Port of Portland

Unleaded Avgas Readiness and Transition Plan

October 2025

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Executive Summary

The Port of Portland has long engaged with community members concerned about the health and environmental impacts of leaded aviation gasoline (leaded avgas—the most widely used product being 100LL). In response to these concerns and growing national momentum, the Port has recently taken more concrete steps to clarify its role and responsibilities in supporting the transition to unleaded aviation fuel.

This document outlines the Port's strategic approach, grounded in the most recent data on unleaded fuel availability, the evolving political and regulatory landscape, and recent engagement with community members, public agencies, and airport stakeholders.

While the federal regulatory landscape currently prohibits the Port and other similarly situated airports from requiring use of unleaded fuel or prohibiting the sale of leaded avgas, the Port recognizes it still holds meaningful opportunities to lead. These include areas where the Port has direct control, influence, or convening power to support and expedite the transition.

The plan identifies key strategies the Port is undertaking to:

- Encourage voluntary adoption of unleaded fuel by airport users.
- Help address infrastructure and market barriers to unleaded fuel availability.
- Advocate for and align with emerging federal and state policies.
- Acknowledge community health and environmental concerns.

By implementing these key strategies, the Port aims to reduce lead emissions, align with federal and state policy direction, and demonstrate accountability to the communities most impacted by aviation-related pollution.

Background

In October 2023, the U.S. Environmental Protection Agency (EPA) issued an endangerment finding, stating that emissions from leaded avgas may endanger public health and welfare under the Clean Air Act.[1] The Federal Aviation Administration (FAA) which regulates civil aviation must now develop standards to control or eliminate aircraft lead emissions. FAA had already established the Piston Engine Aviation Fuels Initiative (PAFI) in 2014.[2] Recognizing the need to bring both government and industry partners together, the FAA then established the Eliminate Aviation Gasoline Lead

[1] https://www.epa.gov/newsreleases/epa-determines-lead-emissions-aircraft-engines-cause-or-contribute-air-pollution#:~:text=WASHINGTON%20%E2%80%94%20Today%2C%20the%20U.S.%20Environmental,under%20the%20Clean%20Air%20Act.
[2] https://www.faa.gov/about/initiatives/avgas/piston-engine-aviation-fuels-initiative-pafi-background-and-program-update

Emissions[3] (EAGLE) initiative in 2022. EAGLE's objective is to safely eliminate leaded avgas by the end of 2030 without impacting the safe and efficient operation of the piston-engine fleet. PAFI became a part of EAGLE, tasked with the evaluation and authorization of the unleaded fuel.

Currently, Supplemental Type Certificates (STCs) must be obtained for every aircraft wishing to use commercially available unleaded fuel at this time. An STC validates that a specific engine and aircraft model(s) meet the minimum certification requirements when using a new fuel type, such as an unleaded fuel. Essentially, it is a design approval that allows for modifications, including fuel-related changes, while ensuring the aircraft remains airworthy and safe.[4]

Public Health and Environmental Considerations

In June 2016, the Port, with input from the Hillsboro Airport Community Advisory Committee (HACA) and in partnership with the Washington County Public Health Department, commissioned Christina Baumann, MD, MPH and Matthew Davis, MPH to develop a report analyzing issues associated with unleaded avgas and options for further characterization of risks in collaboration with Washington County Public Health. Outcomes from the report are being shared as background information:

- The prevalence of lead poisoning is low in Oregon and has declined along with national trends. In Washington County, population lead poisoning statistics are not comprehensive. There continue to be many sources of lead exposure in the environment, and some sources are a greater threat to public health than others due to factors that contribute to the degree of exposure. Lead based paint in older homes remains a major source and area of concern for public health.
- Efforts to model the ambient concentrations of lead in the air at and around HIO have yielded results well below the current National Ambient Air Quality Standard of 0.15 µg/m3. Data on lead concentrations in air, soil and water around HIO is limited and data from one airport is generally not applicable to another due to site-specific prevailing wind patterns and flight operations. However, the available data specific to HIO indicated the presence of lead at levels below health-based standards.
- With FAA's ongoing work to phase out leaded avgas, emissions from HIO are expected to decline or cease in the future.
- Public health departments have the processes, tools and techniques to assess environmental health hazards.

