

# Avgas in 2011: Logic will prevail



## Kent Misegades GA Fuels

As an engineer and a pilot, I believe that logic, combined with the amazing ability of free markets to decide between winners and losers, generally prevails — even when do-gooders, politicians and bureaucrats do their best to throw a wrench into the works.

Ben Sclair entertained us last month with some predictions for the New Year, so here's mine concerning aviation fuels: Logic will prevail and we'll resolve the uncertainty surrounding aviation fuels with a multiple-fuel solution that includes Mogas.

It is a fact that 100LL consumption has been in decline for many years. While some of this can be explained by a reduction in the number of hours flown annually in piston-engine aircraft, the bigger explanations are to be found at both ends of the power spectrum.

At the high end, owners of heavy piston twins have moved, in recent years, to light jets and turbine singles such as the Pilatus PC-12, Socata TBM, and Piper Meridian. Cessna is adding to this trend, as evidenced by the grainy pictures that emerged late last year of a single-engine turboprop based on the company's successful Mustang entry-level jet. Missionary aviation groups, too, are moving to all-jet-fuel fleets as 100LL becomes scarce in developing countries.

At the other end of the spectrum we have a huge array of new Light-Sport Aircraft, nearly all of which are powered by miserly engines from Rotax and Jabiru designed to operate best on 91+ ethanol-free gasoline, AKA Mogas. There are now at least two twin-Rotax aircraft available — the Italian Tecnam P2006T and the French DynAero TwinR — both of which offer a modern four-place cabin while burning 9 gph (total!) of \$3 Mogas per hour.

With these two trends, it is only logical that 100LL consumption would decline, as evidenced by a slow decrease in the num-

ber of FBOs that offer avgas in the U.S., according to numbers we track at FlyUnleaded.com. Refineries, of course, see this trend, explaining why there remain fewer than 10 that produce the fuel in the U.S. and perhaps only two in western Europe, one being Hjelmcø Oil, maker of the popular 91/96UL unleaded avgas.

With 100LL on the decline, representing less than 0.2% of vehicle fuel made in America, it is illogical that a fuel producer would see the market for its replacement as anything greater. Replacing 100LL with an unleaded 100 octane fuel also will not change the decline in the need for that fuel, barring any sudden increase in the use of engines that require it, something that is highly unlikely. With all new products, there are major costs for development, testing, certification and distribution that must be amortized through the product's sales over a reasonably short amount of time. Either this new "boutique" fuel must be produced in significantly greater volumes than 100LL or it must be priced significantly higher than 100LL to compensate for these startup costs. It is therefore illogical to assume that 100LL's replacement will be cheaper, and it is logical to assume that it will be more expensive — if any company is found to produce it, that is.

Given the diminishing revenue current avgas producers must be seeing, it is logical to assume that some will leave the market, which could even include the world's only producer of Tetra Ethyl Lead (TEL), England's Innospec. Without TEL, of course, there is no 100LL. As avgas producers leave the market, supplies decline, driving up the costs to pilots, forcing more to give up flying...you get the picture, and it's not pretty, but it is a logical conclusion.

With all the talk of 100LL and the efforts to find a replacement in the U.S., it is illogical not to consider existing alternatives. One of these, mentioned above,

is Hjelmcø's 91/96UL unleaded avgas. While it would not be adequate for those who need 100 octane fuels, it would satisfy a very large percentage of the existing fleet of piston-engine aircraft. But it's in Sweden, and we need it here. It's certified for essentially all piston-engine aircraft in Europe (most of which are the same planes flown in North America), but the FAA has chosen not to accept this European certification. That's illogical.

The other FAA-approved, affordable and — until ethanol started contaminating our gasoline — generally available aviation fuel is the same stuff found at 160,000 gas stations across the country, Mogas, or more specifically, ASTM D4814-compliant, lead-free, ethanol-free, 91+ (AKI) octane gasoline. Since it has been established that Mogas (sans ethanol) could power 70% to 80% of all legacy piston-engine aircraft and essentially 100% of the new fleet of LSA ships, one should logically expect the FAA, EPA, EAA, AOPA, FOE, DOT, NATA, GAMA and other alphabet groups to enthusiastically support the expanded use of Mogas at our airports. After all, it's cheap, has an enormous distribution infrastructure, produces zero lead emissions and lead deposits in our engines, and is the recommended fuel for the future generation of engines now found on modern sport aircraft. The fact that — with the notable exception of the Light Aircraft Manufacturers Association (LAMA) — the alphabet organizations have virtually ignored Mogas as a solution to the avgas quandary is illogical at best, and irresponsible at worst.

