June 28, 2022 Meeting
Clean Fuel Standard: Agriculture and Forestland Carbon Capture & Sequestration Advisory Panel (AF-CCSAP)

MEETING SUMMARY

PARTICIPANTS

Advisory Panel Members:

- Abbey Brown, Washington Dept. of Ecology
- Amanda Parrish, Lands Council of Spokane
- Dr. Chris Covert-Bowlds, Washington Physicians for Social Responsibility
- Dryw Jones, USDA Forest Service
- John Henrikson, Wild Thyme Tree Farm
- Julius Pasay, The Climate Trust
- Kent Hartwig, Renewable Energy Group
- Mary Catherine (MC) McAleer, Weyerhaeuser
- Max Dubuisson, Indigo Agriculture
- Paul Buckland, Inland Empire Paper Company

Other Participants:

- Department of Ecology: Debebe Dererie, Janee Zakoren

Observer:

- Chris Anderson, Renewable Energy Group (Observer)

Facilitation Team:

- Ross Strategic: Susan Hayman, Heather Christopher

Opening

Abbey Brown (Ecology) welcomed Advisory Panel members and provided an overview of the meeting agenda and objectives. Abbey noted that Ecology will soon be bringing in a new member on their team. Rebecca Spears, who will join the next panel meeting, will serve as the project manager and partnership specialist and will be working closely with this panel.

Susan Hayman, Facilitator, reviewed the agreements and ground rules for the meeting.

Extended Introductions

Susan introduced a new panel member, Dr. Chris Covert-Bowlds with Washington Physicians for Social Responsibility. Susan then walked participants through the Informal Networking session where panel members were organized into three 6-minute rounds of breakout sessions. In each breakout session, panel members were asked to share what they are hoping to give to and get from this Advisory Panel process.

Level Setting—Create shared understanding of key terms and processes relevant to this panel

In this session, Abbey Brown and Debebe Dererie provided a deeper dive into key terms and processes this panel will discuss, including how Clean Fuel Standards work and defining Life Cycle Assessment and how it relates to carbon sequestration on forest and farmlands. Presentation slides may be viewed in the full meeting slide deck.

The Clean Fuel Standard from the Ground Up—*Abbey Brown, Ecology*

The Clean Fuel Standard (CFS) sets Washington State on a trajectory to reduce the carbon intensity of transportation fuels 20% below 2017 levels by 2038. The program does this by setting a cap on the allowable carbon intensity of fuels for a year. Fuels with a carbon intensity above the standard incur deficits and fuels with a carbon intensity below the standard earn credits. At the end of each compliance period, which is a calendar year, deficit holders must purchase enough credits to meet the standard and come into compliance. This market system provides a financial incentive for low carbon fuels, with the intent to both expand adoption of low carbon fuels and make them more affordable.

The key piece of the program is carbon intensity, which is the quantity of greenhouse gas emissions (GHG) per unit of fuel energy emitted over the life cycle of a fuel. It's measured in grams of carbon dioxide equivalent per megajoule (gCO2e/MJ). The carbon intensity of fuels is measured over the full life cycle of the fuel, not just tailpipe emissions at the vehicle, so that it fully captures the GHG impact of producing a fuel in Washington. The life cycle includes production, refining, processing, distribution, and the ultimate fueling of the vehicle.

The greenhouse gases that the Ecology team is most concerned about are carbon dioxide, methane, and nitrous oxide. While methane and nitrous oxide have higher global warming potentials, carbon dioxide is the most prevalent greenhouse gas and therefore has the greatest impact. Once carbon dioxide is in the atmosphere, there are two ways to sequester it: geologic and biologic sequestration. Geologic sequestration is the process of storing carbon dioxide in the earth, usually by pressurization into a liquid and then injecting the liquid into geologic basins. Biologic sequestration, which is the storage of carbon in vegetation soils, woody products, and aquatic environments, will be the focus of this panel.

Carbon sequestration can be accounted for in a couple of different ways, including the life cycle analysis of fuels and book and claim accounting. Book and claim accounting allows an entity to account for environmental benefits not directly linked to the low carbon fuel pathway. Because Ecology wants credits to be allocated to actions taken to directly lower the carbon intensity of fuels, Ecology will only consider using book and claim accounting for certain parts of the CFS under very specific parameters.

