May 3, 2022

NYSERDA
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Submitted via email: scopingplan@nyserda.ny.gov

RE: Climate Action Council Draft Scoping Plan

Dear Sir/Madam:

On behalf of SUNY College of Environmental Science and Forestry, we are submitting comments in response to the Climate Action Council Draft Scoping Plan published on January 1, 2022 to inform the Council of the necessity of using a **standard, consistent and transparent life cycle approach to assess the greenhouse gas emissions and other environmental and human health impacts of all alternative energy sources and products including bioenergy, biofuels and bioproducts (biobased chemicals and materials inclusive).**

1. We recommend that the Climate Action Council adopt a consistent life cycle approach when comparing the greenhouse gas (GHG) emissions and other environmental and human health impacts of different alternative energy sources. Life Cycle Assessment (LCA) is used to assess climate change but also other environmental and human health impacts (e.g. human health impacts, acidification, eutrophication, smog formation, ozone depletion, and ecotoxicity). The climate justice working group also recommends the use of LCA to further research and consider technologies (p. 177).
2. In chapter 7, page 47 of the draft scoping plan, there were discussions about strategies to avoid leakage of GHG emissions to other regions. We recommend the Climate Action Council to add a fourth strategy and discuss the potential role of LCA in avoiding the leakage of GHG emissions to other regions. LCA is a valuable tool that can be used to avoid problem

shifting (i.e. shifting of impacts, burdens and responsibilities) by evaluating the entire life cycle stages of the product or services from raw material extraction to the end-of-life (Bjørnbet and Vildåsen, 2021; Finkbeiner et al., 2006). Using LCA to assess the GHG emissions associated with all products and services in New York state will discourage businesses from moving their operations overseas or other places that have less stringent climate policies. This is because moving operations elsewhere increases the GHG emissions associated with products and services.

3. LCA is one of the most rigorous and quantifiable method to assess the environmental sustainability of fuels, products, and materials. However, one of the challenges with LCA is that different assessments may use different system boundaries, data sources and impact factors and are often not transparent about these choices. According to an LCA of grain production, "the choices of system boundaries have great impact on LCA results, and climate change impact was reduced by more than 40% when factors that are not commonly reported in literature were excluded" (Roer et al., 2012). Therefore, we recommend the Climate Action Council to **discuss in the scoping plan the role of LCA in ensuring apple-to-apple comparison between alternative products**. We recommend **the adoption of the International Standardization Organization standards for LCA (ISO 14040 and ISO 14044)** (ISO 14040, 2006; ISO 14044, 2006) **and the development of clear guidance on the definition of the system boundary and how to deal with multifunctional systems** to ensure transparent and consistent analysis so that alternative energy sources and low carbon materials can be compared. Using a consistent framework will support policy decisions and the choice of fuels and materials that support the net zero goal set by the CLCPA.

4. LCA of biofuels produced from various biomass feedstocks have shown either substantial reduction in emissions compared to their fossil counterparts or net negative carbon emissions i.e., it results in more sequestered carbon that it emits to the atmosphere. These net negative carbon emissions result from sequestration of atmospheric carbon, increase in soil organic carbon content and carbon sequestration during the growth of biomass feedstock. Soy biodiesel can achieve 66–72% reduction in GHG emissions compared to petroleum diesel even after considering land use change impacts associated with its production (Chen et al., 2018). Biodiesel produced from sunflower, palm oil, and rapeseed can reduce GHG emissions by 32%, 52%, and 63%, respectively compared to petroleum diesel (Jeswani et al., 2020). Bioethanol produced from miscanthus results in -4 gCO2eq/MJ due to increased soil organic carbon content from miscanthus growth (Wang et al., 2012). Bioethanol produced from corn stover, and unfertilized switchgrass could result in -22.2 gCO2eq/MJ due to soil carbon sequestration (Kim et al., 2020). Integration of carbon capture, utilization, and storage (CCUS) or bioenergy with carbon capture and storage (BECCS) technologies can further reduce the greenhouse gas emissions of biofuels. Corn ethanol can result in -18.4 gCO2eq/MJ with CCUS (Xu et al., 2022). Bioethanol from wood residues could result in -2.7 kgCO2eq/100 km of vehicle traveled (Bello et al., 2020). Ethanol produced from New York state grown shrub willow can sequester 12 g CO2eq/MJ (i.e. result in -12 g CO2eq/MJ) (Therasme et al., 2021). These LCA studies have shown that biofuels are not only low carbon fuels, but they can also be net negative fuels. Therefore, a consistent LCA approach should be used to evaluate and compare different alternative energy sources and products options e.g., electrification and biofuels.

With a consistent use of LCA throughout the scoping plan, policymakers can make more informed decisions because GHG emissions and other environmental and human health impacts will be considered. When the full life cycle is taken into account, different biofuel pathways may be used to offset GHG emissions from other sectors because of the inherent ability to reach net negative GHG emissions. The standardization of LCA allows for a fair assessment of all energy sources fuel types and products.

Thank you for the opportunity to comment on the Climate Action Council Draft Scoping Plan. Please take this research into consideration when constructing adjustments for the final scoping plan.

Sincerely,

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