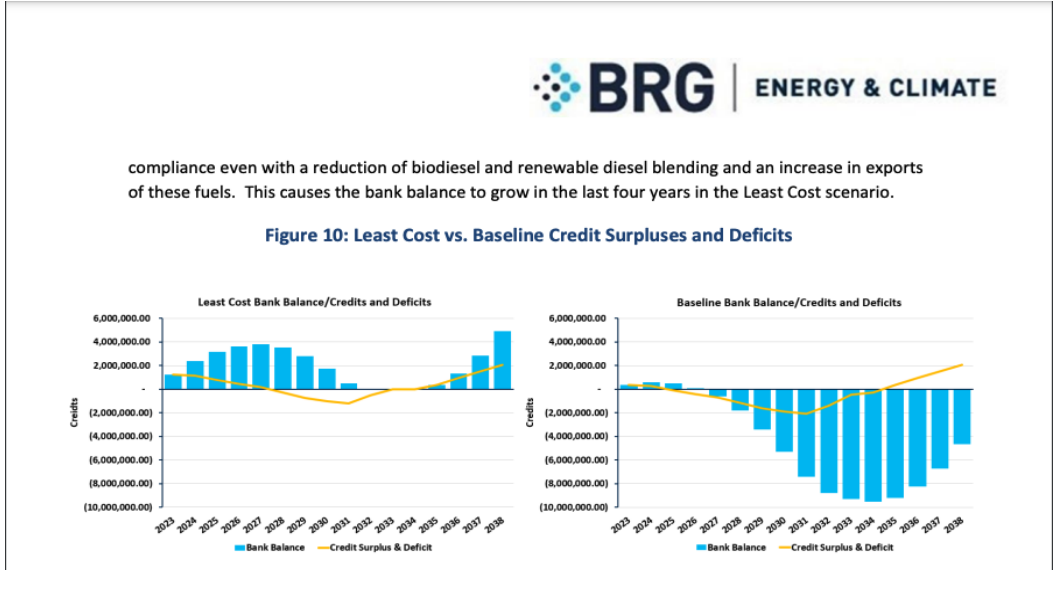
gases” in RCW 70A.535.060(2). Read together, these two sections clearly show that the Legislature intended that the CFS include CDR credit pathways.

III. CDR is Critical to Meeting Washington’s Climate Targets

In carving out a role for CDR among the authorized GHG reduction activities, the Legislature recognized that permanently capturing and storing carbon emissions is critical to meeting Washington’s climate targets. This position is supported by the latest International Panel on Climate Change (IPCC) Report. The IPCC determined that “deployment of carbon dioxide removal (CDR) to counterbalance hard-to-abate residual emissions is unavoidable if net zero CO2 or GHG emissions are to be achieved.”²

The IPCC’s finding that CDR is unavoidable applies to meeting the CFS targets. The Legislature set a CFS carbon reduction target of 20%. *See* RCW 70A.535.025. While the initial compliance curve is gentle, by 2025 the program must achieve 1% per year reductions, increasing to 1.5% per year in 2028, and then a one-time 10% reduction in 2034. *See* WAC 173-424-900.

The Berkeley Research Group (BRG) modeling of Washington’s CFS suggests that additional credit pathways, like CDR, will be needed to meet these reduction targets. Figure 10 in BRG’s report indicates that at best the CFS will have *exactly* enough credits to meet the reduction targets in the early 2030s, and at worst, may run a structural credit deficit beginning in 2025.³



² IPCC, *Climate Change 2022 - Summary for Policymakers* (2022) at 40.

³ Berkeley Research Group, *Clean Fuel Standard Cost Benefit Analysis Report - Washington Department of Ecology* (May 12, 2022) at 34. The least cost analysis assumes that a greater share of Washington’s biofuels will be consumed in state, while the baseline analysis assumes that much of Washington’s biofuels will continue to be exported to other jurisdictions to meet *their* clean fuel standard targets.

The risk of a credit deficit modeled by BRG is reinforced by data from other jurisdictions. As we noted in our February 25, 2022, comment, California, Oregon, and British Columbia have not achieved an annual reduction of 1% or greater by relying on biofuels and electric vehicles alone, and all three jurisdictions are relying on banked credits from early years to meet increasingly stringent reduction targets.⁴ In response, B.C. has proposed to add a CDR credit pathway⁵ and California has already authorized direct air capture CDR projects.⁶ Washington, by contrast, appears poised to fall behind our neighboring jurisdictions by omitting CDR.

IV. Suggested Revisions to the Proposed CFS Rule

We appreciate that Ecology addressed the lack of CDR pathway in the preliminary regulatory analysis. The analysis concludes that including CDR credits at this point “would not have met the goals and objectives of the authorizing statute” for two reasons.⁷ We address these reasons in turn.

