



State of Oregon Department of Environmental Quality

Written Comments

Clean Fuels Program Expansion 2022 Rulemaking Advisory Committee Meeting 2

This document is a compilation of written comments received related to the second meeting of the advisory committee for the Clean Fuels Program Expansion 2022 Rulemaking held Jan. 26, 2022.

Comments

3Degrees Group Inc.....	2
Bp America Inc.....	5
Coalition for Renewable Natural Gas.....	8
Lane Transit District.....	12
Oregon Environmental Council, Union of Concerned Scientists, Climate Solutions.....	16
Oregon Fuels Association.....	20
Renewable Hydrogen Alliance.....	22
University of California, Davis.....	26
Western States Petroleum Association.....	28

February 11, 2022

Cory Ann Wind
Oregon Department of Environmental Quality (DEQ)
700 NE Multnomah Street, Suite 600
Portland, OR 97232
Submitted electronically via CFP.2022@deq.state.or.us

RE: 3Degrees Group Inc.'s Comments on DEQ January 2022 Rulemaking Advisory Committee #2 Meeting

Dear Ms. Cory Ann Wind,

3Degrees Group Inc. (“3Degrees”) appreciates Department of Environmental Quality (DEQ) Staff’s commitment to well-organized stakeholder meetings with ample opportunities for public input. The following comments are in response to both the Rulemaking Advisory Committee (RAC) Meeting #2, as well as the slide deck for the Reporting Workshop held on January 20, 2022.

We look forward to further discussion during upcoming workshops and the next RAC meeting on March 31, 2022.

Target-setting

We support DEQ’s continued investigation and open discussion on the appropriate CI targets for the clean fuels program (CFP), particularly in the context of recent policy developments in Oregon that make the ICF modeling conservative. We agree with comments that have been received that there are risks to setting the CFP targets too low, and significant upside to maximizing low-carbon fuels innovation, commercialization of low-carbon vehicles, local health benefits, and GHG reductions by setting aggressive targets out through 2035 and beyond.

Additional documentation for non-prompt credit transfers

We understand and appreciate DEQ’s desire to have insights into the credit prices for long-term agreements and agreements that cover multiple credit transfers. We recommend that DEQ implement rules to track these transactions in a way that directly targets the desired information. For example, we recommend that DEQ not require that full agreements be submitted, but rather only the pricing and other details DEQ needs to sufficiently monitor the market. We also recommend that DEQ explore an approach that more directly targets long-term contracts or agreements with multiple credit transfers. In California, we have had instances where a counterparty failing to accept a credit transfer within 10 days can result in added complexity due to the delay triggering the requirement to add in the agreement despite the deal not being a long-term agreement. There may be additional fields that DEQ can incorporate into the Oregon Fuels Reporting System to flag if a transaction is covered under a long-term agreement which would then necessitate the additional information being provided to DEQ.

Require an electricity tracking system for RNG attributes

3Degrees is supportive of the proposal to require that RNG attributes be tracked in an electronic tracking system, in line with SB98 requirements. We see no obvious drawbacks to requiring the use of a tracking system and multiple benefits. Renewable electricity and carbon markets have both shown the important role that electronic tracking systems can play in compliance accounting and reporting. Tracking systems have a number of benefits in terms of program implementation, including:

- Ensuring that all environmental attributes issued into the tracking system meet the agreed upon criteria. For instance, the tracking system can require that certain data be provided or certain validation be undertaken before the attribute(s) can be issued into the tracking system.
- Preventing against double-counting, because only a single entity can issue environmental attributes from a given project, and then only one party can hold those environmental attributes in their account at any one time.
- Facilitating compliance reporting and tracking through standardized reports that can be submitted by compliance entities to the regulator.

We support the tracking system implementation being in line with SB98 requirements, as the benefits of tracking systems are diminished if states and/or markets begin to use different tracking systems. Since the market for RNG is national, a single, standardized tracking system will best serve the development of the market.

Additional credit generation post-certification or verification of a fuel pathway

We are supportive of the proposals to allow credit true-up between a temporary fuel pathway code (FPC) and a certified CI, as well as between a certified CI and the operational CI verified by a third-party. On the latter, we have experience with pathways that have changed significantly between the provisional CI and the certified CI. We agree that a materiality threshold of 5% is appropriate and reasonable to minimize the number of corrections that Staff would need to issue. Credit true-up will create assurance that projects will realize the full benefits of reducing CI and therefore reduce any incentives to delay applications until the producer deems the data to be most favorable.

We believe the simplest approach for credit issuance once third-party verification occurs would be to allocate the credits to the pathway holder. This would result in the credits being issued to a single entity and is most likely to benefit the fuel producer directly. If DEQ chooses to issue credits to the entities reporting against the pathway, decisions will need to be made about how to allocate the credits across potential dozens of entities, including how to proportionally allocate and how to address fractions of credits.

Follow up from January 20, 2022 Reporting Workshop

3Degrees was unable to attend the Reporting Workshop on January 20th, but we offer the following feedback in response to the associated memo.

- 3Degrees is supportive of streamlining rule language about entities that can designate an aggregator. As outlined in our December 2021 comments, designating an aggregator allows eligible credit generators to benefit from the program even if they do not have the

resources to manage program participation themselves or might not otherwise be able to participate directly. We are supportive of this benefit being clearly extend to all credit generators. We also recommend that DEQ add in language stating that the aggregator inherits the priority and any other preferential treatment of the designator.

- 3Degrees agrees with the principle of creating a hierarchy for electricity credit generation between the charger/fleet owner and the service provider/fleet operator.
- 3Degrees agrees with DEQ's proposal to require that the FSE registration be submitted in the first half of the quarter.
- On the topic of changes in ownership (topic 6 in the workshop), we recommend that DEQ broaden the scope of the proposed text to include changes in reporting and credit generation rights amongst aggregators. This language should state that it is the responsibility of the designator (not the prior aggregator) to notify DEQ when an aggregator is no longer acting on its behalf. The designator's FSE, facilities, credit generation rights, etc. that were managed by the outgoing aggregator should then transition to the designator or a new aggregator, as directed by the designator.

Implementing this change would also involve removing the following sentence from [340-253-0100\(3\)\(b\)](#): "*An aggregator is responsible for notifying DEQ when its authorization to act on behalf of a credit generator or regulated party has been withdrawn.*"

Thank you for this opportunity to submit comments. We look forward to continued participation and discussion in upcoming workshops.