Q&A and Discussion

Are any other jurisdictions already looking at this?

> Not to Ecology's knowledge. And if they are, they are looking at geologic sequestration and not the biologic form of sequestration.

Will there be mechanisms to incentivize increasing sequestration, and not just recognize/credit what is already happening?

> Ecology's goal is both to offer the opportunity to generate credits for existing practices but hopes that the opportunity to generate credits will serve as further financial incentive for expanding practices that sequester carbon.

Life Cycle Assessment and Carbon Capture and Sequestration related to Agricultural and Forestry Practices—*Debebe Dererie, Ecology*

Life Cycle Assessment (LCA) is a methodology for assessing the environmental impacts associated with the entire life cycle of a particular product or process. LCA includes the extraction, production, transportation, manufacturing, distribution, and consumption of a material. LCA's can vary in scope, including when a material is considered at the end of its life after consumption (cradle-to-grave), or can include how materials are recycled or disposed of after its use (cradle-to-cradle). The key benefit of using an LCA is that it captures all impacts and avoids shifting the burden to other aspects of the system.

The first step of an LCA is to define the goals and scope, including choosing appropriate methodologies and data sources. The second step of an LCA is to conduct a life cycle inventory analysis, which considers all the inputs and outputs of the system. The third step is to identify environmental impact categories – the work of this panel will fall under the climate change impact category. The final step is the interpretation of the LCA, which is what the Clean Fuels Program will use to assign credits.

The two types of LCA are Attributional, which assesses the total environmental burden that can be attributed to a particular product, and Consequential, which considers a total change in environmental burden that may occur due to the product's existence under different scenarios adopted. Washington accounts for a carbon intensity of a fuel using the WA-GREET tool. The carbon intensity of a fuel is calculated by the life cycle GHG emissions per energy of the fuel. The Energy Economy Ratio (EER) is the dimensionless value that represents the efficiency of a fuel as used in a powertrain as compared to a reference fuel, which is typically gasoline or diesel.

The life cycle of biofuels will lead to changes in land use, but there is debate around the actual land use change associated with different products. For example, California and Oregon have different calculations for the land use change emissions associated with corn ethanol. As Ecology develops its rulemaking, it will be important to consider what practices can be used that reduce GHG emissions associated with land use impacts.

Debebe walked through examples from California of carbon intensity calculations of various fuels, including corn ethanol, biodiesel from cooking oil, landfill gas, and electricity. Debebe highlighted the challenges associated with these calculations, including uncertainty around data and methodologies used in life cycle assessments.

Q&A and Discussion

It's important to include ongoing emissions from abandoned coal/oil/gas wells/refineries/facilities. What cleanup/mitigation is required currently?

> This would be considered indirectly, because electricity is being used as part of the fuel generation process. If this electricity comes from coal, it will be included in the LCA. In that regard, it is part of the scope. If coal is used, then the carbon intensity of that fuel is higher.

Does consequential life cycle assessment include the displacement of a higher carbon intensity fuel with lower carbon intensity fuel?

> Yes, the consequential LCA takes into consideration this displacement effect. Generally, LCA is a comparative tool, so you need a baseline to compare it to. When we quantify consequential LCA impacts, we compare it with baseline fuel.

If you compare two scenarios, one where a farmer growing biofuel stocks adds biochar to their soil, and another where a farmer growing food crops is paid by a fuel producer to add biochar to their soil, how do we account for the carbon sequestration benefits of the adding biochar in both cases?

> The rule is currently not written to address these scenarios, but it will be important do demonstrate whether these soil amendments will lead to permanence in terms of the amount of carbon sequestered. These scenarios are exactly what this panel needs to think about – which scenarios are eligible, and which are not. Ecology doesn't need a firm answer on this yet because they are still writing the rules, but Ecology is hoping this panel can advise in this area.

How is displacement of a higher carbon intensity fuel with lower carbon intensity fuel quantified?

> The graph on Slide 13 shows a graph of the Clean Fuel Standard. If a fuel has a carbon intensity under this graph, it receives a credit. The larger the gap between a fuel and the standard, the larger the credit. If a fuel is above this graph, it has deficits. To clear their deficits, the fuel producer needs to by credits from fuel suppliers of lower carbon fuel. Displacement is determined once a standard is in place.

