Thank you for the opportunity, here today, to comment on the proposed regulation. Now, in the Second 15-Day Proposed Regulatory Order (proposed T 13, ch 8.1, § 2343, subd. (b)(1)), the following language has been redacted (which is to say, removed from the proposed Regulation Order): "[...] pursuant to the full fuel cycle methodology including indirect land use methodology as adopted by the ARB as part of the LCFS." [emphasis mine]

Now, removal of language referencing "indirect land use" certainly seems indicative of a potential policy shift favorable to such things as corn ethanol. Now, during a recent LCFS Workshop, last March, it was stated, more than once, that GHG emission increases resulting from indirect land use changes owing to increased corn ethanol feedstock demand cancel out any benefits that may be realized by any use of corn ethanol. Moreover, the effects of increased corn ethanol production on global food-commodity prices is simply a fact of recent history.

The protestations made by various pro-corn-ethanol lobbying organizations recently would tend to lead one to believe that the facts of recent history are somehow abject illusion. Even as I compose this Comment (Apr. 23, 2009), I am, as I listen to the Webcast of the ARB meeting in re the LCFS, hearing various ethanol lobbyists each claim that to accept science is to deny recent history (& vise versa). This alleged dichotomy between science & history is, by definition, sheer folly. It is s fabrication by those who (presumably) directly & / or indirectly benefit from food-commodity unit-prices being as high as is humanly possible! So what are the facts pertinent to the whole issue of indirect land use effects, especially as they relate to corn ethanol?

The following is taken from the recent ARB LCFS Staff Report (released March 5, 2009):

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h. Food Versus Fuel Analysis

The LCFS, together with biofuel production mandates in the U.S. and Europe, will result in the diversion of agricultural land from food production to biofuel feedstock production. This diversion of agricultural land to biofuel production will exert an upward pressure on food commodity prices, and potentially lead to food shortages, increasing food price volatility, and inability of the world's poorest people to purchase adequate quantities of food (63, 64). As both food prices and corn ethanol production levels rose during 2007 and the first part of 2008, warnings about a possible linkage between the two trends began to surface(65). Controversies over the trade-offs between food and fuel crops are likely to intensify as crop-based biofuel production increases over the next decade. In this section, ARB staff discusses various food-versus-fuel issues associated with the production of corn and sugarcane ethanol—the biofuels that are expected to dominate the alternative fuels market over the next five years.

The primary benefits of increased production and consumption of biofuel are thought to be twofold. The first—an increase in energy security—is the rationale for the Energy Independence and Security Act (EISA). In 2007, the U.S. imported roughly two-thirds of

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its oil with over 50% of the imports coming from OPEC countries (EIA 2009). This dependence on foreign oil leaves the U.S. vulnerable to supply disruptions and price shocks. Increasing the domestic production of corn ethanol will diversify our fuel supply and potentially leave us less vulnerable to decisions made by foreign countries and oil

producers.

The second perceived benefit of increased reliance on biofuels—a reduction in GHG emissions—is the rationale behind the LCFS. On an energy basis, direct GHG emissions[32] from the production and use of corn and sugarcane ethanol are less than the comparable emissions from gasoline. When land use change emissions are considered, however, the emission-reduction benefit from corn and sugarcane ethanol is diminished.

Some of the costs and benefits associated with a 50 million gallon per year corn ethanol plant operating in California are summarized below (See Appendix C for a description of how the values appearing in this summary were derived). Such a plant would:

- Provide enough fuel for approximately 80,000 vehicles capable of operating on E-85;
- Displace about 34 million gallons of petroleum fuel;
- Reduce direct GHG emissions by about 0.19 million metric tons per year;
- Require almost 18 million bushels of corn per year;
- Require about 110,000 acres of U.S. farmland to produce the feedstock;
- Result in about 36,000 acres of land conversion, 14,000 acres of which would be in the U.S.; and
- Result in the release of 3.6 million metric tons of greenhouse gases due to land conversions; and
- Result in a net greenhouse gas emission benefit after 19 years of production.

In addition to the costs listed above, the conversion of agricultural land to the productionof biofuel feedstocks has the potential to increase the price for food, increase food price volatility, and increased pressure on water supplies. The production capacity of the ethanol plants currently operating and under construction in the U.S. is approximately 13 billion gallons per year (BGPY)(54). About 4.6 billion bushels of corn—more than 30 percent of the annual U.S. corn crop—is needed to support this level of production.

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[32] Direct and indirect GHG emissions, as well as the concept of indirect land use change, are discussed in detail in preceding sections of this Chapter

Diverting this much of the American corn harvest to ethanol production is likely to exert upward pressure on food prices(66).