Sincerely,

/s/ Maya Kelty

Maya Kelty
Director, Regulatory Affairs



Mark Bunch

Regulatory Advisor

C&P – Fuel supply & midstream: biofuel & low carbon

bp America Inc.
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February 11, 2022

Oregon Department of Environment Quality

VIA Email Transmission

CFP2022@deq.state.or.us

Re: Oregon Clean Fuels Program Expansion 2022 RAC #2 Meeting Jan. 26, 2022

Dear Department of Environmental Quality Staff:

On behalf of bp America Inc. ("bp"), thank you for the opportunity to participate in the Oregon Department of Environmental Quality's ("DEQ") rulemaking on the Clean Fuels Program ("CFP") as a member of the Rules Advisory Committee ("RAC").

bp's ambition is to become a net zero company by 2050 or sooner, and to help the world reach net zero, too. Consistent with bp's ambition, we are actively advocating for policies that address greenhouse gas ("GHG") emissions.

We wish to comment on the workshop topics as follows:

Target setting

The DEQ is considering setting targets for the Clean Fuels Program that go beyond the 20% reduction by 2030 and 25% reduction by 2035 targets that were referenced in Governor Brown's Executive Order 20-04. The International Carbon Federation ("ICF") outlined a more ambitious approach in its report published in July 2021¹. ICF published long term compliance scenarios and stated that, "[t]he combined potential of renewable diesel plus electrification has the potential to exceed the carbon intensity reduction targets identified in Executive Order 20-04²".

However, ICF also stated that "[t]he critical period for compliance is during the late 2020s to 2030, when the carbon intensity reduction targets are increasing 2% per year, and the zero emission vehicle sales requirements are still ramping up."

¹ <https://www.oregon.gov/deq/ghgp/Documents/cfplluCompScenD.pdf>

² https://www.oregon.gov/gov/Documents/executive_orders/eo_20-04.pdf

The ICF report would support DEQ taking a more ambitious approach to target setting, and the expectation is that the Climate Protection Program that was implemented this year could lend further momentum in meeting decarbonization goals. The fact that DEQ has a robust cost containment mechanism provides stakeholder confidence that the program can remain resilient if there is a scenario where actual carbon reduction does not match what has been assumed, and thus provides a safety valve if there are unforeseen credit liquidity challenges.

The reliance on renewable diesel and electrification to meet more ambitious targets and ICF's identification of the critical period from the late 2020s to 2030 reinforces bp's previous comment letter statement regarding the need for a portfolio approach. Project based crediting at refineries and broader use of renewable natural gas ("RNG") for liquid fuel life cycle reduction through book-and-claim accounting are just two examples of where adoption can help DEQ in meeting more ambitious reduction targets.

bp supports DEQ in ambitious target setting but we also urge DEQ to be ambitious in broadening the scope and diversity of credit generating opportunities that can be brought into play to deliver those targets.

Require electronic tracking for RNG

bp supports the concept for using an electronic tracking system, but DEQ could take this a step further by using its introduction to take advantage of synergies that would allow for efficiencies across verification / validation processes rather than adding a layer of complexity should this approach be adopted. Additionally, we would encourage DEQ to work with partner agencies and jurisdictions to develop a common standard platform for electronic tracking that would streamline and encourage adoption within the RNG supply chain.

Additional credit generation

bp supports the proposal to allow for a true-up from a temporary pathway carbon intensity ("CI") and agrees that a materiality check would strike an appropriate balance between value at stake and DEQ resources required to unlock that value. There are any number of ways that a limit could be set. From bp's perspective, being equal to or exceeding a 1g/MJ CI point would be a reasonable trigger point for a true up to take place.

In instances where there may be ambiguity as to what entity is entitled to any additional credit generation, bp supports the concept that the backstop should be with the pathway owner.

Advanced Crediting: Hydrogen

We welcome DEQ's efforts to stimulate hydrogen adoption in the transport sector. Absent the ability to offer fuelling capacity credits due to existing statute restrictions for advanced crediting, the proposal attempts to be the next best option. As such, the concept appeared very complex and difficult to understand and we would recommend that DEQ consider a dedicated working session for stakeholders to get a greater familiarization with what is being proposed if the rulemaking timeline permits.

Thank you for the opportunity to comment on these important topics and we look forward to working with DEQ and key stakeholders through this rulemaking process. In the meantime, do not

hesitate to reach out to me if you have any questions or need additional context.

Sincerely,

A handwritten signature in blue ink, appearing to read "M. Bunch". The signature is fluid and cursive, with a large initial "M" and a stylized "Bunch".

Mark Bunch

February 4, 2022
Submitted via email to CFP.2022@deq.state.or.us

Cory Ann Wind
Oregon Department of Environmental Quality
700 NE Multnomah St., Room 600
Portland, OR 97232-4100



RE: Oregon Clean Fuels Program Expansion 2022 – Comments on Reporting Workshop and Rulemaking Advisory Committee Meeting #2

Dear Ms. Wind,

The Coalition for Renewable Natural Gas (RNG Coalition)¹ submits these comments in response to the public workshop on reporting hosted on January 20, 2022, and the second Regulatory Advisory Committee meeting hosted on January 26, 2022, by the Oregon Department of Environmental Quality (DEQ). Both events were organized in the context of the Clean Fuels Program (CFP) Expansion 2022 Rulemaking. Our comments specifically focus on providing input to questions raised during these events related to renewable natural gas (RNG) credit true ups based on verified CIs, point of credit generation, and electronic tracking.

About the RNG Coalition

The RNG Coalition is the trade association for the RNG industry in the United States and Canada. Our diverse membership is comprised of leading companies across the RNG supply chain, including recycling and waste management companies, renewable energy project developers, engineers, financiers, investors, organized labor, manufacturers, technology and service providers, gas and power marketers, gas and power transporters, transportation fleets, fueling stations, law firms, environmental advocates, research organizations, municipalities, universities, and utilities. Together we advocate for the sustainable development, deployment, and utilization of RNG, so that present and future generations have access to domestic, renewable, clean fuel and energy in Oregon and across North America.

Full Credit Should Be Given Based on Verified Operational CI Scores

With the implementation of third-party verification, DEQ should now shift all crediting to be based on verified operational carbon intensity (CI) scores. We would support a shift to use of verified CIs in crediting, while still retaining the current credit issuance cycle (i.e., truing up to verified CI actuals ex-post rather than delaying crediting until CI actuals are known). We encourage DEQ to adopt a full true up for all pathways.

