



March 13, 2007

Commissioner's James Boyd & Jeffrey Byron
California Energy Commission (CEC)
Attn: Docket No. 06-AFP-1
1516 Ninth St., MS-4
Sacramento, CA 95814-5512

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Re: Full Fuel Cycle – Well to Tank Analysis

Dear Commissioner's Boyd and Byron;

I am writing in regards to the recently released draft report entitled, "Full Fuel Cycle Assessment – Well to Tank Energy Inputs, Emissions and Water Impacts" prepared by TIAX. This was obviously a substantial undertaking in a relatively short time frame on a complex and an incompletely understood set of issues. I appreciate the opportunity to provide feedback and hope my comments help to make the document more useful.

My recommendations are fairly broad in scope and not as focused on specific elements of the document. However, I hope they are useful and serve to improve the final product. Specifically I have the following comments:

1. Renewable biomethane is not considered in the report as a relevant biofuel. Biomethane is an important alternative fuel that arguably has the most environmentally friendly footprint of any existing alternative fuel. Biomethane can be made from a range of feedstocks with dairy manure being one with immediate benefit. Capturing dairy biogas that would otherwise be released to the atmosphere eliminates a powerful source of greenhouse gas emissions in California. Governor Swartzenegger has also touted biomethane as an important biofuel and has directed State agencies to promote its utilization. Our Governor has also signed a formal agreement with the government of Sweden to catalyze the development of biogas upgrading technology and infrastructure for California. As such, it is surprising that biomethane was not evaluated in your draft report. It is important to note that biomethane production does not involve distillation, a distinct advantage over ethanol providing a substantial net energy yield advantage. It also has much greater gallon per acre yield compared to biodiesel. It is also a robust technology that can use crop residues as feedstocks. It appears that the authors did not appreciate that many types of biomass can be used as feedstock to produce biomethane, most of the same sources useful in ethanol production. The Swedish experience shows the variety of agricultural residues, solid waste, municipal sewer and food processing waste that serve as feedstocks for producing biomethane. Finally, the emissions from a biomethane powered vehicle are better than biodiesel and at least as good as ethanol powered vehicles. An analysis of biomethane should be included in the final report.

2. Biofuels crops can be grown under a range of conditions with environmental impacts varying depending on where and how they are grown and what is displaced.

A recent story in the New York Times (January 31, 2007) entitled, "Once a Dream Fuel, Palm Oil May be an Eco-Nightmare" demonstrates how damaging biofuels can be. On the face of it, palm oil appears to be a great fuel. It has high per acre yields compared to other oil crops, is inexpensive to produce and has a high net energy yield. However, it can actually contribute more GHG emissions than fossil fuels when rainforest, in for example Indonesia, are destroyed or wetlands burned to grow palm oil plantations. There are other significant environmental impacts associated with palm oil as well. A cursory analysis may not find these impacts. But there may be methods and locations to grow palm oil that do not have these impacts. How and where biofuels are produced is at least as important as what type of crop is grown to produce the biodiesel feedstock. A generic analysis, though useful, will not be able to demonstrate or account for these differences.

A similar case can be made for Brazilian sugarcane. Although it has the best net energy yield of any existing ethanol supply sources, and an apparent low carbon footprint, its production contributes to soil erosion, eutrophication, loss of biodiversity, etc. under current production practices. And although much of the land to grow sugar cane is not "recent rainforest", expansion of sugar cane acreage will displace ubiquitous ranching in Brazil and likely force ranchers into the rainforest with associated environmental impacts as the rainforest is destroyed. These are results that require a detailed analysis and are likely beyond the scope of this report. But they should factor into any assessment of specific sources of supply for California. The TIAX Report can serve as a point of reference and initial assessment on the issues but it should not substitute for more complete analysis. It should be seen as a first step that sets the stage for detailed and periodic evaluation of biofuel feedstocks that may supply California with fuel.

3. The focus on ethanol, the only alcohol fuel considered, may serve to obscure environmentally preferable fuels and feedstocks not evaluated in the report

Ethanol fuel using "cellulosic" feedstocks is where many "eggs" have been placed. However, the "basket" where they reside may not be the preferred one from an economic and environmental perspective. Butanol appears to be a superior fuel to ethanol for many reasons including energy content that is comparable to gasoline, its compatibility with existing vehicles in high and low blends and its apparent low emissions profile. Yet there has been little or no effort to evaluate or support biobutanol or discuss these comparative advantages. By its very nature, the report will serve to define and influence biofuel preferences. As stated by one popular author, it is important to consider where you want to end up, "to begin with the end in mind". Biobutanol would seem to fit that criteria.

Thank you for the opportunity to comment on this important draft report.

Sincerely,



Allen Dusault

Program Director Sustainable Agriculture