

# **The Future of General Aviation**

## **Washington Public Ports Association**

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Roger Millar, Secretary of Transportation

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# Topics

- Unleaded AVGAS
- Electric Aircraft
- Aircraft and Ground Equipment Charging

# Unleaded AVGAS

- On October 17, 2022, the United States Environmental Protection Agency issued a proposed finding that lead air pollution may reasonably be anticipated to **endanger** the public health and welfare and that engine emissions of lead from aircraft contribute to such pollution.
- An endangerment and contribution finding is therefore the first step in the process of regulating lead emissions from aviation fuels.
- The FAA reports that there are 222,600 registered piston-engine aircraft consuming approximately 184 million gallons of leaded avgas per year
- The endangerment finding will lead to new rulemaking from EPA and FAA on this issue, which is expected to dramatically reduce, if not eliminate, lead in avgas.

Fortunately, there is good news on the horizon!

Source: <https://www.natlawreview.com/article/us-epa-proposed-clean-air-act-endangerment-finding-targets-aviation-fuel>

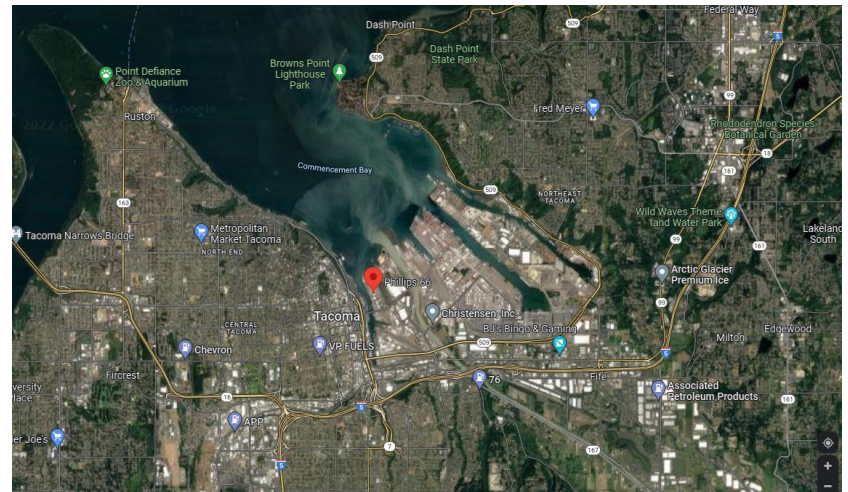
# Unleaded AVGAS

- Eliminate Aviation Gasoline Lead Emission (EAGLE) – Formed in February 2022, aviation and petroleum industry leaders and the FAA announced a new initiative that outlines how our country can safely eliminate the use of leaded aviation fuel by the end of 2030 without adversely affecting the existing piston-engine fleet.
- Fuels under development
  - General Aviation Modifications Inc. (GAMI) supplemental type certificates (STCs) for nearly all GA piston fixed-wing aircraft engines and airframes.
  - Swift Fuels is working through the FAA approval process for its 100-octane unleaded avgas with the expectation of completing FAA certification in 2023.
  - Phillips 66, Afton Chemical, LyondelleBasell and VP Racing, are also developing unleaded aviation gasoline formulas that are being evaluated by the FAA's Piston Aviation Fuel Initiative (PAFI).

Sources: <https://www.faa.gov/unleaded> ; <https://www.avweb.com/aviation-news/gas-lead-free-future-spotlighted-during-epa-hearing-testimony/>

# Phillips 66 UL100

- Phillips 66 operates a 300,000-gal AVGAS tank at its Tacoma site.
- P66 UL100
  - New manganese-based additive package replaces the lead package
  - Service the entire fleet of general aviation aircraft [drop-in fuel]
  - Meet or exceed the performance and quality characteristics of 100LL as specified in ASTM D910
  - Less hazardous engine emissions compared to 100LL
  - Minimize any cost increases
- P66 estimates UL100 will be available at its Tacoma site by 2028



Source: <https://trustedfuel.com/categories/future-of-avgas/posts/faq>

# General Aviation Electric Aircraft

## Fixed-wing Aircraft

### Pipistrel Alpha Electro

- 2-seat electric trainer with performance which is tailored to the needs of flight schools
- Short take-off distance
- 1000+ fpm climb capability
- One hour, 30-minute flight time
- FAA certified



### Bye Aerospace two seat eFlyer 2

- 2-seat electric trainer with performance which is tailored to the needs of flight schools
- Short take-off distance
- 1000+ fpm climb capability
- Three hour 30-minute flight time
- Not yet certified by FAA



# General Aviation Electric Aircraft

## Fixed-wing Aircraft

### Eviation Alice

- 2 crew, 9 passenger regional air service
- First flight Sept 2022 at Moses Lake
- Based at Arlington Airport
- Propulsion by magniX – based at Paine Field
- Max speed: 260 knots
- Max load: 2,500 lbs
- Not yet certified by FAA
- Anticipated entry into service in 2027

### Ampair Eco Caravan

- Cessna 208 Caravan
- 1 crew, 9 passenger regional air service
- Hybrid-electric
- First flight November 2022
- Not yet certified by FAA

### Ampair EEL

- Cessna 337 Skymaster
- 1 crew, 5 passenger regional service
- Forward Engine Parallel-Hybrid-electric
- First flight June 2019
- Not yet certified by FAA



# General Aviation Electric Aircraft

## eVTOL Aircraft



Hyundai Supernal



Wisk



Alauda Airspeeder



Beta



Joby



Jetson One



Airbus Vahana



Air One



Blackfly



# Vertiports

Vertiports can take many forms



Sheffield City Airport and Heliport



Using a Taxiway as a Heliport

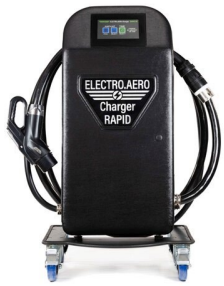


Skyport Vertiport in France - operational 2024



Lillium Lake Nona Vertiport- operational 2024

# Aircraft Charging



Electro Aero Smart Rapid 30 and Rapid 80 Chargers



Electro Aero Smart Hangar



Beta Charge Cube



Beta Charge Pad

# Questions/Discussion

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