True ups would be especially helpful for dairy RNG projects. Dairy RNG projects have uncontrollable variability in their CI because their operations are impacted by external factors such as temperature and herd count. Without crediting based on actual verified operational CIs, there will be instances where a project may unexpectedly over or under generate credits, based on these external factors. Allowing

¹ For more information see: <http://www.rngcoalition.com/>

dairy RNG projects to true up their credit generation after completing their verification—rather than penalizing them if they exceed their initially certified CIs—will improve the accuracy of credit generation in the program and ensure that all fuels are obtaining the full value of their true GHG reductions.

We do not recommend that a threshold be set for such a true up. Instead, we believe this can be added as an automated crediting step within the current cycles once verification concludes. We recognize that changes to IT infrastructure may be needed to accomplish this and we recommend coordination with California, Washington, and other jurisdictions on such a change.

None of this should impact the ability of a project to quickly receive a CI from DEQ and begin to generate credits as soon as it is actively producing RNG. Temporary pathways should also be easy to obtain, as an onerous process is an impediment to low carbon fuel project growth. DEQ may also wish to establish a greater number of temporary fuel pathway codes based on a wider variety of RNG feedstock and fuel combinations.²

RNG Suppliers Are Best Positioned to Be Credit Generator, but the Option for Contractual Flexibility Would Be Helpful

At the reporting workshop, DEQ asked questions about who should be the credit generator³ for RNG, especially in the context of a given piece of Fuel Supply Equipment (FSE) switching from dispensing fossil gas to renewable gas. RNG producers and importers have deep experience and proven track records of successfully managing credit reporting obligations from clean fuels programs. Thus, if only one entity is to be chosen as a point of crediting, we recommend that the producers and importers be retained as that entity.

RNG producers and importers can, and do, work closely with other parties (including the owner of the compressors and other pieces of fuel supply equipment at the stations) to be sure that their reporting is accurate and that all forms of necessary documentation are available to demonstrate to the regulator and verifier the claimed volumes dispensed.

Therefore, we would also recommend adding the ability to transfer the opportunity to generate credits to other parties contractually—as the California LCFS allows⁴—should it prove commercially beneficial to do so. The language to allow this could mirror the language currently present for other alternative fuels

² At a minimum we recommend DEQ consider developing a Temporary CI for dairy and swine manure biogas to power and for RNG derived from forest waste/residuals. See our January 7, 2022 comments to the California Air Resources Board for more details: <https://www.arb.ca.gov/lists/com-attach/91-lcfs-wkshp-dec21-ws-BTdWYldmUDIEMgE2.pdf>

³ Per OAR §340-253-0320(2-3): https://secure.sos.state.or.us/oard/viewSingleRule.action;JSESSIONID_OARD=lyPA1o2GpU4UJBeM1ZGfDhv9HoMQdnrBQzx7UZLu9o3SlhqRoUkE!2121836845?ruleVrsnRsn=252467

⁴ See California Code of Regulations §95483(b)(2): <https://casetext.com/regulation/california-code-of-regulations/title-17-public-health/division-3-air-resources/chapter-1-air-resources-board/subchapter-10-climate-change/article-4-regulations-to-achieve-greenhouse-gas-emission-reductions/subarticle-7-low-carbon-fuel-standard/section-95483-fuel-reporting-entities>

(such as alt jet fuel already has in OAR §340-253-0350(2)). We recommend the following addition to OAR §340-253-0320:

“The ability to generate credits for biomass-based or fossil CNG, LNG, L-CNG or any blends of such fuels may be transferred to another entity, so long as the transfer is documented in a written contract between the buyer and seller.”

The M-RETS Tracking System Should be Used to Demonstrate Retirement of Environmental Attributes

We strongly support DEQ adopting an electronic system for tracking the environmental attributes that underly RNG crediting. The RNG industry would prefer one source of truth for determining who can claim the environmental benefits associated with RNG creation and use across all North America. The best tool we’ve seen to track creation and retirement of such environmental attributes for RNG is the Midwest Renewable Energy Tracking System (M-RETS). Oregon’s utility RNG procurement regulation under Senate Bill 98 requires the use of M-RETS in RNG procurement and compliance.⁵ California’s proposed RNG procurement program⁶ is signaling the likely use of M-RETS when programs are fully adopted and implemented.

If DEQ was to also use M-RETS in the CFP and to harmonize with other jurisdictions undertaking similar policies in the use of this uniform registry tool, it will eliminate any potential for unintended “double counting” of environmental benefits. It will also save resources at both RNG project companies and for DEQ. RNG producers and importers prefer to learn and use only one system, rather than a patchwork of state-by-state systems. DEQ can coordinate with other states on enforcement using this tool. Such multi-jurisdictional systems are well proven on the renewable electricity credit world,⁷ and are a helpful step to ensure market confidence about the environmental benefits claimed as the number of RNG sources increases significantly in the future.

Conclusion

RNG Coalition appreciates the opportunity to participate in RAC and public meetings and provide comments in this process. We thank DEQ for their continued leadership on this program. We look forward to participating in the next steps of the 2022 Expansion Rulemaking and are confident that the results of the rulemaking will strengthen the CFP as a model that other jurisdictions will review and replicate.

⁵ Oregon Public Utility Commission, AR632. See OAR §860-150-0050:
<https://apps.puc.state.or.us/orders/2020ords/20-227.pdf>

⁶ California Public Utilities, Decision Implementing Senate Bill 1440 Biomethane Procurement Program, Page 40:
<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M438/K240/438240736.PDF>

⁷ Oregon has experience dealing with an electronic system used by several other jurisdictions to track environmental attributes in the power sector. The Oregon Renewable Portfolio Standard requires the tracking of renewable energy credits (RECs) by using the Western Renewable Energy Generation Information System (WREGIS): <https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=1116> (see OAR 330-160-0020)

Sincerely,

/s/

Sam Wade

Director of State Regulatory Affairs
Coalition for Renewable Natural Gas
1017 L Street #513
Sacramento, CA 95814

From: Kelly Hoell

Sent: Wednesday, January 26, 2022 1:35 PM

To: Jason Heuser

Subject: RE: [External Sender]CFP Rulemaking -- Question for you re: Advance Crediting for Hydrogen Vehicles

Hi Jason,

There are a number of different issues for hydrogen (compared to electricity) for this advanced crediting provision.

