

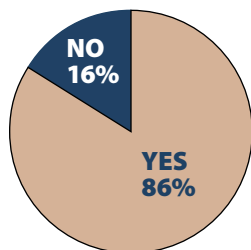
# AVWEB/AVIATION CONSUMER FUEL SURVEY

This is a summary of an online survey conducted by AVweb and *Aviation Consumer* during February and March of 2011. In an effort to learn more about the nature of the avgas replacement market, participants were asked 32 questions across of range of considerations related to a replacement for leaded aviation fuel.

As of early March 2011, 3151 participants had completed the survey. Of the total, 97 percent of these were pilots, 96 percent lived or were based in the U.S. or Canada and 86 percent owned airplanes or were involved in partnerships. Comments from readers appear in the right column of each question.

## Q1

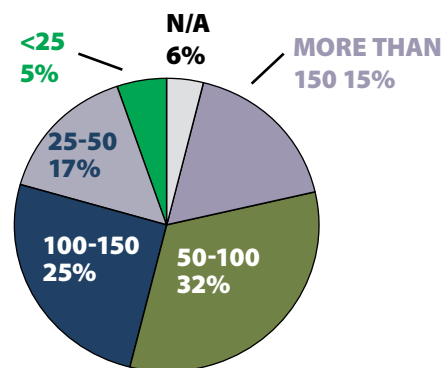
**Do you currently fly an airplane that requires 100LL?\***



\*Note that this survey is not a *stratified sample*, but a *self-selected sampling*. The proportion of owners requiring 100LL reflects a mirror opposite of the accepted estimate that only 30 percent of the GA fleet requires 100-octane fuel. Comments from participants revealed that this bias is likely due to those owners requiring high-octane fuel believing that they have more at stake if a replacement fuel isn't found.

## Q2

**How many hours a year do you fly?**



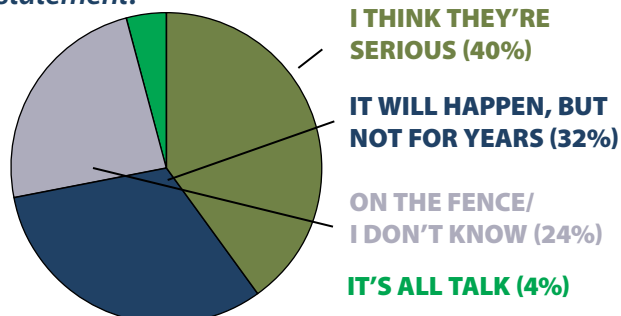
"I owned two aircraft...I was forced to sell them at a great loss due to the economy. I have aviation friends who still own aircraft, but have cut back flying from 200 hours a year to 50 hours a year."

"I used to fly well over 100 hours a year and now I am down to 50 or less. Reason: Fuel costs!"

"I have three airplanes and fly 250 hours a year, at least. I have 4000 hours on mogas. It's good for the engines."

## Q3

**The lead issue has been with us for decades, but the EPA recently said it had no timeline for the elimination of lead. What's your reaction to this statement?**



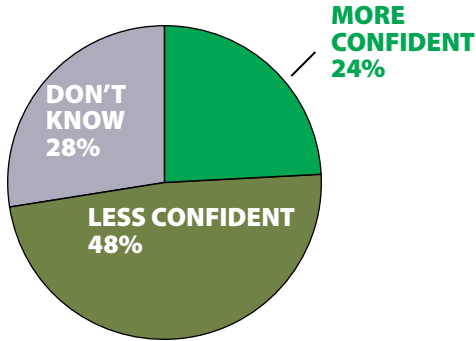
"This entire issue isn't even an issue. The miniscule amounts of lead are not harming anyone or anything (look at what the industry did voluntarily!). There is no problem to be fixed."

"The greatest threat to 100LL availability is the fact that there is only one facility in the world that makes tetraethyl lead. The EPA threat pales in comparison to this single-point failure mode."

"It is absolutely ridiculous that it is taking so long to find a replacement. The FAA, the EPA, and the whole industry keep saying we need to study the issue. We've been studying the issue for 30 years for crying out loud. How much more study do we need? There are several viable options. Let's just pick one already and all get behind it and make it work."

