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Aviation Biofuels: Continuing Self-Delusion

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With avgas sustaining above \$5 a gallon, there's a certain mindless comfort in reading news reports that imply that biofuels, when scaled up, will be half the price. A couple of recent developments might encourage this thinking (or not), but I think it's worth planting the seed of permanent skepticism.

Pixeling into my inbox today was a press release from the Air Transport Association lauding the ASTM approval for specifications for alternative aviation fuels, specifically biofuels. Technically, this announcement is just the technical specs end of the process; the final approval happens later this summer. But no matter. The press release will be duly reported, giving the reader the vague notion that progress toward a bright new aviation biofuels world is being made.

I'd discourage thinking that, however, given the statements made by Undersecretary of the Air Force Erin Conaton speaking about the milestone of the Air Force Thunderbirds flying a show on a biomass blended fuel three weeks ago. When someone finally got around to asking what this stuff cost, Conaton revealed that it cost 10 times as much as the JP-8 the services normally use or about \$30 per gallon. But don't worry, comes the quick rejoinder, economies of scale will bring this down in short order.

As Robert Rapier reports in his [R Squared Energy Blog](#), this is a common refrain in the biofuels industry, which has a long and glorious history of promising both economies and scale that never potentiate because they have no basis in reality. The ethanol industry has been doing it for three decades, complete with government subsidies. Just three years ago, Jatropha was the darling of the energy crop set until it was discovered both crop and oil yields were far below laboratory estimates. Now, we've moved on to the next magical plant, Camelina, which both the Air Force and Navy are banking on for as much as half their aviation fuel needs before the end of the decade, a proposal that causes people who understand energy markets to roll their eyes.

As hapless consumers of such stories, we are hard pressed to find good, critical data on the subject of biofuels by which to reach an informed opinion. Rapier's blog is a good one, as is Vaclav Smil's *Energy Myths and Realities: Bringing Science to the Energy Policy Debate*. The overarching point of many reports on biofuel economics is that they gloss over real-world yields, ignore the need for expensive and significant infrastructure and, most important, propose wildly optimistic timelines that ignore the established history of primary energy transitions. As Smil points out, it took decades for coal to displace wood and oil has yet to—and probably never will—displace coal. Nuclear has been overpromised from day one. Remember “too cheap to meter?”

All of this would be rather harmless if it didn't distract from the formulation of a sane national energy policy by getting entangled in the political process, thus producing monstrosities like the ethanol program. Smil argues that the quickest way to restrain the cost of oil and thus avgas and Jet A is to aggressively raise the CAFE standards. Although there's some market resistance to this, there's probably a lot less now that mogas is hovering around \$4. In any case, boosting car mileage is far more technically achievable in a reasonable time frame than even driving Camelina-derived Jet A to \$15 a gallon.

While on the subject of ethanol, there may be good news there. Or at least not bad news. Oklahoma Sen. Tom Coburn this week sprung a surprise amendment to end the 45-cent-a-gallon ethanol subsidy and to eliminate the 54-cent tariff on imported Brazilian ethanol. These efforts keep coming up and even in Iowa, a recent poll found weakening support for the subsidies. Sooner or later, it seems, they're going to fall. This is good news for aviation because it may mean less pressure on mogas to contain ethanol and perhaps improve the ability of E0 mogas to penetrate the airport market. But that's an issue that's hard to pin down. I wouldn't take it to the bank, by any means.

None of this is to suggest that biofuels don't have a place in the energy mix for aviation. They very well might, thus the ASTM approval is a good thing. But an informed consumer—that's you—should understand that claims for their market penetration are consistently overstated and none have come to fruition, nor are they likely to, even if oil gets to \$175 a barrel. So in reading about aviation biofuels, keep one eyebrow permanently arched.

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