In summary, I would have real concern about an advanced crediting program for H2 working well to do what DEQ is hoping that it would (incentivize the transition to cleaner transportation fuels in OR). I would be worried that it would not provide much benefit/incentive for fleet owners and could be incredible difficult to manage. My reasoning is listed below.

When I engaged previously about the advanced crediting for electricity, I was thinking about the program option from the perspectives of:

1. What is needed to ensure the integrity of the Clean Fuels Program stays intact (ie credits actually represent real emissions reductions)?
2. What is actually useful for a fleet trying to make the transition to cleaner vehicles? Because of the high upfront cost of the new vehicles and associated infrastructure, would this “loan” program actually assist a fleet in making that transition sooner than they might otherwise and how would it work?

Bringing in the perspective of EWEB and your interests poses a different perspective because you would be thinking about this from a couple of different points of view:

- Electricity provider to possible hydrogen hub sites in EWEB service territory
- Hydrogen producer and potential distributor along with NW Natural at the ROC or elsewhere
- Potential hydrogen fleet owner for your own fleet vehicles (someday)

The advance crediting rules for electricity based on the current structure of the CFP are a little more straight-forward (than H2) for a few reasons:

- ELECTRIC: The credits are accrued to the owner of the charging infrastructure. Often, but not always, a fleet that is transitioning to electric will own both the charging infrastructure and the vehicles and so the advanced crediting loan opportunity is given to the same entities that are responsible for the higher infrastructure costs of investing in the new cleaner technology – ie – the incentive is being applied to the right people to influence decision-making to transition to the cleaner alternative.
- H2: I’d need to look at the rules again to make sure I’m saying this correctly but as you’re asking for quick feedback I’ll say this based on how I ***think*** it works right now... For H2 I think the credits would naturally go to the entity that makes the H2 or imports the H2 into the state (similar to liquid fuels). Therefore, the advanced crediting incentive could be

provided to the fleet owner if they were doing on-site H2 production, however the costs, space requirements, regulations, and potential public concerns of development of on-site H2 production are significant and real barriers for fleet owners to install that infrastructure on-site. Therefore, the incentive of the credit advancement would flow to the fuel producer, which could increase the fuel availability in the state, but wouldn't necessarily provide incentive for that H2 to flow into a vehicle because the fleet owners who still have significant costs associated with fuel pumping, shop upgrades, and more expensive vehicles wouldn't have access to the incentive directly.

- ELECTRIC: Because fleets don't have a choice of utility provider and because CI scores for regional electricity will vary slightly from year to year but not swing wildly (esp. given that utilities are also facing pressure from the RPS), the calculations for advance credits can be based closely on expected reality and the small differences as actual CI scores are reported can be trued up as the credits are paid back. Electric outages that could impact the CI score (if electricity were made on-site from a diesel generator during a prolonged outage for example) would likely be such small occurrences that CI wouldn't be impacted much.
- H2: If a fleet didn't produce their own fuel on-site then they would buy most likely liquid deliveries from a distributor. The CI scores are all over the map for the products I've seen available to date. Potential outages could have a much more significant impact on CI and accounting and are so unpredictable that advance crediting assumptions made 6 years in advance would almost certainly be worthless.
- ELECTRIC: Electric vehicle deployments are much further along than H2 deployments meaning that timeframes to procure vehicles and install infrastructure are better understood, although this was my biggest concern that I told DEQ. In our case, we have had several years of lag-time between committing to purchase electric buses and getting buses on-site and in-service actually reducing emissions. If DEQ does a credit advancement assuming a certain level of emissions-reductions but those vehicles never get deployed (worst case), get deployed significantly later than expected, (very likely) or are deployed at much lower rates of use than expectation (also very likely as the technology is new), then that could hurt the integrity of the program because we would be showing a carbon reduction in terms of credits generated that were not based on an actual reduction of carbon in the atmosphere.
- ELECTRIC: When I have run the numbers of expected credits vs. initial price premium to invest in the vehicles and required infrastructure for LTD, the advanced crediting option doesn't get us super far. It's not enough to pay for the price premium over diesel of even 1 bus + required charging infrastructure for example. That's even with being in SUB territory with a super-low utility-specific CI (which gives us more credits than other parts of the state) and assuming a stable credit price moving forward. That said, it could provide valuable matching funds for a grant process, but alone it is not that helpful on the face of the advance crediting alone. For transit, there are a number of grant programs helping fleets with up-front infrastructure costs to transition to low-no emissions vehicles. I usually see the credits as incentive to bring down the operating costs of new/uncertain technology, but DEQ is wanting something that will incentivize transition to new fuels.
- H2: If the CI score is higher than electricity (at least for our area which is what I know about, which it almost certainly would be) that means fewer credits would be generated per kg dispensed into the fuel tank, and if the costs for implementation of a H2 fleet are higher than electric (which they also undoubtedly would be) then the advanced crediting benefit would

be even less than electric and I can't see that being incredibly helpful in incentivizing decision-making.

From the memo with my answers in red:

Producing hydrogen has a wide range of carbon intensities that are associated with it where there are a limited number of them for electricity.

o What assumptions should DEQ make in calculating advance credits when it is possible to have different sources of hydrogen throughout the timespan of the advance crediting payback period? **This would be very difficult to do and assumptions made up front could be very wrong.**

o Should the agreement with the applicant limit the sources of hydrogen used to those within a specific CI range or below a certain cap? **For the integrity of the program that would make sense, but if you did, that would limit the usability of this benefit for fleets even more than I describe above. If H2 was incredibly abundant and fleet owners had good choice of vendors then this would work but right now a fleet is going to use H2 from wherever they can get it.**

o How would DEQ monitor the CI of the hydrogen used once the advance credits are issued? **This would be difficult and I see it creating headaches for all involved at this stage.**

The timespan for advanced credits for electric vehicles is up to 6 years. In establishing that in rule, DEQ used feedback from potential fleets that the amount of revenue generated by 6 about years' worth of advance credits would be what is needed to influence a fleet's next purchase.

o Given the economics of hydrogen, would advance credits have a similar influence? **No.**

o How many years' worth of advance credits would be needed for hydrogen? **Would depend on who gets the credit and what the rules are about CI. See above about if this would actually be useful.**