Historically, the price of corn has been relatively stable varying from about $2.00 to $2.50 per bushel between 2000 and 2006. Prices in 2008, however, spiked at over $5 per bushel and are currently near $4 per bushel(55). The recent sharp increase in corn prices was not caused solely by the conversion of acreage devoted to food and feed production to biofuel crops. The cost of energy appears to have been the largest contributor (65, 67). The demand for biofuel feedstocks may, however, be overwhelming a food supply system that was already overextended by weather-induced production shortfalls and surging demand from a worldwide population that is both increasing in size and affluence. Increased meat and dairy consumption by newly affluent populations places additional demands on soy and corn—feed crops that are also used for direct human consumption and biofuel production(64). Moreover, the increased production of biofuels may more firmly link prices of biofuel feedstocks with petroleum prices, thereby leading to increased price volatility for food(63): as petroleum fuel prices increases, biofuels become more profitable which, in turn, allows producers to raise their feedstock prices as they increase production levels. Because those with the lowest incomes must devote a large percentage of those incomes to food, they are less able to adjust to changing food prices in the short term.

An important factor in the food versus fuel debate that has received relatively little attention until recently is the impact of expanded biofuel production on water supply and water quality. The shift in U.S. agricultural production toward corn, the conversion of land to agriculture (indirect land use change), and the growth in the number of bio-refineries will place additional demands on already overburdened water supplies. The water use impact of devoting a larger proportion of available agricultural land to corn production depends on the crop that is being replaced as well as its geographical location. Of more concern, however, is the expansion of agriculture in dry areas like the western U.S.: altered cropping patterns on relatively moist agricultural lands will usually have less of an impact than expanding irrigated production in relatively arid areas.

Bio-refineries can also place a strain on local water supplies. A refinery that produces 100 million gallons of corn ethanol uses as much water as a town of 5,000. More intensely managing land to improve yields may also exacerbate water quality problems: soil erosion along with fertilizer and pesticide runoff can increase as crop management intensifies(68, 69). Bringing non-agricultural lands into production can also increase erosion and runoff. Conservation Reserve Program (CRP) lands are of special concern: the CRP was created, in part, to protect environmentally sensitive or highly erodible acreage.

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And in a Comment I posted to the LCFS website Nov. 14, 2008, I said pretty much the same thing. Moreover, a number of different reports have appeared (in various places) before & since then stating, basicly, the same thing as well. So what has all that to do with the Proposed Regulation Order, a proposed regulation that would govern the granting of research monies to future research projects

including Low Carbon Fuel research projects?

Simply this; the fuels research projects considered cannot rightly be evaluated without any full consideration of indirect land use effects of any possible full-scale production of any given proposed fuel to be researched! The fact is that when food-crops are diverted for production of biofuel feedstock, the resulting inflationary pressures imposed on the prices of nearly all food-commodities has a tendency to cause many of them to increase, or else to refrain from decreasing.

Incidentally, the effects of increased biofuel production (especially increased corn ethanol production) can be readily noticed at any local grocery store. For instance, a box of store-brand macaroni & cheese increased, in price, by approximately 64.7%, at one California grocery retailer (for example), when the 2007 Federal RFS initially took effect. Since then, an additional 50% price increase has taken place over the following approximate year, or so, before eventually settling at its present level. For a loaf of bread, a pound of ground beef, a small sack of beans, etc., approximately similar price increase trends have been experienced. Doubtless, the commodity-inflationary pressures responsible for that can easily be said to have consequences in developing nations where household budgets are far more sensitive to changes in food-commodity prices than obviously is the case here in California, even in the poorest of urban neighborhoods.

Now, some pro-corn-ethanol persons have, in the recent past, responded to similar concerns by stating that the inflationary pressures create incentive for use of additional land for food & fuel crop production. That sounds interesting. For the very thing that corn ethanol lobbyists now deny is the very thing they used to defend the kinds of increases in production of conventional biofuels (especially corn ethanol) they most zealously seek. After all, those having received undue economic benefit from starkly escalated food-commodity prices can easily be said to be interested in protecting what they perceive to be their proverbial "turf."

So why include an example of what happened at one grocery store? Why not simply stick to discussion of macro-statistics in re indirect land use changes? It's because macro-statistics can rather easily be discussed without necessarily efficaciously communicating the essential substance of that which is desired to be communicated. Most people are not intimately acquainted with spot price numbers at a given exchange, but everybody who eats food & buys groceries is able to see, first hand, some of the real world consequences of the indirect land use effects of increased production of conventional biofuel (especially corn ethanol).

In conclusion, language requiring accounting for indirect land use effects must be included in the language of the Proposed Regulation Order! Thank you.