First, Ecology explained that developing this pathway would require significant time and could impair “Ecology’s ability to have a fully functioning program by the statutory deadline.”⁸ We want to acknowledge that Ecology is under a swift deadline to implement both the CFS and the Climate Commitment Act programs in 2023. Simultaneously developing both rules is a significant achievement, to say the least. Under a tight timeframe, Ecology has admirably run a transparent, open, and efficient CFS rulemaking process.

However, we urge Ecology to look beyond January 1, 2023. As we offered in our February 25 comment letter, and as we offer again below, simple language that authorizes Ecology to begin developing protocols for a CDR pathway in mid-2023 or 2024 *would not* jeopardize Ecology’s ability to launch the program in early 2023. However, it *would* allow Ecology to begin developing a CDR credit pathway to ensure a structural credit deficit does not materialize.

Second, in the regulatory analysis, Ecology explained that additional credit supply in the program in the early years could jeopardize credit prices.⁹ We believe this concern is misplaced.

⁴ Daniel Mazzone et. al., *Multijurisdictional Review of LCFS Programs 2010-2020 Q2: OR, CA, B.C.*, U.C. Davis, (2021) at 5. Available at <https://escholarship.org/uc/item/080390x8>.

⁵ British Columbia Dept. of Energy, Low-Carbon Fuel Expansion Cuts Emissions, Creates Jobs (May 9, 2022) <https://news.gov.bc.ca/releases/2022EMLI0032-000730>.

⁶ C.A.R.B., *Carbon Capture and Sequestration Project Eligibility FAQ*, (2021) (CARB approved a limited set of CCS activities including direct air capture and practices capturing Co2 from existing industrial operations). Available at <https://ww2.arb.ca.gov/resources/fact-sheets/carbon-capture-and-sequestration-project-eligibility-faq>.

⁷ Dept. of Ecology, *Clean Fuel Standard Preliminary Regulatory Analysis* - Publication 22-02-029 (July 2022).

⁸ *Id.* at 107, “Expanding the scope of the rulemaking could have impaired Ecology’s ability to have a fully functioning program by the statutory deadline.”

⁹ *Id.*

As we described above, the program faces a greater risk of too few credits, rather than too many. Furthermore, because RCW 70A.535.050(3) allows Ecology to cap CDR credits, Ecology can limit the number of CDR credits as needed to maintain stable credit prices.

While we appreciate that Ecology stated that CDR may “be addressed in future rulemakings” we urge Ecology to begin now.¹⁰ By inserting a simple provision, an example of which we provide below, Ecology can begin scoping CDR protocols and policy decisions through 2023-2024. This would give Ecology a jumpstart toward implementing a CDR pathway in 2025 *if* a credit shortage materializes.

We believe this could be as simple as adding a new provision to the CFS rule under Part 2, “Designation of Regulated Parties and Credit Generators” that Ecology:

Will accept applications for carbon capture and sequestration and carbon dioxide removal credit-generation projects beginning July 1, 2025. Prior to accepting applications, Ecology will develop a technology-neutral protocol that includes requirements for reporting, permanence, verification, credit generation, and additionality. Ecology will provide notice regarding the quantity of available credits under this pathway prior to accepting applications.

The July 1, 2025, timeline we suggest aligns with the protocols Ecology already plans to develop for CCS in the Tier 2 fuel pathway proposed in WAC 173-424-600(5)(b)(viii).¹¹ It also provides the “considerable time and resources” Ecology stated is necessary for a CDR pathway.¹² Finally, it would clarify the role of the Agriculture and Forestland Carbon Capture and Sequestration Advisory Panel and harness their expertise to develop the protocol.

Moreover, if Ecology engages in another round of rulemaking in 2024 or 2025, Ecology can refine this section as needed. However, adding this now allows Ecology to begin scoping a CDR pathway *before* initiating another round of rulemaking. This will put Ecology in a better position to implement a CDR pathway in 2025 if it is needed.

V. Conclusion

We applaud Ecology’s development of the CFS and appreciate Ecology’s transparency throughout the process. We look forward to continuing to engage during the CFS implementation and in subsequent rulemakings. However, we urge Ecology to reconsider the exclusion of a CDR credit pathway in this iteration of the rule. CDR will be critical to meeting Washington’s, and

¹⁰ *Id.*

¹¹ While the Tier 2 fuel pathway includes CCS, this is not a substitute for a standalone CDR pathway because the Tier-2 pathway is tied to continued production of fuel, not the wholly additional removal of greenhouse gases.

¹² *Id.*

global, climate targets. Yet, CDR technologies, like Charm, are largely excluded from both the CFS and Climate Commitment Act rule.

We believe a simple commitment to creating a CDR protocol in the coming years would put Ecology in a stronger position to meet the CFS carbon reduction targets without jeopardizing Ecology's ability to begin the CFS program in 2023.

We appreciate the consideration of these comments and continue to support Ecology's efforts to address climate change.

Sincerely,

A handwritten signature in black ink, appearing to read "Nora Cohen Brown". The signature is fluid and cursive, with a long horizontal stroke at the end.

Nora Cohen Brown
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