The eligible credit generator for electricity is the owner or operator the charging equipment for an electric vehicle, which will often be the same entity applying for advance credits. However, the eligible credit generator for hydrogen is the owner of the hydrogen fuel as it is being dispensed which is not as ideal in the advance credit situation.

o How often will the owner of the hydrogen fuel when it is being dispensed be the same as the owner of the fuel cell vehicle being applied for here? **Very infrequently, especially to start.**

o Is the owner of the fuel when it is being dispensed the correct credit generator for hydrogen, or should the fuel be treated more akin to RNG? **Would need to look up the details of RNG.**

o Does it make sense for the applicant for advance credits for hydrogen to be different than the credit generator? **There are many more players in getting H2 from production to being put into a vehicle so more complexity here.**

o Who would get the advance credits? **Costs are high for fuel production and for fleet ownership so incentives are needed on both the supply and demand side of the equation to make this a reality.**

o Would we need to limit this provision to fuel cell vehicles that would only fill from dedicated dispensing equipment and would not use public hydrogen dispensers?

o In the case of hydrogen produced at central facilities and transported to filling equipment is there a risk that the fuel producer may successfully demand to be the owner as it is being dispensed in order to generate normal CFP credits and that would interfere with paying back

advanced credits? **Yes. This would be very difficult from a reporting phase.**

o Would avoiding this situation require a change to who generates credits for hydrogen as a fuel across the program? **Most likely yes.**

Hope this is helpful! These are just a few of my initial thoughts without too much time to dive into it in depth. Let me know what questions you have about my thoughts. I appreciate the question.

Best,

Kelly Hoell

(Pronounced "Hail")

Pronouns: she, her

Lane Transit District

Sustainability Program Manager

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Contact us at [LTD.org](https://www.ltd.org)



Clean Fuels Program
Department of Environmental Quality
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Portland, OR 97232

February 11, 2022

RE: Clean Fuels Program Expansion - RAC Meeting #2 Comments

DEQ Clean Fuels Program staff,

Thank you for the opportunity to comment following the Department of Environmental Quality (DEQ)'s second Clean Fuels Program Expansion Rulemaking Advisory Committee (RAC) meeting. We submit for your consideration feedback regarding the materials and conversation from the RAC meeting, and to express our continued strong support for expanding the carbon intensity reduction targets to reflect the ambition that science demands and that Oregon deserves. Thank you in advance for your consideration.

Carbon intensity reduction targets

We were very pleased to hear from RAC members across the board—from environmental justice advocates to industry representatives alike—that ambitious reduction targets are supported. RAC members cited reducing greenhouse gasses, business investment certainty, and community benefits as reasons for stronger reduction targets.

This past year, Oregon has unwantingly become the poster child for climate change, making international headlines for our deadly and devastating climate-fueled heat waves, wildfires and drought. The June 2021 heat dome alone killed some 100 Oregonians¹, including several frontline workers; threatened our state's economic recovery by shuttering small businesses and impacting local tourism²; and compounded our ongoing public health crisis by worsening air quality³ and disproportionately affecting environmental justice communities. Oregon has a responsibility to address its share of this global challenge. It is unconscionable to continue putting the lives and livelihoods of our workers, frontline communities, children and grandchildren at risk; DEQ must use every tool at its disposal to immediately cut the fossil fuel emissions that are destabilizing the climate.

Moreover, Oregon's climate tragedies are grim visual evidence of what scientific consensus has long concluded. The August 2021 U.N. Intergovernmental Panel on Climate Change (IPCC) report, described by the U.N. Secretary-General as "Code Red for Humanity," only further underscores the need for urgent

¹<https://www.opb.org/article/2021/08/06/oregon-june-heat-wave-deaths-names-revealed-medical-examiner/#:~:text=The%20heatwave%20led%20to%20more,occurring%20in%20the%20Portland%20area.&text=Shandas%20said%20it's%20rare%20%2D%20and,on%20mortality%20during%20a%20heatwave.>

²<https://www.kgw.com/article/news/local/max-lines-businesses-close-due-to-excessive-heat/283-094c46c6-5b2e-4836-9e04-46b6ba6f593d>

³ <https://www.oregon.gov/newsroom/pages/NewsDetail.aspx?newsid=64009>

action by decision-makers in Oregon to significantly and immediately cut fossil fuel emissions. The report warns that we are perilously close to exceeding the internationally agreed-upon threshold of limiting global temperature rise to 1.5°C. Oregon is already experiencing devastating extreme heatwaves, wildfires, and droughts at 1.2°C of warming, and **our state's current transportation emissions levels are contributing to these deadly, harmful and expensive climate impacts, which disproportionately harm communities of color, tribal, rural, low-income, and other frontline communities and have taken a tremendous toll on Oregon's overall economy.**

We are in the decisive decade for climate action. DEQ's Clean Fuels Program Expansion provides a crucial opportunity to achieve significant emissions reductions from Oregon's top polluting sector: transportation. By establishing a strong carbon intensity target for the program, DEQ will help create jobs in the clean fuels economy, improve public health by reducing harmful co-pollutants from tailpipe emissions, and invest in local communities and economies. The carbon intensity reduction targets are essential to the overall ambition of the Clean Fuels Program and moving the needle on climate emissions and co-pollutant reductions in the transportation sector.

We urge DEQ to maximize benefits under the Clean Fuels Program by establishing carbon intensity reduction targets that help ensure Oregon achieves science-based emissions reductions of at least 50% by 2030 and at least 90% by 2050. These economy-wide targets are in line with deep decarbonization studies and the Biden administration's target of reducing U.S. greenhouse gas emissions 50-52% by 2030,⁴ and are necessary to fulfilling Oregon's responsibility to meeting global greenhouse gas reduction goals. In addition, DEQ's recently-adopted Climate Protection Program establishes a mandatory cap decline for transportation fuels, requiring 50% reductions from a baseline of 2017-2019 emissions by 2035, and 90% by 2050. An ambitious Clean Fuels Standard is complementary and supportive of achieving these mandatory emissions reductions from the transportation sector.