One could speculate all day why this is the case. Conspiracy theorists would claim that it is the strong arm of Big Ethanol quashing any attempts to allow consumers to have what they want — a choice of an ethanol-free fuel. Or perhaps it's the triumvirate of the EAA, AOPA and GAMA that has proclaimed "though shalt have one and only one avgas and it will be 100 octane." It might even be the lead industry's lobby that fears the end of their existence, but

that's hardly likely.

The one factor that bureaucrats, politicians, lobbyists and the aviation alphabets ignore is the will of the consumer, who generally is a whole lot smarter than given credit. There is a growing cacophony of them who are seeing the deleterious effects of ethanol in fuels and they are "mad as hell and aren't going to take it any more."

Just as the replacement — by edict — of the good-old, cheap, warm, non-toxic Edison light bulb by the Mercury Curly Fries Lightbulbs (CFLs) has resulted in hoarding of the former and disdain of the latter, so too is the damage to property and the environment caused by ethanol, leading to increased calls for changes to the Energy Independence and Security Act of 2007 (EISA) Renewable Fuel Standard mandates that have resulted in contamination of America's gasoline with ethanol.

Logic would lead one to conclude that lawsuits and changes to our laws should be the consequences of unpopular legislation, such as EISA 2007. The many comments among the more than 5,000 signers of our petition to ban ethanol in premium gas are proof of the rejection of ethanol among consumers.

A growing number of industry lawsuits opposing the EPA's recent approval of E15 only strengthens what consumers are saying: Please give us a choice to not use ethanol in our fuel! Three such lawsuits have been filed since November from three powerful organizations: The American Petroleum Institute (API), the National Marine Manufacturers Association (NMMA), and the National Petroleum and Refiners Association (NPRRA). All share the NPRRA's concern that E15 "could harm the engines owned by the millions of Americans we serve."

Since ethanol at any level in Mogas is damaging to aircraft, one would logically expect to hear similar protests from any one of the aviation alphabets, as well as

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To learn more about the petition, "Keep ethanol-free gas widely available," that will be sent to EPA Administrator Lisa Jackson, go to [ThePetitionSite.com/1/keep-pure-gas](http://ThePetitionSite.com/1/keep-pure-gas)

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# FAA reauthorization top priority



## Charles Spence Capital Comments

WASHINGTON, D.C. — Reauthorization of the FAA is one of the main concerns for the Transportation and Infrastructure Committee in the House of Representatives, according to its new chairman, Rep. John Mica (R-Fla.).

The FAA has been operating on a series of short-term extensions since 2007. The last full authorization for the agency was passed in 2003 when Mica was also committee chairman. Two Congresses between his chairmanships were unable to get agreement with the Senate on several issues, even though both Houses were controlled by Democrats.

Mica says a top priority of his committee in the 112th Congress is a fiscally responsible reauthorization of the nation's aviation programs that improves the air transportation system for the good of the economy and creates jobs.

In line with this goal, he says the committee will "conduct rigorous oversight" of NextGen (the Next Generation Air Transportation System), the multi-billion dollar modernization project that includes replacing ground-based radar with satellite-based surveillance, redesigning approach and departure routes, and causing users of the system to replace aircraft avionics. He adds that the committee will

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the Congressional General Aviation Caucus. All one hears, however, is a loud echo. As Ben Stein put it so succinctly, "anyone, anyone?"

At the annual meeting of the Petroleum Equipment Institute last fall, Dr. Phillip Verleger, a professor at the University of Calgary and a noted expert on the oil industry, called the U.S. mandates on ethanol production a "gimmick" devised to benefit primarily the agricultural and ethanol industries. As Verleger accurately described the situation, America's ethanol policy is "a train wreck in progress." If we wish to avoid this train wreck, the unattainable mandates for ethanol must, logically, be amended.

Mogas is the safest, cheapest, most widely-available and affordable, long-term solution to most of the problems surrounding the future of aviation fuel, provided ethanol is kept out of it. That it must become one of the two fuels powering piston-engine airplanes in the future is simple logic, really.