# Q4

Does the fact that the EPA said there's no timeline make you more or less confident in the future of 100LL?



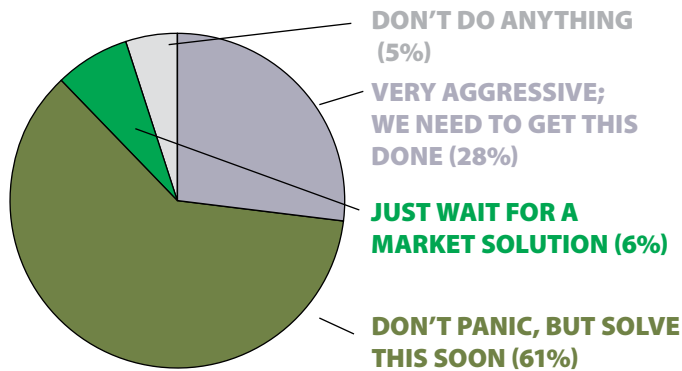
"The intrusion of EPA into the life of the free enterprise system, with their onerous growth and stifling regulations will continue... to the destruction of innovation in aviation. Regulation limits the progress to a real solution."

"I believe it is crucial to come up with a solution as soon as possible because the EPA has our 'cajones' in a vice."

"The EPA is not totally committed to doing away with leaded gas. Things may stay the same or the amount of lead may be reduced. If a viable alternate unleaded 100 octane fuel became available it would be the ideal solution."

# Q5

How aggressive should the general aviation industry be in finding a replacement?



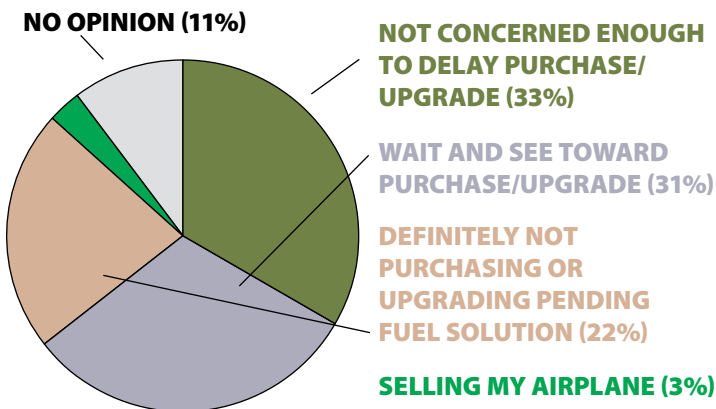
"Wake up. Swift fuel has been tested, is a direct replacement for 100LL. It has superior performance to 100LL. No expensive modifications need to be made. If a cost effective fuel is not available or fuel becomes more expensive, I plan to sell my plane and stop flying."

"Find a good solution or I will sell my plane. It seems to take on political views when GAMI and Swift have fuels tested and in the case of GAMI, I know they do a very good job of testing and should be looked at further."

"It is just hard to believe that we cannot just seek an equivalent replacement and set a time line once that is achieved, utilize the existing infrastructure and move on."

# Q6

With regard to your level of confidence in future supplies of avgas, which best describes your opinion?



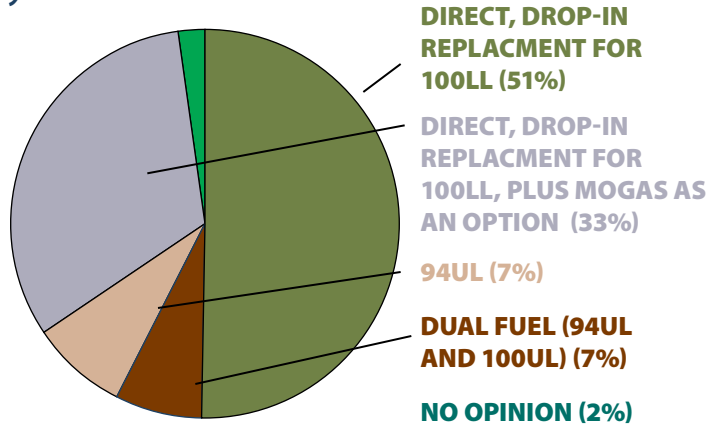
"I fly a Beech Bonanza with an IO-470N TCM. This engine requires 100LL. I am concerned that the \$70,000 for the new engine and airframe upgrades may become useless if 100LL is pulled from the market."