[3] https://www.faa.gov/unleaded
https://flyeagle.org/
[4] https://www.faa.gov/aircraft/air_cert/design_approvals/stc#; *see also* FAA Reauthorization Act of 2018, § 585,

- A rapid health impact assessment would be unlikely to improve the understanding of the health impact of HIO. Although there were limitations in data, the available data did not suggest that leaded avgas presented an environmental health threat to the community adjacent to HIO.
- A health risk assessment with an environmental sampling component could be used to determine if lead has accumulated in the local environment and whether this leads to human lead exposure at or around HIO.

However, there continue to be many sources of lead exposure in the environment, and some sources are a greater threat to public health due to the degree of exposure. For example, lead based paint and plumbing in older homes remain major sources and areas of concern for public health. As noted above, the EPA's endangerment finding prompts EPA and FAA to begin working on regulatory options to address lead emissions from aircraft engines and develop their own separate regulatory actions. The Port is aligned with local and national public health agencies' determinations and is motivated to help expedite the transition away from the use of leaded avgas where we can, to support the reduction of harmful emissions, minimize health risks for surrounding communities, and advance broader environmental and public health goals.

Applicable Legal Framework

While the Port remains committed to supporting a transition to unleaded fuel, our ability to ban or restrict sale of leaded avgas is currently prohibited by federal law. As a recipient of FAA grant funding, which is critical to all qualifying airports' operations, the Port is subject to a set of legal obligations known as FAA grant assurances. Under these assurances, if 100LL was made available at an airport any time in 2022, that airport cannot prohibit its sale or require pilots and operators to use an unleaded fuel.[5]

This restriction will remain in effect until the FAA Administrator officially authorizes a universal unleaded fuel that meets the criteria set forth in Section 770 of the FAA Reauthorization Act of 2024, or until December 31, 2030, whichever comes first. A universal fuel—often referred to as a "drop-in replacement"—must be authorized by the FAA Administrator as safe and fully compatible with all or nearly all models of aircraft currently using 100LL, without requiring engine modifications or new certification.

As of June 24, 2025, the FAA Office of Airports confirmed that no universal replacement fuel has been approved. While products like Swift UL94 and GAMI's G100UL have received supplemental type certificate (STC) approval for certain

[5] https://www.faa.gov/airports/airport_compliance/compliance_guidance/Grant-Assurance-40-Leaded-Aviation-Gas-QA.pdf

aircraft models, they are not yet authorized by FAA as meeting the universal unleaded fuel requirements in federal law described above.

Fuel Availability Landscape

Several fuel producers offer STCs for their unleaded fuel products, these currently include unleaded, ethanol-free motor gasoline, commonly known as "mogas", Swift Fuels' UL94 and GAMI's G100UL, along with other unleaded STC fuels that are still in development. Within the unleaded fuel space, there are discussions among the fuel producers and pilots as to the value of American Society for Testing and Materials (ASTM) certification of the fuel (see pilot focus group comments in Stakeholder Engagement & Lessons Learned for more information). However, not every fuel producer chooses to pursue ASTM certification. Use of STCs is an important step in the transition to the safe use of unleaded fuel, but there are still barriers to industry-wide adoption.

Mogas has been an FAA-approved aviation fuel since 1982.[6] Like the other unleaded fuel products on the market, mogas also requires approval for use through an STC. Mogas is capable of powering 65-80 percent of general aviation aircraft[7] but a challenge is the fuel distributor's willingness and/or ability to supply airports with aviation-grade mogas.[8] In 2014, the Port, with input from HACA, commissioned KB Environmental Sciences, Inc. to evaluate the feasibility of adding mogas to the range of fuels provided at HIO. The study found that mogas was considered a "niche" fuel in that it was available at less than 1% of US airports, and only two in Oregon. It would be possible to secure mogas for HIO, but only a subset of general aviation aircraft that frequent the facility could use it (8.5% - 29.5%). Due to very limited availability combined with fuel retailers' concerns about safety and liability, mogas was not added to the mix of fuels available at HIO.

The unleaded fuel supply chain needs to scale to commercial production levels for distribution at high volumes and at a reasonable cost. Under the current federal regulatory landscape, airports that previously offered 100LL must continue to do so. As a result, to support simultaneous distribution of unleaded fuel products, airports would need to add to or modify fueling infrastructure to dispense unleaded fuel until a universal substitute is authorized by the FAA. We're committed to doing what we can

[6] https://www.eaa.org/eaa/pilots/eaa-stc-program/auto-fuel-stcMogas
[7] https://aviationsafetymagazine.com/unicom/unleaded-fuel/ or https://www.generalaviationnews.com/2012/07/12/new-study-shows-autogas-can-power-80-of-piston-aircraft/
[8] https://www.aviationpros.com/aircraft-maintenance-technology/aircraft-technology/business-general-aviation/article/10726747/mogas-or-diesel