Advisory Panel Workplan

Susan reminded panel members of the collaborative work done at the first meeting to develop the Advisory Panel Workplan, using an interactive Mural Board (see image below). At the May 19th meeting, participants were asked to brainstorm ideas for what topics this panel should explore in the next several

months, identify framing questions for each of those topics, and identify information and resources that might be needed to answer those questions (see summary of Meeting #1 for more details).

For this meeting's mural exercise, panel members were invited to share ideas on framing questions for a synthesized set of topics, identify information needed to answer those questions, and suggest whether this conversation should happen at the August, September, or October panel meeting.

Panel members generated many framing questions to explore. After some discussion, members identified the following framing questions for each topic area. Potential meeting topics identified by members for August, September, and October are noted.

Common vocabulary

- What are the acronyms, abbreviations, and definitions needed to create a shared understanding of carbon capture and sequestration on farm and forestland?

Clean fuels 101

- Overview of lifecycle assessment, what they include or not "Lifecycle 101"
- What are the landscapes and related activities/feedstock we are talking about?
- "Carbon Markets 101 for Clean Fuel Standards" (including quantification and crediting mechanisms)
- 101: CFS, Markets, LCA, wells-to-wheels
- What are the boundaries of an LCA for biofuels? What is the starting point and ending point?
- What is the current state of knowledge in LCA of carbon reduction in agriculture and forestry
- How does CFS crediting work?

Clean Fuel Standard and offsets (August)

- Should carbon benefits be considered only at production sites (e.g., farmland)?
- Should carbon equivalents be used to define carbon benefits?
- Identifying boundaries of carbon offsets associated with transportation fuel production
- The carbon offset markets are an established and strong working community of natural/working lands carbon accounting professionals. Calculating sequestration for this program can rely on work that is already done or started there.
- How do carbon offsets connect to the CFS? (different from CFS credits)

Mechanisms to incentives best practices (September)

- How do we coordinate with and educate small-scale forest and farm landowners to help reduce barriers to participation?
- What incentives will support farmers and forest landowners' economic viability climate goals, such as sequestration, better water use, and clean energy?
- How do you measure mechanisms/incentives are working as planned?

Other state and federal programs/efforts

- How does DNR's carbon sequestration efforts relate to Ecology's?
- How do we connect with federal Climate Smart Agriculture and Forestry initiatives?
- Federal Renewable Fuel Standard (RFS)

Environmental justice

- What are the kinds of impacts from carbon sequestration activities on environmental justice and overburdened communities?
- How can our work bring an equity and environmental justice lens, and target benefits to overburdened communities?
- Can we work with, and benefit overburdened communities including farmworkers? What about unions e.g., representing timber industry workers?

Financial/energy costs (October)

- Examining financial and energy cost of converting biomass to biofuels compared to extracting and refining petroleum
- Economics? Market Tensions?
- Are these practices enough to "move the needle?"

Identifying agricultural and forestry practices with potential for carbon sequestration benefits (Aug/Sept)

- What are the potential life cycle stages for carbon reduction in agriculture and forestry?
- Identify existing practices that have measurable GHG benefits
- Standards/best practices?
- Consider combining this topic with "Technical Issues" below
- Identify metrics for success: maximizing long-term site potential for carbon sequestration and optimizing carbon sequestration in economically useful products
- Identify pathways for carbon sequestration in forestry: improved forest management, afforestation, extended rotation, developing old-growth characteristics

Materials sourcing

- How to address long term sourcing of materials for bioenergy projects/markets?

Technical issues in quantifying carbon sequestration benefits of farming and forestry practices (August)

- Addressing requirements (or not) for additionality/causality
- Questions about additionality of practices (e.g., where does hydropower come into play for electricity production, if we can decrease irrigation usage by farms)
- If the Clean Fuel Standard causes land use change (i.e., more corn production) how will we account for the loss of forestland and associated carbon in that fuel? (termed leakage in the carbon offset space)

- At what scale will we measure carbon impacts in the production of biofuels? Stand/field level? Landscape level?
- Determine criteria to measure conversion (e.g., acres? carbon sequestered by land use type?)
- Clarifying the definition and mechanisms for ensuring permanence, and at what scale (field/plot vs project vs region)
- Book and claim for methane digesters (RNG) for biofuel inputs