"I indicated 'I'm not concerned enough to delay any kind of purchase of an airplane or upgrade based on worry about fuel.' However I'd like to add that any airplane I purchase, I would ensure could be run on lower-octane fuel, such as mogas. I would NOT purchase an airplane that required 100-octane fuel."

"We need to know what is going to happen so aviation can move forward. The question of fuel has an impact on general aviation upgrades and purchases of planes."

# Q7

Looking ahead to a solution and irrespective of price, which of these proposals makes the most sense to you?



*"We need a drop in replacement for 100LL. There's no way to have two separate fuels. The infrastructure can't support it."*

*"Turbocharged, high-horsepower engines will in all probability require 100LL. I don't believe that most FBOs will be interested in investing the capital necessary to support two octane levels of avgas."*

*"I think a single 100-octane solution is the only viable alternative. I would only spend money on modifying my IO-550 to use mogas if faced with no alternative."*

*"Ethanol-free mogas is a replacement for 100LL for those that can burn it and it is better for the environment than 100LL. I support making some ethanol-free mogas available for those that choose to use it for aircraft or land/sea craft."*

*"I think mogas is the best short-term fix and it should also be available for aviation use over the long term. Keeping the cost as low as possible should be a major goal in what ever solution is found."*

## INSIDE THE MOGAS NUMBERS

Our survey revealed strong support for mogas from surprising sources. Although more than 80 percent of survey takers told us they own airplanes that require 100-octane fuel, only 51 percent said they favored a single-fuel 100-octane solution.

The reason for this discrepancy is that 40 percent of owners who need 100-octane fuel also favor mogas as a second option. Some own second airplanes that can burn mogas and many are looking forward to owning or operating mogas-capable LSAs. Among those owners who said they own airplanes that require 100 octane, 40 percent said they would

consider using mogas if they could.

Although our survey revealed a strong sentiment for mogas, respondents were also aware that making mogas widely available will be difficult. In one question, we asked if the industry membership groups (AOPA, EAA, GAMA) should pressure the FAA to ask EPA to segregate a portion of premium mogas from ethanol blending. Almost half—48 percent—favored this, while 30 percent opposed it.

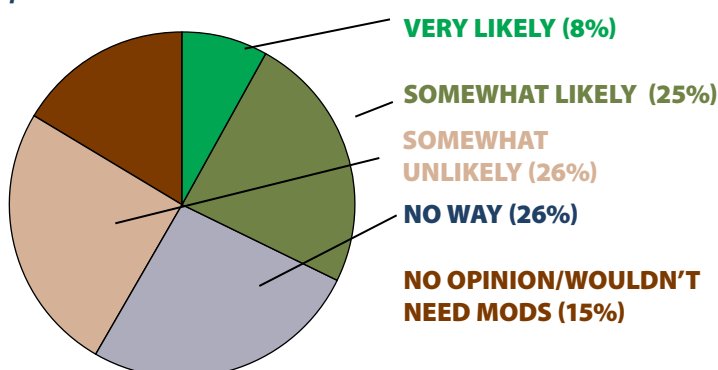
When we asked participants about what they thought about the likelihood of mogas actually being part of the fuel solution, again,

nearly half—47 percent—said they thought it wasn't likely at all, due to government mandates on ethanol blending in motor gas.

While many respondents favored mogas as an option, they haven't expressed this view to their airports and FBOs. Only 15 percent told us they had asked their local FBOs to provide mogas. Among those who told us they favored mogas as a solution, about 40 percent said they had asked FBOs to provide it on the field. (About 100 airports currently sell mogas. Some are adding it, others may be dropping it due to supply difficulties.)

# Q8

How likely are you to consider modifying your airplane to burn a lower-octane fuel?