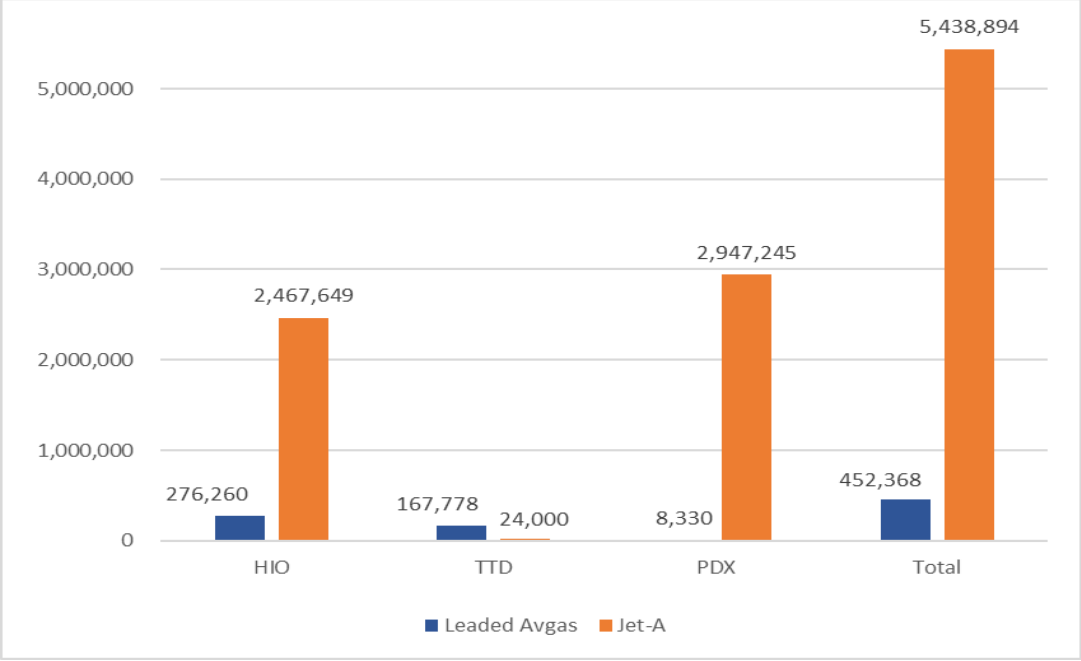
to help accelerate the transition to unleaded fuel, but we are not able to mandate which alternative fuel is adopted by those that sell or buy avgas at Port facilities.

Oregon's system of airports consists of 95 public-use airports ranging in size from large commercial service facilities to small rural airstrips. The system also includes one seaplane base and one heliport for a total of 97 aviation facilities. Of those facilities, 52 airports statewide offer fuel service.[9] Pilots fuel airplanes at various airports just like people purchase fuel for their cars at various filling stations, so requiring unleaded fuel at one airport is not an effective strategy. Efforts to develop a state-wide solution will be important to account for pilots' fueling behavior and to ensure an effective and sustainable transition.

Avgas at Port Facilities

The Port owns and operates the Portland International Airport (PDX) and two general aviation facilities—Hillsboro Airport (HIO) and Troutdale Airport (TTD). Although PDX is predominantly a commercial service airport, it also supports a limited amount of general aviation activity. A variety of aircraft use the Port's general aviation facilities including private jets, piston/propeller aircraft and helicopters. Business jets use Jet A which does not contain lead, while the remaining aircraft use low lead avgas (see Figure 1).

