Input on alternatives to existing regulation and concepts in the LCFS Re-Adoption Concept Paper released on March 7, 2014

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I. Introduction

This is an alternative option, based on carbon capture rather than on limiting emissions of CO_2. I'm not sure whether this satisfies the requirement of the LCFS, but in principle it ought to. Whether less CO_2 is released to the atmosphere or more CO_2 is taken up by sequestration makes no difference to the amount of atmospheric CO_2, so long as the amount of sequestration is equal to the required amount of carbon reduction.

For carbon capture, a politicially neutral mode is with trees. Trees are known to sequester atmospheric CO_2 through the action of photosynthesis. Young trees capture more atmospheric CO_2 than mature trees, thus the mode of planting saplings and seedlings is reasonable.

Note also that novel fuel blends have the potential to impact air quality negatively, even more negatively than traditional blends. Studies of emissions in Brazil, for example, paint a dim picture of the combustion products of ethanol [1,2,3].

II. Analysis

The goals of the LCFS are clear. The carbon intensity of transportation fuels is to be reduced by 10%. California uses a specified amount of transportation fuels. Each fuel has a known carbon intensity. Trees sequester as much as 1.5 megagrams of carbon per hectare per year in temperate forests [4]. It is reasonable to assume that an estimate may be made for how many trees need to be planted to offset the carbon intensity of transportation fuels by 10%.

An important question is where such trees might be planted, and whether appropriate trees may be found for local areas. Considering the size of local desert and other marginal lands, this use seems possible for significantly longer than 50 years.

III. Fiscal Responsibility

In the spirit of the LCFS, it is reasonable to assume that the sale of fuels ought to have an appropriate mechanism to fund an equivalent capture of atmospheric carbon dioxide. Revenues for tree planting may reasonably come from either manufacturer of the fuels, or from the seller of the fuels, or from the consumer.

IV. Conclusion

The goal of public input is to allow for novel opinions. I hope the perspective I've presented will be of use to the CA Air Resources Board.

References:

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