

To: Senate Committee on Natural Resources and Energy
From: Rachel Smolker, Ph.D., Biofuelwatch
Re: Clean Heat Standard
Submitted: April 5, 2022

Dear Senators Bray, Westman, MacDonald, Campion and McCormack,

First, thank you for your service to Vermont.

I am writing with regards to the proposed Clean Heat Standard, H.715. I am aware that you have had a lot of engagement on this issue, but I feel compelled to weigh in, as codirector of Biofuelwatch, an international nonprofit that conducts research and campaign work on the impacts of large scale bioenergy. We have staff in both Europe and the USA, and have worked with local communities, national governments and internationally on these issues for the past two decades. We are a nonprofit without vested interest in sale of any biofuels.

Heating with biofuels will largely consist of using biodiesel fuels in mixture with fossil heating oil as is already occurring in many places, including neighboring states, as well burning wood. My comments here focus on biodiesel:

The vast majority of biodiesel is produced from soy (not waste oils, see below). Here is data from 2020 from the Energy Information Agency, (in millions of tons)
[canola oil (1246), corn oil (1516), poultry fat (163), tallow(368), algae (0), used cooking oil/aka yellow grease(1053),soy oil (8383).]

Soy is *the* most land area intensive source of energy. An article tellingly entitled “Energy Sprawl is the Largest Driver of Land Use Change” concludes: “...it would take hundreds of years for oil production to have the same energy sprawl as biofuels. Meeting energy demands while conserving nature will require increased energy conservation, in addition to distributed renewable energy and appropriate siting and mitigation.”

Soy is grown in vast industrial monocultures, much of it is GMO and sprayed with glyphosate among other herbicides and pesticides. Estimates are that expansion of soy production is responsible for some 40% of tropical deforestation. Demand is skyrocketing including for aviation fuel - with major oil refineries (such as Phillips 66 and Marathon in San Francisco bay area) now converting to produce HVO fuels).

Reliance on domestic production does not resolve the concerns because soy is an internationally traded commodity and production changes in USA ricochet far beyond our borders, for example as has been the case when corn ethanol shifted profitability of corn farming on a large scale, displacing soy production to Latin America as global demand for soy still continued to escalate.)

Given the international commodity trade in vegetable oils, and the closely interlinked markets for different vegetable oil,

indirect land use change impacts are key. Any increase in demand for one variety of vegetable oil only displaces other uses which can be fulfilled by expanding production elsewhere. This is why any increased demand for soy has resulted in expansion of palm oil (the least expensive, and responsible for massive GHG emissions, profound biodiversity loss, air pollution from peatland fires and human rights abuses. The ILUC consequences of expanding demand for soy are well presented in this 2020 report: Soy, land use change and ILUC risk.

Vermont is not alone in trying to grapple with the transition away from fossil fuels. Europe has many important lessons we can benefit from since they committed to reducing GHG emissions under the Kyoto Protocol long ago, and have been developing policy measures to meet those commitments for many years under the Renewable Energy Directive. In those policy processes, it has become understood that it is critical to assess and incorporate not only direct - but also indirect - land use change impacts into their consideration and lifecycle assessments of emissions: https://ec.europa.eu/energy/sites/ener/files/documents/Final%20Report_GLOBIOM_publication.pdf. European policy increasingly reflects this understanding of indirect land use change and the impact of palm oil expansion resulting from market linkages and unsustainable levels of demand. While very difficult to quantify, assess or mitigate, the problem cannot be ignored if we are to succeed in addressing climate and biodiversity challenges.

LIFECYCLE ASSESSMENTS: The CFA claims that the LCA for soy biodiesel indicates some 76% reduction in emissions over fossil fuels. Lifecycle assessments are notoriously problematic as they vary widely depending on what assumptions are included and how narrow or holistic the scope, and whether or not the intent is to measure overall emissions or only process emissions. This is why for example, the National Academies are currently undertaking a study aimed to provide guidance for biofuel LCA. Among other, a key issue is how indirect land use change is accounted for.

For now, the deeply problematic nature of biofuel LCA's has recently been well articulated in a paper recently published by the Royal Society. This is one of the only meta-analyses performed that has “deconstructed” the problems and clarified the very divergent LCA results reported in the literature. A key point to highlight is that many LCA are dominated by industry interests and that is reflected in favorable outcomes. What has been increasingly evident, for example, is the role of indirect land use change which is a massive contribution to emissions (among other impacts of expanding agricultural horizons).

(Note: The Royal Society concludes that

THE CLEAN FUEL ALLIANCE: You received testimony from the “Clean Fuels Alliance”. Please note that the CFA was until recently the National Biodiesel Board. Their mission: *“Representing biodiesel, renewable diesel, and sustainable aviation fuel, Clean Fuels Alliance America will advance the*

interests of its members by supporting sustainable biodiesel, renewable diesel and sustainable aviation fuel industry growth.”

The Clean Fuel Alliance membership reflects their focus on selling soy, being dominated by major multinational soy interests such as Cargill, Bunge, ADM, as well as some national soy grower associations and soy grower associations and promotion boards from the states of Arkansas, Illinois, Indiana, Iowa, Kansas, Louisiana, Kentucky, Michigan, Minnesota, Nebraska, Missouri, New York, Mid-Atlantic, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Tennessee, Wisconsin.

As is common for industry advocates, the CFA lists the feedstocks for biodiesel as “the most diverse fuel available, made from a wide variety of waste and by-product feedstocks such as used cooking oil, rendered animal tallow, recycled grease and agricultural byproducts from canola, soybean and other plant oils.”

While waste oils can be used to produce biodiesel, these are in very limited supply, but high demand as they are generally subsidized at a higher level and gain public approval more readily. As shown above, the vast majority of biodiesel fuel is produced from soy oil, and that is poised to dramatically increase with the shift to heating with biodiesel and the aviation industry’s pivot to use of HVO (hydrotreated vegetable oil fuels, also called “renewable diesel”).

COSTS:With regard to costs - It is remarkable that the Clean Fuel Alliance suggest that “*fuel switching is clearly superior to*

weatherization and energy-efficiency measures both from a GHG and cost standpoint". Any measure that eliminates the need to purchase energy is ultimately more cost effective than locking in perpetual use of any fuel, whether fossil or biological in origin - not to mention the many other advantages to land, biodiversity, public health, food production, water quality etc.

Biodiesel and other biofuels are already richly subsidized through various incentives, including a lucrative \$1/G federal tax credit. Policies such as the low carbon fuel standard in California tend to dominate the market as they provide the richest subsidy supports. Vermont will be competing in what is a highly competitive market that is currently poised to skyrocket (see International Council on Clean Transportation)

It is imperative that we find ways to reduce our impact on both climate and also on biodiversity. Simply assuming that biofuels can deliver us from these challenges is misdirected and moves us in the wrong direction.

Respectfully yours,

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