Eliminate Aviation Gasoline Lead Emissions Initiative (EAGLE)
FAA Safety Team (FAAST) Briefing

Saturday, February 22, 2025

9:00 a.m. – 10:00 a.m. Central Time

EAGLE's Goal and Partners

"Eliminate the use of leaded aviation fuels for piston-engine aircraft in the United States by the end of 2030 (2033 for Alaska) without adversely impacting the safe and efficient operation of the existing fleet."

EAGLE Objectives

KEY OBJECTIVES:

1) Facilitate Stakeholder Support for the Development and Deployment of Viable Replacements for 100LL
2) Research and Develop Technical Solutions to Mitigate the Potential Impacts on the Existing GA Fleet
3) Inform the Regulatory & Policy Processes to Safely and Smartly Eliminate Lead Emissions
4) Protect the Availability of 100LL During the Transition

Welcome to the EAGLE Unleaded Fuels Overview

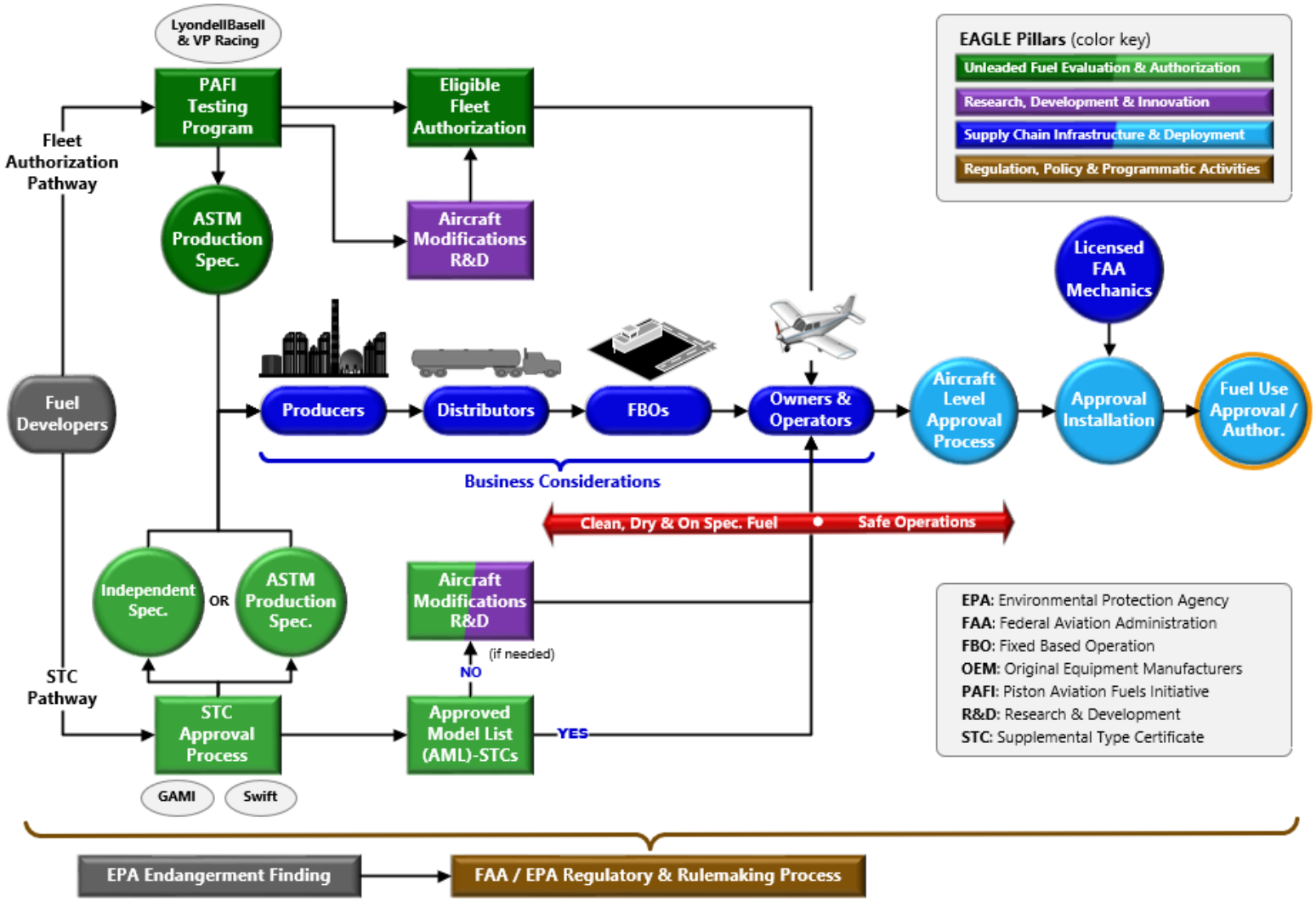
AGENDA

- Introduction/Welcoming Remarks by the EAGLE Co-Chair, NATA
- Two Pathways, Transition to Unleaded (UL) Aviation Gasoline “Big Picture” (EAA)
- Two Pathways, UL Fuel Status Updates (EAA/GAMA)
- UL Fuel Evaluation and Authorization (GAMA)
- Industry Stakeholder Perspectives:
    - Pilots and Aircraft Owners – AOPA