Health impacts (October)

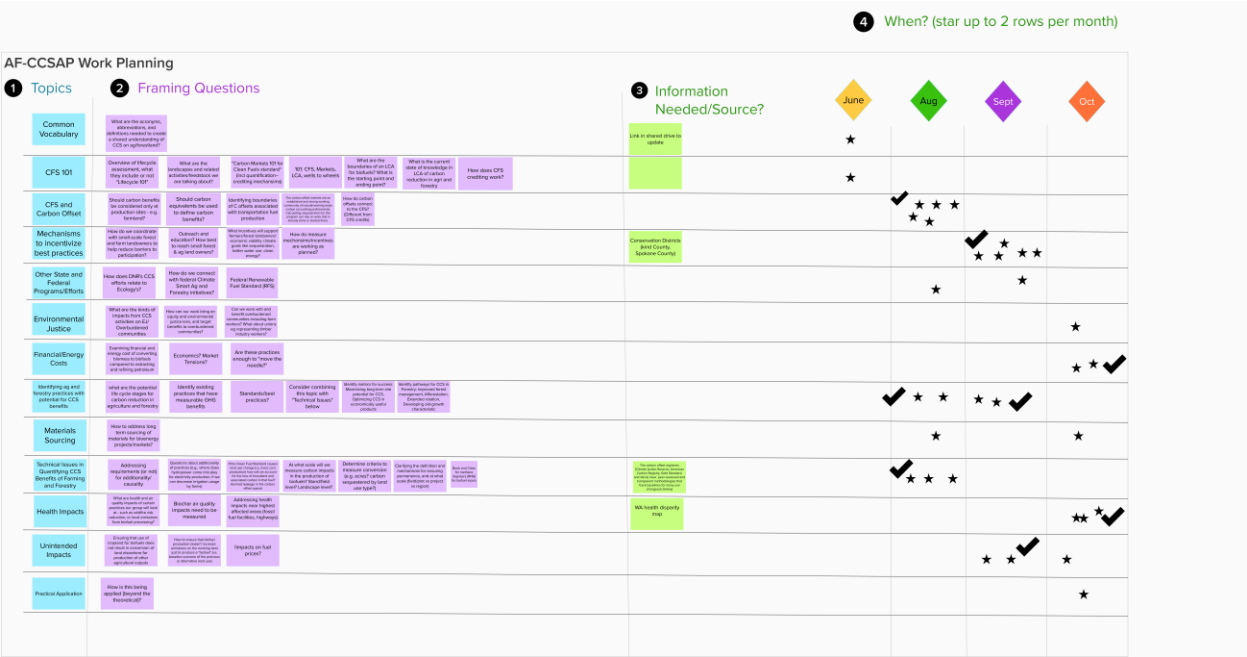
- What are health and air quality impacts of certain practices our group will look at, such as wildfire risk reduction, or local emissions from biofuel processing?
- Biochar air quality impacts need to be measured
- Addressing health impacts near highest affected areas (fossil fuel facilities, highways)

Unintended impacts (Sept)

- Ensuring that use of cropland for biofuels does not result in conversion of land elsewhere for production of other agricultural outputs
- How to ensure that biofuel production doesn't increase emissions on the working land just to produce a "biofuel" (i.e., baseline scenario of the previous or alternative land use)
- Impacts on fuel prices?

Practical application

- How is this being applied (beyond the theoretical)?



The facilitation team will use the information collected as a basis for the draft August agenda, which will be shared with the panel prior to finalizing. Panel members will be invited to make further additions and refinements for subsequent work planning.

Closing

The next Advisory Panel meeting will be August 31st, from 9am-12pm Pacific. Ecology will post the June presentation slides and the meeting recording on the AF-CCSAP webpage by July 1st. A draft meeting summary will be distributed to panel members for review by July 11th, and Ecology requests that comments be submitted to the facilitation team by July 18th. A final meeting summary will be posted on the AF-CCSAP webpage by July 22nd.

Ecology thanked members for their participation and contributions. Ecology also shared the team's contact information and encouraged panel members to email the team with any ideas, suggestions, or questions that arise before the next panel meeting.