Of the scenarios modeled in ICF's illustrative compliance scenarios, **Scenario C, which includes a 20% carbon intensity reduction by 2030 and a 37% CI reduction by 2035, is most in-line with the necessary ambition to achieve these science-based goals.**

Fuel pathway considerations

While an ambitious carbon intensity reduction target serves as the backbone of the Clean Fuels Standard, we also urge DEQ to be thoughtful about the potential fuel pathways that could achieve these targets. Specifically, while ICF modeling of Scenario C indicates excessive growth in Natural Gas and Renewable Natural Gas fuel consumption, it is important to note that increased carbon intensity targets do not guarantee any given fuel pathway, and could be achievable through means other than higher use of RNG. **Moreover, to maximize climate emissions reductions, health benefits, and cost-effectiveness, carbon intensity targets can and should be achieved through electrification as much as possible. As the modeling shows, strong electrification, especially of medium- and heavy-duty engines, creates a virtuous cycle: there is a crossover point where higher levels of electrification reduces the amount**

⁴ <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>

of diesel/gasoline used such that deficits actually start to decline while credits continue being generated.

Likewise, in order to maximize emissions reductions and co-benefits under this program, it is critical to ensure that—as the Clean Fuels Standard gets stronger—early investments in the program do not result in perverse long-term consequences. We therefore urge DEQ to be cautious not to reward early emissions reductions that may not achieve meaningful carbon intensity reductions in the future. For instance, paper transactions for emissions reductions that may actually result in a buildout of fossil infrastructure without real net emissions reductions in Oregon. There may be a lot of competition for RNG throughout the economy, and transportation may not be the highest and best use for these limited molecules.

Advanced crediting for hydrogen

Lastly, we understand that some RAC members—namely those interested in promoting hydrogen—have requested that DEQ make advanced crediting available for hydrogen fueling equipment. As DEQ noted in its RAC meeting #2 memo, producing hydrogen has a wide range of carbon intensities associated with it.⁵ Specifically, hydrogen’s carbon intensity ranges between 13 and 205 (a deficit generator) and EERs ranging between 1.9 - 2.5, depending on how the fuel was produced.

Given the varied nature of carbon intensities for hydrogen, we urge DEQ to use caution in considering advanced crediting for this fuel. In general, we would discourage allowing advanced crediting for fuels that do not come from a 100% clean energy source. While our organizations supported advanced crediting for battery electric charging in DEQ’s 2021 transportation electrification rulemaking, this was with the understanding that Oregon’s electricity grid would soon be on its way to transitioning to 100% clean, zero-emitting energy sources (as mandated by the legislature in HB 2021). At the very least, given the varying carbon intensities of hydrogen, we would urge any conversation around advanced crediting to include a CI threshold based on lifecycle emissions. Moreover, we urge DEQ to consider potential unintended consequences of advanced crediting for hydrogen that could result in expanded fossil fuel infrastructure without tangible assurances that 100% renewable hydrogen will come into the market.

Electronic tracking for RNG

Our organizations support DEQ’s proposal to require an electronic tracking system for renewable natural gas claims. If DEQ chooses to move forward with this option, we urge the agency to choose a system and standards that are robust and can accurately capture and track renewable natural gas production, injection, and the retirement of environmental attributes. A strong system will avoid double-counting.

Thank you for your consideration, and we look forward to continuing to work with you to ensure a healthy future and a stable climate for all Oregonians through the establishment of an ambitious Clean Fuels Program.

Sincerely,

⁵ <https://www.oregon.gov/deq/rulemaking/Documents/cfp2022m2memo.pdf>

Clean Fuels Program Expansion - RAC Meeting #2 Comments

Jana Gastellum
Deputy Director for Programs
Oregon Environmental Council

Jeremy Martin
Director of Fuels Policy, Sr. Scientist
Union of Concerned Scientists

Victoria Paykar
Oregon Transportation Policy Manager
Climate Solutions



February 16, 2022

Ms. Cory Ann Wind
Oregon Department of Environmental Quality
700 NE Multnomah Street
Portland, OR 97232-4100
Submitted Via Email: CFP.2022@deq.oregon.gov

RE: Clean Fuels RAC Target Setting Comments

Dear Ms. Wind:

Thank you for the opportunity to comment on the “target setting” agenda item from the Rules Advisory Committee meeting #2.

Without question, the Oregon Fuels Association (OFA) has been critical to the success of Oregon’s Clean Fuels Program. That success has been instrumental in attracting significant capital investment and provided an opportunity for nearly every Oregonian participate in greenhouse gas reduction. Moreover, adoption of this program by locally-owned businesses has helped the program achieve new levels of political and community support.

As we look forward, we believe the state needs to proceed pragmatically and avoid unnecessarily tying this program to unrealistic targets. Executive Order 20-04 calls for the Department of Environmental Quality to increase the Clean Fuels Program targets from a 10% reduction in carbon intensity in 2025 to a 25% reduction in 2035. This would more than double the current program targets. Moreover, this proposed change would happen in less than 10-years after the adoption of the program.

Reasonable and achievable targets are important for a number of reasons. First, the public and regulated community need to have confidence that targets can be met in cost effective way. Without that level of confidence, the policy will not stand up to public and political scrutiny and will not attract the necessary investments to achieve those goals. Or put another way, if the regulated community, their customers, and Oregonians generally do not believe that a program will work they will ask that it go away or be replaced by something else. Likewise, if investors are concerned that the program will be unable to meet its objectives or fall under attack, they will not invest.

Second, as we are experiencing in this rulemaking, these targets can and will change so long as they are achievable. There is nothing that would prevent DEQ to adjust a 25% goal in 2030 if, as advocates suggest, it appears Oregon fuel supply can reasonably meet that target. It is worth noting that many OFA members remain apprehensive about meeting the current 10% reduction target. For some businesses, achieving the existing targets will be a challenge and the idea of moving regulations to a 25% reduction requirement will come with considerable cost. Despite what some might suggest, 25% remains very aggressive.

Third, costs of achieving anything above 10% are not well understood. It's important that we keep costs of compliance in mind for all Oregonians, regardless of where they live or how much they make. It is appropriate to make sure that regulations do not outpace the ability for Oregonians to pay for those regulations, particularly low-income individuals. After all, these costs will be borne by fuel customers. Increasing the target from 10-25% will ultimately increase the price of fuel, furthering the divide of energy inequality in Oregon.

And fourth, the recently adopted Climate Protection Program has been styled a "back stop" to existing regulatory programs like the Clean Fuels Program. As such, there is no environmental reason to push the targets beyond a 25% reduction. If the CFP fails to achieve the GHG reductions envisioned by some RAC participants, the CPP will.