**Kent Misegades, an aerospace engineer and aviation journalist, writes the GAFuels blog at GeneralAviationNews.com with Dean Billing, an expert on autogas and ethanol.**

work to ensure that the NextGen program is implemented in an efficient and cost-effective manner, and that taxpayers' money is not wasted through a poorly managed program.

Another area affecting aviation where Mica's committee will be active is oversight of the Transportation Security Administration (TSA). He said TSA was intended to be a lean agency with the flexibility to respond to threats. "Instead it

has grown from a modestly sized pre-9/11 force of 16,500 private airport screeners into a massive bureaucracy of more than 60,000."

The committee is continuing to monitor the programs and performance of TSA, working to reform and reduce the size of the bureaucracy, supporting a risk-based approach to security to maximize the effectiveness of limited resources. This, he says, means seeking ways to improve the agency's ability to detect threats, an approach that could mean less government intrusion for general aviation and more reliance on GA's own security measures.

### USER FEES

Reps. Thomas Petri (R-Wis.) and Jerry Costello (D-Ill.) recently prepared a bipartisan letter signed by 116 members of the House of Representatives urging Presi-

dent Obama to not include user fees in the budget for fiscal year 2012. Petri chairs the House's Aviation Subcommittee, while Costello is the Democrat's ranking member. In the past two Congresses the roles were reversed when the Democrats held a majority.

Last year a similar letter, also initiated by Petri and Costello, was sent to the president and apparently had an effect in cooling the interest in user fees, which would call for a large bureaucracy. Fees were not included. This year general aviation groups hope for the same results. General aviation's alphabet groups had urged members to contact their members of Congress to urge them to sign the letter.

**Charles Spence is GAN's Washington, D.C., correspondent.**

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From: Larry Gaines, Bonanzas to Oshkosh leader and representative to the Clean 100 Octane Coalition

To: Ben Sclair, publisher of GA News Magazine

Date: 26 February, 2011

RE: GA Fuels column, 4 February 2011 Edition

Hello Mr. Sclair,

I just read a column in your February 4 edition concerning GA Fuels, written by Kent Misegades. I agree with his arguments regarding government policies about ethanol in fuel, but he misses the mark completely in his "analysis" of the GA fuel market. While I understand the frustration Mr. Misegades must feel about unavailability of less expensive fuel for his own aircraft (ethanol-free mogas), he misses some very important points, ignores historical data, and forsakes the 30% of the GA fleet that burns 70% of the fuel.

1. Already stated. While Mr. Misegades notes that the majority of "legacy" GA aircraft run well on less than 100 octane fuel, he omits the fact that the other 30% - which will be grounded without 100 octane - burns 70% of the fuel. That 30% also represents a larger capital investment in aircraft than the 70% which are powered by low compression engines. More on this below.
2. Mr. Misegades neglects to mention that splitting the already-small aviation fuel market in 2 leads to losses in economy-of-scale benefits for both populations. He claims that a single fuel based on automobile fuel stock will be a lot less expensive than a single fuel of 100 octane. I am not convinced, because the higher cost of avgas vs. auto gas is caused more by the volume of manufacture than by the expense of the ingredients. For there to be a significantly lower price for aviation fuel, it would have to be un-modified automobile gas, sold in wholesale volumes equal to auto gas station quantities. In other words, full truck loads. Most airports don't buy fuel in such quantities. Mogas, when available at airports, has traditionally been somewhat cheaper, but still a lot more than the same gas on the street.
3. Mr. Misegades is not counting Jet-A. We're not talking about 1 fuel vs. 2. We're talking about 2 vs. 3. Few FBOs can afford the added infrastructure. Extra tanks in the fuel farm, additional trucks and/or self-serve pumps, etc. Ignoring the up-front costs and subsequent amortization, 2 fuels results in diluted sales of both. The only way a 2-fuel system can work (leaving Jet-A out of the discussion) would be a formulation that allowed the same base stock for both fuels - 80-91 octane "base stock" with an additive blended in at the pump to achieve 100 octane. There is no effort whatsoever along these lines. Perhaps some day, but there are enough challenges replacing 100LL as it is. Mr. Misegades argues that we should not even try to replace 100LL with an unleaded 100 octane fuel. Perhaps he'd feel differently if he owned a Piper Malibu or Cessna 210.