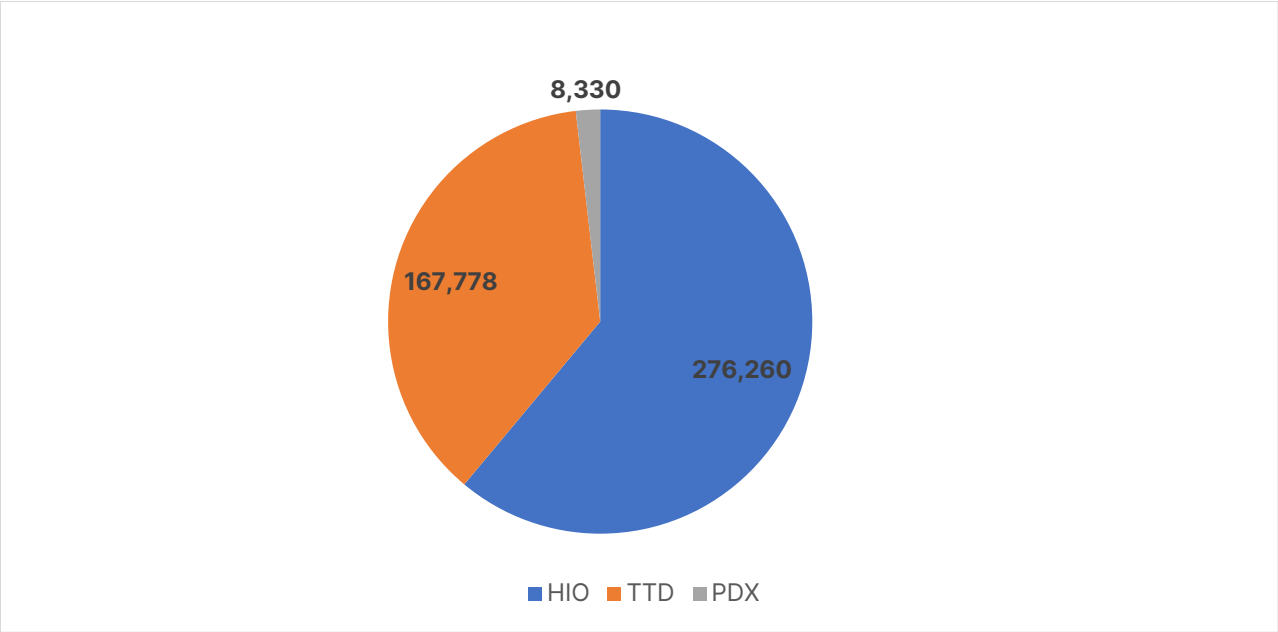
Figure 1. Port General Aviation Facilities' 2024 Fuel Delivered (gallons)*
**does not include Jet A fuel used for commercial passenger service at PDX*



[9] https://www.oregon.gov/aviation/plans-and-programs/Documents/OAP/2019/ODA_REPORT_OAP_ExecutiveSummary.pdf

The Port will focus initial efforts on data-driven[10] prioritization across our general aviation facilities as well as on state-wide strategies. The goal is to work on strategies that could have the greatest benefit as quickly as possible. Although Jet A is the most predominant fuel used across all Port general aviation facilities, usage of leaded avgas occurs at all three airports with HIO having the highest annual volume at 64% of total leaded avgas at Port facilities. (see Figure 2.)

Figure 2. 2024 Annual Leaded Avgas Delivered by Facility (gallons)



Stakeholder Engagement & Lessons Learned

The Port has engaged with a wide range of stakeholders on this topic for many years. In 2023, we launched a series of roundtables and additional engagement activities aimed at understanding community priorities and identifying activities that may support an accelerated the transition to unleaded fuel before 2030. Below are high-level summaries of these activities and the key lessons learned.

Three **community roundtables** were held between February – November 2024, in-person and virtually. Each roundtable began with a briefing on the avgas transition, including the EPA's endangerment finding, the Port's learning about unleaded fuel, challenges and opportunities, and community engagement updates. Following the briefing, community participants were invited to ask questions and share thoughts with staff. Attendance was limited at each event and totaled about a dozen unique

[10] The most current data set available for annual general aviation fuel usage is from calendar year 2024.

participants throughout the roundtables. This was potentially due to limited awareness of the issue or event, the time of day and/or location.

Feedback from the roundtables included strong requests for a clear action plan with specific targets and timelines. Some participants called for the Port to mandate the use of unleaded fuel at Port facilities or to suspend airport operations until such a mandate could be implemented. There was also significant interest in measuring ambient lead concentrations around HIO.

Additional topics discussed included exploring opportunities at other Oregon airports to support the transition, incentives to accelerate adoption of unleaded fuel, and details about current flight operations at the site. At the final roundtable, several community members expressed a desire to maintain ongoing engagement with Port staff throughout the transition process. A **pilot focus group** was held in November 2024, and additional **1-on-1 engagement** has occurred opportunistically. Pilots consistently identified safety and cost as their top considerations when thinking about switching to unleaded fuel. While many pilots expressed understanding of and support for the shift toward unleaded fuel, they also voiced significant concerns about safety—particularly given the inherent risks associated with being early adopters. One pilot offered a compelling analogy: "If your car breaks down, you can pull over to the side of the road; in a plane, you don't have that option." Several pilots emphasized their preference for a gradual transition, allowing sufficient time to adapt, work through technical details, and build confidence in the new fuel.

