March 2, 2023

Chair Sollman and members of the committee
Senate Committee on Energy and the Environment
Oregon State Capitol
900 Court St. NE
Salem, Oregon 97301

I am a consultant and retired UC Berkeley researcher who worked with the California Air Resources Board for many years on calculations of biofuel carbon intensity (CI) for the state's Low Carbon Fuel Standard (LCFS). I am currently a consultant to EPA's Office of Transportation and Air Quality (OTAQ) responsible for modeling uncertainty in calculations of biofuel carbon intensity. I have published widely on this topic in academic journals and was a contributor to the IPCC's Fifth Assessment Report's chapters on transportation and bioenergy.

The fundamental problem with regulations like California's LCFS and Oregon's Clean Fuel Program (CFP) is that CI is not actually a property of a fuel, as are quantities such as density, and chemical composition. CI is unobservable and therefore unmeasurable; it must be modeled by assembling large amounts of data, much of which are not available and must be estimated. Moreover, there are different methods of life cycle assessment (LCA) that use very different methods and thus estimate different things.

The CI estimated by a model like GREET (used in the LCFS and CFP) represents emissions along a supply chain using an approach that does not attempt to estimate the greenhouse gas mitigation achieved by using a fuel. My colleagues and I explain why in a peer-reviewed paper (1) published in 2014. In a 2017 paper (2), we explain why policies based on these methods may not mitigate climate change.

In the fuel regulations in both California and Oregon, results from the GREET model are combined with estimates of emissions related to land-use change using an economic model (GTAP-BIO) that itself has severe limitations, as described in papers I co-authored with colleagues from EPA/OTAQ and Pacific Northwest National Lab (3) and others (4).

The bottom line is that estimates of fuel carbon intensity are highly subjective, based on factors such as one's choice of models and the parameter values to use in the chosen models. For example, one model I work with estimates that increasing the use of soybean biodiesel results in additional global warming. Other models (such as GREET combined with GTAP-BIO) suggest it mitigates global warming. CI is therefore dependent on which modeling system is chosen. There is no best model; all have many limitations. Within any chosen modeling system, results are very uncertain since many parameter values are uncertain and virtually all models exclude or over-simplify important factors influencing climate change.

Regulations based on fuel CI presume that these estimates are more accurate than the are. Claims about the emissions avoided by the LCFS and CFP are based on the assumptions that the models are accurate and that biofuels perfectly replace (rather than merely displace) fossil fuels. These claims are not based on serious analysis. In fact, no one can say with certainty whether these regulations result in emissions increases or decreases.

To mitigate climate change from transportation, it is essential that we use less petroleum. Increasing overall fuel supply by producing a fuel that may or may not mitigate climate change is a risky approach to solving this problem. And it may only displace some fuel to other markets, not actually avoid its combustion, further reducing climate change mitigation benefits.

Sincerely,

Richard Plevin, PhD
Portland OR

References

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2. Plevin, R.J., M.A. Delucchi, and M. O'Hare. 2017. 'Fuel carbon intensity standards may not mitigate climate change', Energy Policy, 105: 93-97. http://dx.doi.org/10.1016/j.enpol.2017.02.037

3. Plevin, Richard J., Jason Jones, Page Kyle, Aaron W. Levy, Michael J. Shell, and Daniel J. Tanner. 2022. 'Choices in land representation materially affect modeled biofuel carbon intensity estimates', Journal of Cleaner Production, 349. https://dx.doi.org/10.1016/j.jclepro.2022.131477

4. Malins, Chris, Richard Plevin, and Robert Edwards. 2020. 'How robust are reductions in modeled estimates from GTAP-BIO of the indirect land use change induced by conventional biofuels?', Journal of Cleaner Production, 258. https://dx.doi.org/10.1016/j.jclepro.2020.120716

See www.plevin.com/publications for additional papers on these topics.