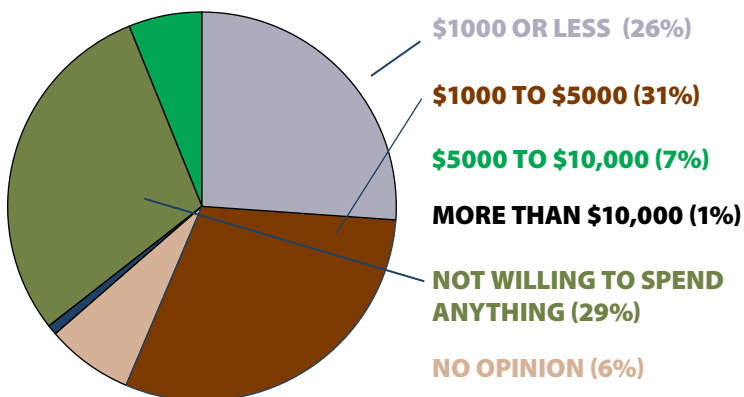
*"Either paying much more for fuel or having to pay much for engine upgrades (my plane is a twin) is just something that I can't do. I will have to just sell my airplane if either of these happen."*

*"We need inexpensive electronic ignition with knock detection before we reduce the octane of avgas."*

*"We need estimates as to the cost of hardware modifications and forecast pricing for alternative blends. The pricing projections need to come from credible fuel producers, not from proponents of any particular formulation. Consumers want a cheap fuel that does not increase engine maintenance costs, does not reduce range or power, and is readily available within existing infrastructure. We won't know how to 'vote' until we see some data on modification costs and fuel pricing."*

## Q9

What's your best guess on what you'd be willing to spend to modify your airplane to burn a lower-octane fuel?



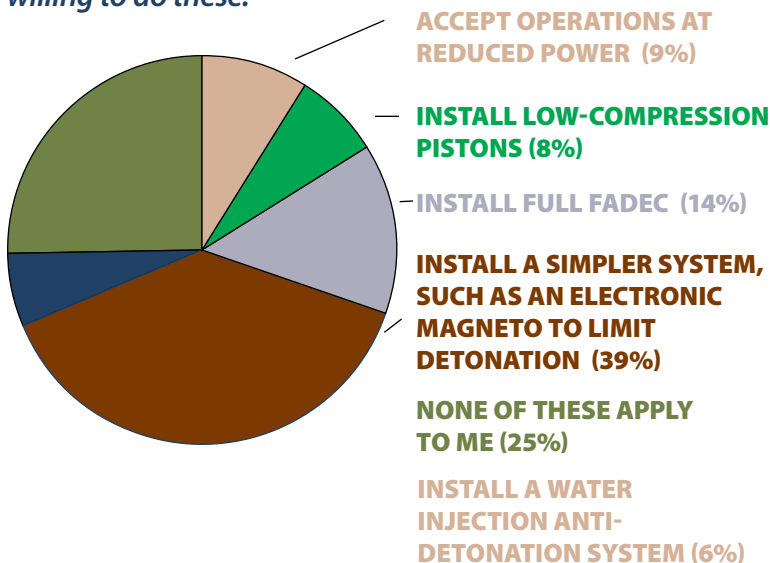
"An industry solution won't work unless FAA approves the fuel and or the modifications to use it. If you can figure out how to get FAA out of the way, great, let's do it and let the market determine what we'll have. Anyone really think that's an option?"

"I would like to see increased power from any modification, whether it's FADEC or a diesel conversion."

"Replacement should support all GA engines. If high-performance engines cannot be supported without major modifications, than this is not the correct solution. Engine Modifications should be less than \$5000/ engine. Performance reduction should be less than 10 percent."

## Q10

If modifications were required for my airplane, I'd be willing to do these:



"I'm coming up on TBO in a year or two, with marginally legal compression numbers now. I need to know what to do about my engine soon. If I could replace it with a diesel, I'd consider that (but I can't). If there were a FADEC, lower-octane replacement, I'd consider that (but there isn't). I need to know that my next engine, whatever it is, won't require extensive modification a few years after it goes in."

"The proper solution needs to address all of these needs with a preference placed on minor mods such as FADEC / electronic ignition than on a compromise in power."

"I suspect we might benefit more from an exceptionally well-designed FADEC that maintains detonation margins in takeoff and climb and extracts every ounce of efficiency from the engine in cruise on 97UL - rather than opting for a very expensive 100 octane replacement and soldiering on at their high fuel burn."