Pilots also noted the importance of having an ASTM specification for unleaded fuel. This designation, often called ASTM fuel standards, are widely used to ensure the quality and safety of various types of aviation fuel.[11] The pilots also noted that there are already two kinds of aircraft fuel currently available—leaded avgas and Jet A—and mistakes are made during refueling like what can occur with unleaded/diesel in cars. Therefore, there is some concern about adding a third type of fuel to the mix. Pilots also noted that conflicting information is widespread, so they look to their aircraft and engine manufacturers as trusted sources.[12, 13]

FAA and EAGLE are also turning to pilots, aircraft mechanics and Fixed Base Operators (FBOs) to gain greater insight into aircraft owners experiences with unleaded fuels that are available now.[14]

[11] https://www.astm.org/news/astm-tests-ensure-fuel-quality-nd16
[12] https://www.avweb.com/aviation-news/textron-keeps-g100ul-off-approved-fuel-list-wants-more-testing/
[13] https://www.avweb.com/aviation-news/cirrus-service-advisory-cites-gami-g100ul-as-unapproved-for-sr-series/
[14] https://www.aero-news.net/index.cfm?do=main.textpost&id=4A5B71A9-9DA4-4547-81E9-EAAC07ACFE14

Supply chain stakeholders were engaged:

- March 2024: site visit to GAMI, Inc. in Ada, Oklahoma
- May 2024: site visit to Swift Fuels, LLC in West Lafyette, Indiana
- June 2024: conversation with Titan Fuels
- March 2025: conversation with VP Racing Fuels

Key conversation points in the meetings and conversations with fuel developers and distributors centered on the history and testing of the fuels, current production volumes and locations, and the transport possibilities to the Pacific Northwest for the fuel's distribution. Fuel developers also discussed the various benefits of using their fuel for the aircraft owners and aircraft maintenance teams. At this writing, the fuel developers shared insights into uptake of their respective products:

- Market availability
    - Swift 94UL is being sold at 14 airports across the US
        - Swift 100R is FAA-certified for Cessna 172 R/S models and expects additional FAA approvals by end of CY2025.
    - GAMI G100UL is being sold at 5 airports across the US
- ASTM certification
    - Swift 94UL unleaded fuel is ASTM International approved
    - GAMI G100UL unleaded fuel is not pursuing ASTM certification
- STCs currently issued to aircraft registered in Oregon:
    - Swift 94UL = 48
    - GAMI G100UL = "numerous"

VP Racing Fuels has also been pursuing the development of an unleaded fuel for the past five years via the FAA's Piston Aircraft Fuel Initiative (PAFI) approach for fleet-wide certification as well as ASTM certification. They are in the process of testing different engines and aircraft along with more than 10,000 different materials. Company representatives anticipate their fuel will be available in the summer of 2026.

Early adopters were also engaged:

- June 2024: conversation with University of North Dakota flight school
- July 2024: conversation with Utah Valley University flight school

Flight school conversations centered on the schools' experiences transitioning their flight training fleet from exclusively using 100LL to unleaded fuel (and then back again, in one instance). Included in the discussions were reflections on their use of the fuel from both the operational and maintenance perspectives.

In June 2023, The University of North Dakota flight school selected Swift's 94UL fuel as it was "approved an industry-tested [ASTM] fuel" and transitioned all 103 of their flight training aircraft to this fuel. After using 400,000 gallons of the fuel over 125 days, the flight school started seeing some unexpected maintenance issues. In collaboration with the fuel developer and the engine manufacturer, the flight school stopped using the unleaded fuel and returned to using 100LL. While the flight school had intended to make the switch to unleaded fuel permanent, the resulting aircraft maintenance issues cost the school nearly half million dollars in repairs and impacted student training. According to the flight school representatives: "We're going to let the industry figure this out and when assurances are there, we'll jump back in. At this point, we're not motivated to try new things at the expense of our students."

The Utah Valley University flight school transitioned all their eligible aircraft to unleaded fuel in April 2023. At the time of the conversation, flight school representatives shared that they had more than 18,000 hours on their fleet of 25 airplanes (23 were exclusively using Swift's 94UL) in 2023 and had no concerns with either the supply chain/distribution nor performance/use of the fuel. The flight school is watching as the unleaded fuel market develops and will seek the expertise of their aircraft engine manufacturers before using any additional new fuel(s).