We remain hopeful that alternative fuels, blended or otherwise, can help us meet that aggressive 2035 goal. But there remains significant uncertainty in the types, quantities, and equitable availability of alternative fuels, as well as the technology adoption by drivers, and the ability for future drivers to pay for transportation.

As one of the few regulated entities represented in the RAC, we ask that DEQ avoid creating an aggressive and unnecessary target and instead allow our local businesses to first achieve the 10% target before considering changes to the program.

Sincerely,

Mike Freese
Oregon Fuels Association
RAC Member



February 11, 2022

VIA EMAIL

Cory Ann Wind
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, OR 97232-4100

RE: Renewable Hydrogen Alliance Comments – 2nd Clean Fuels Program RAC Meeting

The Renewable Hydrogen Alliance (RHA) appreciates the opportunity to serve on the Rules Advisory Committee for the Department of Environmental Quality's Clean Fuels Program (CFP) expansion. Please find below our comments and thoughts on the information presented at the second RAC meeting on January 26, 2022, specifically with regard to the proposed Advance Credits for Hydrogen.

RHA appreciates DEQ's willingness to consider extending Advance Credits to hydrogen. Please see our responses to the questions provided. Note that RHA did not receive input from our members on every question so only those questions that received responses are included below.

Discussion: Adapting the advance crediting provision for hydrogen vehicles or fueling equipment poses a few challenges that need to be considered including:

- Producing hydrogen has a wide range of carbon intensities that are associated with it where there are a limited number of them for electricity.
 - What assumptions should DEQ make in calculating advance credits when it is possible to have different sources of hydrogen throughout the timespan of the advance crediting payback period?

Response: It may be easier to focus on the method of production rather than the source (if by "source", DEQ means feedstock). It will be easier to differentiate among and track carbon intensities of hydrogen produced via electrolysis by identifying either the utility mix of generation or in the case of hydrogen coming from Washington, the annual utility fuel mix report.

DEQ could use reported CI and estimated credits for an initial period of time (maybe 3 years) and then have the owner report out, and then provide the owner with a mechanism to true-up at that time if they are short.

- Should the agreement with the applicant limit the sources of hydrogen used to those within a specific CI range or below a certain cap?

Response: It is too complicated to have a range of CI for hydrogen and then base credits on the range. Instead, we would propose that the CI has to be below a certain threshold (like 2kgCO₂/kgH₂) and/or follow the federal DOE/EPA standard that is set to be published Spring 2022, and then monitored.

- How would DEQ monitor the CI of the hydrogen used once the advance credits are issued?

Response: Affidavit (like what is done today) along with random or mandatory audits depending on resources.

- The timespan for advanced credits for electric vehicles is up to 6 years. In establishing that in rule, DEQ used feedback from potential fleets that the amount of revenue generated by about 6 years' worth of advance credits would be what is needed to influence a fleet's next purchase.

Response: We understand the difficulty where EV fuel credits go to vehicle owner and therefore makes sense to front load 6 years' worth; whereas, if credits are separate from the fuel the "upfront loan" concept does not work.

- Given the economics of hydrogen, would advance credits have a similar influence?

Response: Yes. The number of years is highly dependent on CI and the cost of the vehicles.

- How many years' worth of advance credits would be needed for hydrogen?

Response: Depends on the CI and cost of the vehicles, and the amount of fuel used. RHA will try to get our member Toyota to provide additional information as they have better data around the value proposition for customers.

- The eligible credit generator for electricity is the owner or operator the charging equipment for an electric vehicle, which will often be the same entity applying for advance credits. However, the eligible credit generator for hydrogen is the owner of the hydrogen fuel as it is being dispensed which is not as ideal in the advance credit situation.

Response: Seems easiest to give the owner of the vehicle the credits even if they are not the fuel owner, but has to be low CI H₂ from dedicated filling station. Then can use the advanced credits concept like with BEVs. Fuel producer can sell the hydrogen and the buyer of the fuel (owner of the vehicles) gets their discount on the backend separate from the fuel provider.

- How often will the owner of the hydrogen fuel when it is being dispensed be the same as the owner of the fuel cell vehicle being applied for here?

Response: The hydrogen fuel dispensing owner will likely **not** be the vehicle owner. But it is highly dependent on the fleet and the fueling infrastructure cost sharing arrangement. Not really an issue.

- Is the owner of the fuel when it is being dispensed the correct credit generator for hydrogen, or should the fuel be treated more akin to RNG?

Response: It should be treated like RNG – whoever owns the fueling dispenser owns the credit. This credit and its value can be shared between parties just like it is today.

- Does it make sense for the applicant for advance credits for hydrogen to be different than the credit generator?

Response: No. We would suggest keeping all credit value with one party that is shared with others through bilateral agreements.

- Who would get the advance credits?

Response: Whoever owns the dispensing equipment, just like RNG today.

- Would we need to limit this provision to fuel cell vehicles that would only fill from dedicated dispensing equipment and would not use public hydrogen dispensers?

Response: No. If the credit stays with the dispenser, it doesn't matter who is using the equipment. If a fleet has a usage agreement with the fueling infrastructure owner, then the economics of this are pre-determined. The owner of the equipment can choose to share the value with public users through the price of fuel.

- In the case of hydrogen produced at central facilities and transported to filling equipment, is there a risk that the fuel producer may successfully demand to be the owner as it is being dispensed in order to generate normal CFP credits and that would interfere with paying back advanced credits?

Response: Not really. This is the case today with RNG. The value of the credits is shared along the fueling chain, from producer to refueler to the off taker.

- Would avoiding this situation require a change to who generates credits for hydrogen as a fuel across the program?

Response: Yes – recommend leaving as-is.

Thank you for the continued opportunity to provide feedback on the CFP expansion rulemaking process and topics. RHA looks forward to working with DEQ and key stakeholders through this rulemaking process.

Please do not hesitate to reach out to me if you have any questions or need additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read "Michelle Detwiler", is placed on a light blue rectangular background.

Michelle Detwiler
Executive Director

February 11, 2022

Oregon Department of Environmental Quality (DEQ)
Oregon Clean Fuels Program (CFP)

Re: Comments on Clean Fuels Program January 26, 2022 workshop on Target Setting

Dear CFP Team:

Thank you for this opportunity to comment on the materials and discussion related to the Clean Fuels Program 2035 targets and illustrative scenario modeling supporting the target-setting effort. Please find several comments below. For clarifications or questions, please contact Julie Witcover at jwitcover@ucdavis.edu.

