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April 2, 2015

The Honorable Caddy McKeown, Chair
Transportation and Economic Development Committee
Oregon House of Representatives
900 Court St. NE
Salem, OR 97301

Dear Representative McKeown:

The Aircraft Owners and Pilots Association (AOPA) is the world's largest aviation membership association that represents the general aviation interests of our members nationwide, including over 5,000 in Oregon. On behalf of AOPA and our members, we write to express our strident opposition to House Bill 3193, which would impose a punitive, non-specific and unreasonable increase on the taxes paid by users of leaded aviation fuel (avgas).

The vast majority of piston engine general aviation aircraft must currently operate on aviation-specific fuels to meet safety of flight and technical requirements established by the Federal Aviation Administration (FAA). As of today, a calculated amount of lead is included in those fuels to allow aircraft engines to operate reliably and safely in a broad variety of demanding flight conditions.

For the past several years, however, AOPA, FAA and the general aviation community have been working towards safely transitioning the general aviation fleet to a suitable unleaded aviation fuel through the Piston Aviation Fuels Initiative. Unfortunately, this bill would do nothing to accelerate that ongoing process, and would only serve to have an immediate and significant negative consequence on the 16,200 jobs and $3.02 billion annual economic impact generated by general aviation in Oregon.[1]

We also note that this ill-conceived bill is a direct violation of the Federal Aviation Administration's (FAA) restated policy on the use of revenue from state and local taxes on aviation fuel. That revised policy, effective December 8, 2014, requires that all new or increased state and local fuel taxes on aviation implemented after December 31, 1987 be utilized solely for aviation purposes. As a recipient of Federal Aviation Administration Airport Improvement Program funding, the state is obligated to comply with this and other FAA policies, grant assurances and regulations.

We urge the committee to consider these points, review the attached white paper for the latest information on the process to safely transition the general aviation aircraft fleet to an unleaded fuel, and prevent HB 3193 from moving forward. If you have any questions, or need additional information, please do not hesitate to contact me at (301) 695-2094.

Sincerely,

David Ulane, A.A.E.
Northwest Mountain Regional Manager

CC: Transportation and Economic Development Committee Members

[1]PriceWaterhouseCoopers Study on the Contribution of General Aviation to the U.S. Economy, released February 2015. http://www.gama.aero/files/documents/GAMA_WhitePaper_Final_LRes%20-%20Wings%20and%20Rotors.pdf

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History and Current Status of Unleaded Aviation Fuel Development

The Aircraft Owners and Pilots Association (AOPA), a not-for-profit membership organization, is the world's largest aviation membership association, representing the general aviation interests of our members nationwide, including more than 5,000 in Oregon. Since 1939, AOPA has been committed to ensuring the safety, future viability, and development of general aviation airport as an integral part of our national transportation system.

AOPA and the General Aviation community continue to be committed to safely transitioning the general aviation fleet to an unleaded fuel. On May 29, 2013, representatives of the General Aviation Industry and the Petroleum Industry, along with the Federal Aviation Administration (FAA) formalized and commenced the Piston Aviation Fuels Initiative (PAFI). PAFI is a collaborative industry-government effort formed to identify candidate unleaded aviation gasolines, provide for the generation of qualification and certification data, and facilitate fleet-wide certification of the fuel(s) with the least impact on the existing fleet.

In June 2013, the FAA issued a request for fuel developers to submit candidate unleaded fuel formulations to be evaluated as replacements for 100LL. The request closed July 1st, 2014 and four fuels; one each from Shell and TOTAL, and two from Swift Fuels have been selected. Today, these four candidate fuels are being evaluated through qualification and properties testing (Phase 1) to determine which will move on to full scale engine and aircraft testing (Phase 2). Phase 1 is scheduled to be completed by end of year 2015 and Phase 2 by end of year 2018. PAFI is designed to support this evaluation consistent with the FAA goal of identifying a viable unleaded aviation gasoline by 2018.

In order to facilitate a timely and successful transition to an unleaded avgas, it is imperative that interested parties become aware of and support the FAA and Industry's establishment and implementation of PAFI. The fiscal year 2015 FAA budget includes $6 million in funding for independent unleaded avgas assessment and testing. Additionally, the U.S. Senate Appropriations Committee recently passed the Fiscal Year (FY) 2016 Transportation, Housing and Urban Development (THUD) funding bill, approving $6 million dollars, to advance the transition to an unleaded aviation fuel for piston aircraft.

Significant steps have been taken in implementing PAFI by the FAA and General Aviation industry.

- The FAA has established a Fuels Program Staff, to provide focus and to consolidate resources and expertise.

- The Associations representing key facets of the general aviation and petroleum industry, along with the FAA has formed the PAFI Steering Group (PSG) whose role it to coordinate the activities of key stakeholders.