State Landscape

The State Aviation Board is a seven-member board that provides policy guidance and oversight to the Oregon Department of Aviation. The Port has engaged the board's leadership as well as their associated individual airports to explore interest in

partnering with the Port on statewide opportunities. There is interest in a transition but infrastructure and distribution limitations in the Pacific Northwest present significant challenges. It is also evident that some sustainable mechanism is needed to offset costs of unleaded fuel until economies of scale are achieved or FAA mandates a universal solution. State legislation (SB 90) was proposed in 2025 that would have created an income tax credit for owners of aircraft that incur qualifying expenses to use unleaded fuel but did not advance. The Port supports efforts toward such a statewide approach.

Port Strategies Moving Forward

The Port will work to facilitate voluntary adoption of unleaded fuel in advance of FAA's 2030 target date through partnerships, outreach and education, and advocacy. We will pursue strategies that would deliver the greatest benefits to the community and the environment via Port facilities as well as state-wide initiatives. Initial focus of this unleaded fuel transition will be at the Hillsboro Airport (HIO). Any entity at HIO that sells, or self-fuels unleaded fuel, would select their preferred brand, not the Port.

The Port will strive to achieve voluntary adoption through the following activities:

- Ensure infrastructure at HIO can accommodate unleaded fuel by the end of calendar year 2026.
- Meet with the owners of all the FBOs at Hillsboro to discuss their interest in selling unleaded fuel by CY2025.
- Meet with flight school(s) at HIO to determine their interest in self-fueling unleaded fuel for their training aircraft by CY2025.
- Provide incentives (e.g., continuing education, marketing and business development support etc.) to early adopters.
- Maintain engagement with the State Aviation Board and regional airports with the goal of advancing efforts to expedite the transition to unleaded fuel in Oregon.
- Identify industry group(s) that are hosting informational events for pilots to help educate about what is required to transition to unleaded fuel and share that information with local pilots.
    - Where possible, support pilots' participation and assist with outreach efforts to promote broad access and reduce barriers to participating in these events.
    - If no industry group-sponsored events can be found, convene a panel for a webinar by Q4 FY26.
- Provide progress reports at a minimum annually via the Port's dedicated webpage and other established public engagement venues as appropriate.
- Monitor public health agency websites (i.e., US Environmental Protection Agency, Oregon Health Authority, and county health departments) for any communications regarding public health impacts from leaded avgas and post any available information on the Port's website.
- Informed by progress made annually, identify any additional strategies that can be taken.

Reporting on Progress

Going forward, a dedicated webpage has been created (portofportland.com/hio/leadfreefuel) to serve as a central resource where stakeholders can track our progress, access relevant materials, and receive updates on future engagement opportunities. The team is also working to establish clear measures to gauge progress on the Port's strategies, which will be shared through this site as they are developed.

Glossary

100LL
100 Octane Low Lead Aviation Gasoline—the most commonly used leaded aviation fuel for piston-engine aircraft. While it contains lead, FAA's Grant Assurance 40 mandates its availability at airports that sold it in 2022 until an approved unleaded alternative is available fleet-wide.

EAGLE
The FAA's **Eliminate Aviation Gasoline Lead Emissions** program—an initiative focused on reducing lead emissions from aviation activities through research, policy, and fuel alternatives.

Fixed Base Operator (FBO)
A business located at an airport that provides a range of services to general aviation aircraft and pilots, including fueling, maintenance, hangaring, and pilot support.

Oregon State Aviation Board
The State Aviation Board advises the Oregon Department of Aviation on policy issues, develops recommendations on key aviation issues and provides guidance to ODAV. Seven members are appointed by the Governor and represent aviation and community interests from the public and private sectors statewide. The board also provides recommendations for programs such as Connect Oregon.

Roundtable
A facilitated discussion format that brings together diverse stakeholders, experts, and community members to share perspectives, exchange information, and collaboratively address specific topics or challenges.

Voluntary Adoption
The process by which individuals or organizations choose to implement a new practice, technology, or policy on their own initiative, without being mandated or required by law or regulation.

References

FAA Guidance on Transitioning a Flights School to Unleaded Avgas:
https://www.faa.gov/sites/faa.gov/files/Guidance_Transitioning_FlightSchool_to_Unleaded_Avgas.pdf

EPA Endangerment Finding: https://www.epa.gov/newsreleases/epa-determines-lead-emissions-aircraft-engines-cause-or-contribute-air-pollution

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