Sincerely,

Julie Witcover, Ph.D.

Assistant Project Scientist, Policy Institute for Energy, Environment, and the Economy
University of California, Davis, California, USA

-
- *High CI reduction target scenario.* Having a scenario that goes beyond the EO target of 25% CI reduction aligns with the direction of Oregon's state goals announced since the EO. This "high CI reduction" scenario combines carbon-lowering impacts of fuel mixes in other scenarios, namely the achievement of stronger EV targets, and substantially more renewable diesel (RD). The approach of relying on RD to meet compliance reflects the role the fuel is filling now, especially in California.
 - While it doesn't impact principal takeaways from the study, actual fuel mix for a higher target may well draw from a broader diversity of sources.
 - At the same time, DEQ should be mindful of over-reliance on the ability to meet ambitious EV goals in CFP target-setting, given the number and heterogeneity of consumers that need to transition to EVs. If the state should fall short of EV goals, more RD would potentially be required to meet a given CFP target. A strong draw on lipid-based RD, absent new sources of (scaleable) feedstock that do not have land use consequences, can increase the risk of unaccounted for but substantial indirect impacts, including GHG emissions.

 - *RD growth.* The discussion during the meeting about the impact that incentives for RD could have on food prices and other indirect effects flags a serious concern, especially under higher targets if lipid-based RD does, indeed, become the workhorse of



compliance. For more on this, and the recent move toward parity in price of soy oil with soybean meal, up from historical levels, see, e.g.,

<https://www.agriculture.com/news/business/renewable-diesel-boom-is-wild-card-for-us-soybeans>.

- If persistent, this price relationship would suggest more potential for indirect impacts from use of soy -- both on land use conversion and food prices -- than in the modeling used to date.
 - Care should be taken with the tightening of targets unless other measures to safeguard against this potential are taken. Additional research and policy development are needed to design such safeguards.
-
- *Longer term goals.* Additional discussion on how to incentivize both incremental reductions in existing fuels and innovation for ones not yet commercially available, either within the CFP or in conjunction with other policies, is warranted, although likely needs to occur with other partners, including beyond the state. Experience to date suggests that the incentive from the CFP (or programs like it), by itself, does incentivize the incremental reductions, and helps cover costs for market-ready fuels that are much lower in carbon (e.g., very low carbon liquid biofuels), but may not be sufficient to drive their innovation.



Jim Verburg
Senior Manager, Fuels

February 11, 2022

Sent via e-mail to: CFP.2022@deq.state.or.us

Ms. Cory-Ann Wind
Oregon Clean Fuels Program Manager
Oregon Department of Environmental Quality
700 NE Multnomah Street
Portland, OR 97232-4100

Re: WSPA Comments regarding DEQ Clean Fuels RAC Meeting #2

Dear Cory-Ann:

Western States Petroleum Association (WSPA) appreciates the opportunity to provide the Oregon Department of Environmental Quality (DEQ) with our feedback from the Clean Fuels Program (CFP) Rulemaking Advisory Committee (RAC) Meeting #2, held on January 26, 2022. WSPA is a non-profit trade association that represents companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas, and other energy supplies in Oregon and four other western states.

Carbon Intensity Standards (Slides 10-12)

WSPA recommends that DEQ does not adopt carbon intensity (CI) standards more stringent than the standards established by the Governor Executive Order for 2030 and 2035, as these standards are already very aggressive. WSPA further recommends that DEQ does not increase the stringency of the existing standards through 2025. These WSPA recommendations are intended to allow a smooth transition for low carbon fuel supply growth and to provide time for the infrastructure in Oregon to be transformed to distribute the new low carbon fuels and in order to minimize fuel supply disruptions.

Additional Documentation for Credit Transfers (Slide 25)

Regulated entities should not be required to provide a complete copy of the credit transfer contracts to DEQ. Date of transfer, price and number of credits should be sufficient information for DEQ to monitor the credit price market. In addition, WSPA requests that the DEQ includes in the credit transfer documentation protocol the ability of entities to select the type of transfer (i.e., Type 1 – delivery takes place no more than 10 days of agreement, Type 2 - delivery takes place more than 10 days of agreement).. This documentation approach is utilized in the California LCFS Reporting Tool (LTR).

Additional Credit Generation (Slides 29-31)

WSPA supports that credits that were generated under a temporary fuel pathway be tried up once a provisional fuel pathway is approved. This mechanism would not be an incentive to delay fuel pathway applications. To the contrary, it will enable DEQ to process the fuel pathways more effectively by providing DEQ more flexibility to review a pathway application, without being bound by end of quarter deadlines, in the event that DEQ needs more time to finalize its review.

WSPA also supports those credits generated under a provisional fuel pathway be tried up once an

operational fuel pathway is approved. This would enable proper crediting when operational progress is made toward lowering the carbon intensity of a fuel pathway. In order to limit adjustments for very small changes to the CI value, DEQ could set a threshold (i.e., a reduction of 1 gCO₂e/MJ or a percentage reduction of the original CI value) to qualify for the credit adjustments. The fuel pathway holder should be the entity receiving the credit adjustments.

Advance Crediting (Slide 33)

As documented in a previous WSPA comment letter (dated November 13, 2020) regarding the proposed advanced crediting provision of the CFP Electricity rulemakingⁱ, WSPA continues to believe that the concept of advance crediting is an unnecessary program element since there is already an accepted mechanism for program review in case of a credit shortfall. Accounting for the “delayed” emission reductions from advance crediting could increase the complexity of the CFP and could expose the program to a potential double-counting of emission reductions.

If DEQ does intend on providing provisions for advance crediting in this rulemaking, WSPA believes that the program should be open to all entities. In addition, advance crediting should allow for all low carbon fuel pathways (including liquid fuels) to qualify for an advance crediting provision to keep the program fuel neutral.

WSPA appreciates the opportunity to provided comments on this important proposed regulation. If you have any questions regarding this submittal, please contact me.

Sincerely,



James Verburg

Sr. Manager, Fuels



ⁱ Western States Petroleum Association, “Comments on Oregon Clean Fuels Program Electricity Rulemaking: Proposed Advanced Crediting Provision”, submitted to the Oregon Department of Environmental Quality, November 13, 2020.