- On June 10, 2013, FAA issued a request for candidate fuel producers to submit unleaded fuel formulations to be evaluated as replacements for 100LL.

- The request closed July 1st, 2014 and the FAA has selected four fuels; one each from Shell and TOTAL, and two from Swift Fuels which have entered Phase 1 of the program.

- Phase 1 qualification and properties' testing is currently underway.

General Aviation – Important Part of U.S. Aviation System

General aviation contributes to the U.S. economy by creating output, employment, and earnings that would not otherwise occur. Direct impacts, such as the purchase of a new aircraft, multiply as they trigger transactions and create jobs elsewhere in the economy (*e.g.*, sales of materials, electronics, and a wide range of other components required to make and operate an airplane). Indirect effects accrue as general aviation supports other facets of the economy, such as small business, rural economies, and tourism.

In February 2015, the General Aviation Manufacturers Association released a report on the contribution of general aviation to the U.S. economy in 2013, prepared by PricewaterhouseCoopers (attachment 3). Thais comprehensive report notes that nationally, general aviation accounts for over 1.1 million jobs, labor income impact of $69.1 billion, and a total economic output of over $218 billion.

General Aviation in Oregon

General aviation in Oregon is a significant and important part of the state's economy. Oregon is home to over 7,600 aircraft, 8,600 active pilots, and 97 public use airports. The General Aviation Manufacturers Association report on the contribution of general aviation to the U.S. economy in 2013, (attachment 3) notes that general aviation in Oregon accounts for 16,200 jobs, labor income impact of $846 million, and a total economic output of over $3 billion.

Background

Today, 100LL avgas contains 50 percent less lead than it did prior to 1980, dramatically reducing lead emissions from general aviation. General aviation has reduced lead emissions an additional 50 percent since that time through a combination of replacing aging piston powered aircraft with turboprops or more efficient piston designs, upgrades to in-service aircraft to increase efficiency, and changes in engine management strategies that have increased efficiency. These benefits in reduced lead emissions continue to increase year over year.

Three-fourths of the U.S. general aviation fleet—167,000 of the 220,000 aircraft—are piston-powered aircraft certified to fly on leaded fuel. Lead boosts the octane of the fuel used in piston-powered aircraft, thus protecting aircraft engines against detonation, which can cause an engine to literally tear itself apart during operation. High performance engines are especially susceptible to detonation, a condition known as knock. It is estimated that 30% of the piston fleet of aircraft are powered by the high performance engines that would be most affected by a move to an unleaded fuel. In addition, this 30% of the fleet is comprised of aircraft that conduct a vast majority of aircraft operations which consumes approximately 70% of the total 100LL used by general aviation.

The FAA, the federal agency with oversight for general aviation, and the Environmental Protection Agency (EPA), the federal agency with oversight for environmental concerns including aircraft emissions, worked with the general aviation industry – including aircraft and engine manufacturers, fuel producers and developers, and representatives of fuel suppliers and consumers – through the FAA's Unleaded Avgas Transition Aviation Rulemaking Committee (ARC) to address the transition to an unleaded fuel. Throughout 2011 and into 2012, the Unleaded Avgas Transition ARC worked through a host of factors, with safety paramount, for transitioning to an unleaded fuel. These factors included certification, production, and distribution, as well as environmental and economic concerns.

Of paramount importance and complexity is the impact of transitioning to a new fuel including upfront costs to develop and qualify an unleaded fuel as well as the long-term cost impact of deploying a new fuel. Converting in-use aircraft/engines to operate on a non-drop-in unleaded aviation gasoline is a significant logistical challenge, and in some cases, a technical safety challenge as well. A change of approved fuels with different performance characteristics and modifications to engines and aircraft requires FAA certification to ensure compliance with applicable airworthiness standards necessary for safety. The FAA certification process is comprehensive and requires significant investment of resources, expertise and time to complete. The cost and resource impact upon both industry and government could be extremely significant depending upon the level of effort and number of modifications that may be necessary to support a transition of the in-use fleet to an unleaded AVGAS.

Attachments

Attachment 1:

FAA Unleaded Avgas Transition Aviation Rulemaking Committee, Findings and Recommendations, February 17, 2012

Part 1
http://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/Avgas.ARC.RR.2.17.12.pdf

Part 2
http://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/Avgas.ARC.RR.Appendix.2.17.12.pdf

Piston Aviation Fuel Initiative

The Piston Aviation Fuel Initiative (PAFI) was established at the request of a broad cross section of the aviation and petroleum industries and consumer representatives to develop a path forward for the identification, evaluation and deployment of the most promising unleaded replacements for 100 low lead aviation gasoline. The mission of PAFI is to evaluate candidate unleaded replacement fuels and identify those fuels best able to technically satisfy the needs of the existing aircraft fleet while also considering the production, distribution, cost, availability, environmental and health impacts of those fuels. Mounting environmental and economic pressure necessitates a transition to unleaded fuel. Unfortunately, the aviation and petroleum marketplace, in concert with existing government regulations and policies, do not support an orderly and economically viable fleet-wide transition to a new fuel or fuels, hence the need for the joint government and industry collaborative initiative known as PAFI.