4. History has shown that 2 fuels doesn't work. There used to be 80 and 100LL at a few airports. Because of lower sales volumes, 80 was rarely less expensive than 100LL to a significant degree. 80 was more expensive at some places. 80 didn't make it, economically. Mr. Misegades' points are about mogas, so maybe comparison to 80 is apples & oranges. But my point is that 2 fuels creates expenses that overwhelms the savings. We've tried it and it didn't work. There is no reason to believe mogas & 100 will result in sufficient sales of each for both to succeed.
5. If there is only 1 fuel it has to be 100 octane. 70% of fuel sales will go away as high-compression piston aircraft are grounded. Is this a "sky is falling", irrational fear? I don't think so. Aircraft are certified with certain horsepower ratings. Reducing power output even 1%, while perhaps insignificant in the "real world", creates the need to recertify each and every airframe, engine, propeller combination. That simply will not happen. Every aero engine with compression ratio of 8.5:1 or higher will be grounded. That's every Bonanza & Baron since 1961, every Cessna twin, every Cirrus, every Piper Saratoga, and many, many more. Virtually every fuel injected Continental or Lycoming powered airplane. Mr. Misegades simply ignores the fact these aircraft represent a slice of GA of which he is not a part. A slice, based on fuel sales, that is twice as large as the slice he champions.
6. Mr. Misegades cites "the popular 91/96UL unleaded" available in Europe. Popular? European fuel sales are barely noticeable compared to US fuel sales. 91/96UL goes for \$13 a gallon. And, it won't work in any of the aircraft cited above. Europe has pretty-much killed off GA. Europe is hardly a model for US aviation policy decisions.

Here are a couple things Mr. Misegades hinted at, but did not address outright:

1. By almost ignoring the existence of the 100 octane fleet, Mr. Misegades appears to think it's somehow irrelevant, despite it doing the bulk of GA flying and buying the bulk of aviation fuel. Perhaps he thinks 30+ year old airframes are not worthy of inclusion in "modern" or "future" policy decisions. For analytical purposes, let's simply remove 30+ year old airframes from the mix. We're left with a fleet that is 60% high compression, requiring 100 octane, and 40% that will fly on mogas. The 60% buys 85% of the gas. The numbers are even more skewed in favor of a 100 octane solution.
2. High performance aircraft (100 octane) are used far more often in the "practical" side of aviation. For transportation and support of business. Nobody's passion for flying is greater than mine. I fly purely for fun and personal "enrichment", but I sure as heck am not willing to forsake those who use their airplanes for business. That usage is the reason municipalities own and maintain airports. If the sport aviation crowd squeezes out the business aviation crowd, we all lose. Airports will become few & far between. Maintenance shops will be hard to find. The shrunken market will cost the "survivors" far more than the difference in fuel costs between mogas and 100ULsome day.

The worst thing that can happen right now, is for the General Aviation community to start "class warfare" in its ranks. He tacitly suggest that those needing nothing less than 100 octane fuel are irrelevant. The airlines would love to see 100 octane fuel go the way of the dodo bird. They think high performance personal and business aircraft steal "their" customers and use "their" airspace. They already lobby hard for measures that will assure near-extinction of GA - like it's become in Europe. We need to get behind efforts to assure a suitable fuel for ALL of General Aviation. That means we need to support efforts to find a 100 unleaded fuel. Period. Mr. Charles Spence argues that FAA reauthorization is the top priority and your publication, like all of GA, decries user fees. Those issues are 100% irrelevant if there is no fuel for our airplanes, and they are nearly meaningless if fuel policy cuts 70% out of the market.

Mr. Misegades fuels (no pun intended) class warfare with his column in your February 4 edition. Basically he pits owners & pilots of lower performance aircraft, who want to save a few bucks, against high performance owners & pilots whose entire investments in aviation are at risk, and for whom low performance doesn't meet mission requirements. Mr. Misegades apparently sides with the more "grass roots" segment. If he thought it through, he would come to the conclusion that the savings he seeks will cost him a lot more - perhaps everything.

This is copied to Lee Buechler of the Clean 100 Octane Coalition. Mr. Misegades should check out their web site:<http://www.100octaneformyplane.com/>

Then he should get on board and use the "bully pulpit" you afford him, to push for a 100 octane replacement for 100LL.

Thank you for your attention,

Larry Gaines