Aviation gasoline has remained largely unchanged for seventy years and the existing fleet of piston aircraft was designed to be compatible with its chemical and physical properties to achieve superior levels of safety, reliability, durability and performance. The FAA's certification activities and supporting policies have therefore not focused on certifying an existing fleet of aircraft to a new fuel or evaluating the properties and performance of fuels themselves, but rather on ensuring the airworthiness of products operating on known fuels conforming to long-established specifications.

To date, the only paths for approving a new fuel for use in existing products was for the OEM to amend their type certificate (TC), or for a third party to obtain a supplemental type certificate (STC) from the FAA, a process intended to ensure flight safety of an existing aeronautical product when operating on the specific fuel to which it was tested. This approval process requires a separate showing that each aircraft and engine complies with all of the airworthiness standards when operated on the new fuel. This process was identified by industry as being too costly and inefficient to be successful in transitioning the entire existing aircraft fleet to any new fuel, particularly because much of the fleet is no longer supported by an active manufacturer. It was also identified that existing evaluation paths examine the airworthiness of the aeronautical products but are not designed or intended to evaluate the chemistry and properties of the fuel. While there are options available for approved model list supplemental type certificates (AML-STC) that can cover a range of aircraft and engine models, such an approval process can be complex and would not likely result in the orderly fleet-wide transition necessary to maintain the economic viability of the piston aircraft fleet. Other available avenues for approval such as amended type certificates or the issuance of manufacturer service instructions authorizing the use of a new fuel across a range of models pose similar barriers and complications to an orderly and comprehensive transition and do little to address the orphan fleet of aircraft and engines no longer supported by an active manufacturer.

Aviation fuel commercial development and deployment over the past seven decades has relied on industry organizations comprised of a diverse group of industry stakeholders possessing experience and technical knowledge in the areas of powerplant engineering, fuel system design, combustion engineering, chemical engineering, toxicology and emissions, and fuel production and distribution, among others. These industry stakeholders require that a new fuel must both be shown to operate safely across the fleet of existing engines and aircraft, and must be able to be produced and distributed across existing infrastructure safely and efficiently. Thus, it is recognized that significant additional information beyond that required for FAA airworthiness approval is necessary to bring a fuel into actual production and distributed as a commodity in the marketplace.

Fuels move seamlessly around the globe because of broad-based understanding and acceptance of the products, their properties and behaviors, and commonality between production, distribution and testing methods. Such acceptance is necessary to ensure widespread, reliable, and economically viable production, distribution, and usage wherever aviation gasoline is needed. This global acceptance is the result of open consensus-based processes that permit peer review and significant standardization among both the products and their respective testing methods and specifications.

Inherently, existing FAA certification procedures such as STCs, amended TCs and service letters are a closed review process between a fuel developer and the FAA office and/or OEM, relying upon data that is often considered to be proprietary intellectual property. While this may work for FAA airworthiness approval resulting in the ability to burn a particular fuel in a particular aircraft and engine combination or list of combinations, it does little to overcome the barriers to the broad acceptance necessary for fleet-wide implementation by the petroleum, specialty chemical, aviation, and insurance industries as well as the end consumer. FAA certification procedures also do not address the concerns of environmental and health advocacy groups and regulators who have a stake in the emissions and toxicology of any new unleaded fuel. Additional peer review, testing, data collection and the development of industry consensus standards are all necessary steps above and beyond FAA airworthiness approval to bring a fuel to the marketplace as anything other than a specialty proprietary product with limited availability and application.

PAFI was conceived and established to overcome these barriers to entry into the aviation fuel marketplace by creating a process that would evaluate all of the properties and conditions necessary for broad production, distribution and usage of a new unleaded aviation fuel, and expeditiously develop data necessary to support FAA approval of the majority of the existing fleet of piston aircraft to operate on that fuel. Further, PAFI was designed to conduct much of the testing necessary for fuel production and distribution acceptance and fleet approval using common test facilities, procedures and industry consensus standards leading to broad

marketplace acceptance and adoption. In short, the PAFI process is necessary to take the good ideas of a fuel developer and move them beyond FAA approval in limited applications to fleet wide approval and broad based acceptance in the marketplace. It is the mechanism by which a fuel developer can move beyond having a proprietary product with limited application to become a broadly produced and distributed aviation fuel. In effect, the PAFI process is necessary to help enable widespread market acceptance and fleet-wide certification for a candidate unleaded fuel.

The PAFI process involves a two phase testing program. Phase 1 evaluates candidate fuels for potentially show stopping issues in the production, distribution and operation arenas before significant investment is made in gaining FAA design approval. Among these steps is an evaluation of the chemistry of the fuel and fitness for its intended purpose. Because of the substantially differing chemical makeup of various candidate unleaded fuels and their anticipated departure from the chemistry and properties of traditional aviation gasoline, tests necessary to establish a fuels' fitness for purpose under all reasonably envisioned conditions could vary from one fuel to another. The chemistry and performance properties of the fuels will largely determine the required tests and evaluations necessary, which will increase in scope and complexity with increasing deviation from the chemistry and properties of the existing fuels for which the fleet was designed and certificated. The PAFI process is intended to assess the makeup of various fuels and establish credible and peer-reviewed test protocols for ascertaining necessary fit-for-purpose data. Because the PAFI process has broad buy-in across the petroleum and aviation industries and is overseen by an independent, collaborative government/industry body of technical experts with no profit motive or stake in the outcome, results are viewed as objective, helping to ensure broad acceptance in the marketplace of successful candidate fuels that pass through the PAFI process.

Other critical Phase 1 evaluations include; assessing the emissions and toxicology properties and resultant impacts, evaluating whether a fuel can be produced and distributed broadly and economically, and determining that the fuel will perform adequately across its full intended compositional range in the existing fleet of engines and aircraft, effectively ensuring that it will be tested under worst case conditions of fuel composition and operating environment. The PAFI process also endeavors to examine the business case for candidate fuels looking at projected production, availability, and distribution models in an effort to ascertain whether a fuel would be readily producible and available at a manageable cost.

Having proved the technical, environmental and business case merits of proposed unleaded replacements to 100 low lead in Phase 1, fuels determined to be the most promising are approved for entrance into Phase 2. These fuels are ready to be tested now at the engine and aircraft level with an eye toward their adoption across as much of the existing fleet as possible. The PAFI process endeavors to do this by funding the Phase 2 engine and aircraft testing in support of fleet-wide adoption under the oversight of the FAA Technical Center in Atlantic City, New Jersey. The

data collected from this federally-funded test plan would not only lead to acceptance of the fuels but also generate data that can be used to support the fleet wide approval of aircraft and engines including the orphaned fleet no longer supported by a manufacturer. This step is critical to addressing implementation of fuels in the marketplace in an orderly and comprehensive manner. FAA involvement in this step of the process is crucial not only to ensure that the entire fleet is addressed but also to bring the credibility of test methodology and data necessary for the petroleum and aviation industry and consumers to accept and adopt the fuel across the board.

Ultimately, the PAFI process is not intended to be a barrier to entry for proposed fuels but rather is designed to enable the most promising fuels to undergo the necessary independent peer review and data collection necessary to gain broad-based industry, regulatory, and consumer acceptance leading to production and sale across the entire aviation marketplace. History has shown that FAA and/or manufacturer airworthiness approval of a fuel alone does not lead to acceptance by industry and consumers and ultimate production, distribution and sale at airports. Many STCs and manufacturer service instructions have been issued approving fuels that have never been successful in achieving broad production, distribution and user community acceptance. The reasons for this are complex and varied, but in the end the PAFI process is designed and intended to help overcome them. In developing the PAFI process, the petroleum and aviation industries, in cooperation with the FAA and EPA, are applying the lessons learned from past efforts to approve new piston aviation fuels and assist in overcoming the barriers to any new fuel moving from being a good idea to widespread production, distribution and sale in the aviation marketplace. This benefits all parties concerned from the fuel developer to the end consumer and everyone in between.

Ultimately it is everyone's goal that the piston aviation fleet moves efficiently and economically to a viable and safe unleaded future. The PAFI program provides a sound process to ensure that this goal is achieved with a minimum of disruption to the general aviation industry and with the greatest likelihood of marketplace success.

Attachment 2:

Comments of the General Aviation Avgas Coalition on the Advance Notice of Proposed Rulemaking on Lead Emissions from Piston-Engine Aircraft Using Leaded Aviation Gasoline, EPA Docket No. EPA-HQ-OAR-2007-0294

www.afpm.org/WorkArea/DownloadAsset.aspx?id=309

Attachment 3:

General Aviation Manufacturers Association report on the Contribution of General Aviation to the US Economy in 2013, prepared by PricewaterhouseCoopers.

http://gama.aero/files/documents/General%20Aviation's%20Contribution%20to%20the%20US%20Economy_Final_20150130.pdf