    - Fixed Base Operators (FBOs) and Distributors – NATA
    - Engine and Airframe Manufacturers (OEMs) – GAMA
- EAGLE Communications Resources
- Q&A

What Is a Viable Unleaded Replacement for 100LL Avgas?

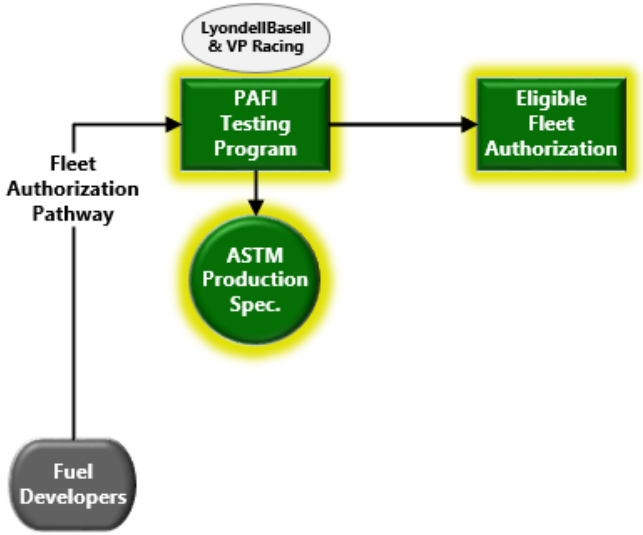
- **Safety**
  - Engines & aircraft must continue to meet FAA airworthiness safety requirements
  - Components of a new fuel must be acceptable for use
- **Production & Distribution**
  - Can be produced and distributed in quantities and locations to meet U.S. need
  - Stakeholder understanding of fuel to make business risk decision for production, distribution and use
    - i.e. purchase, produce, transport, store, sell, and dispense into aircraft
- **Consumer Use and Continued Operational Support**
  - Economically reasonable to support consumer use
  - Stakeholder understanding of fuel to support use case (i.e. operator, school, insurance, finance, etc)
  - Manufacturer understanding of fuel to make business risk decision to provide customer support for aircraft/engine use of fuel, technical & warranty, new production, etc.

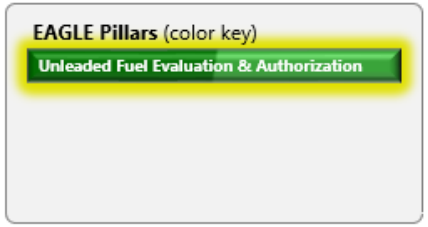
Transition to Unleaded Aviation Gasoline "Big Picture"



“Big Picture” – EAGLE Unleaded Fuel Evaluation and Authorization Pillar

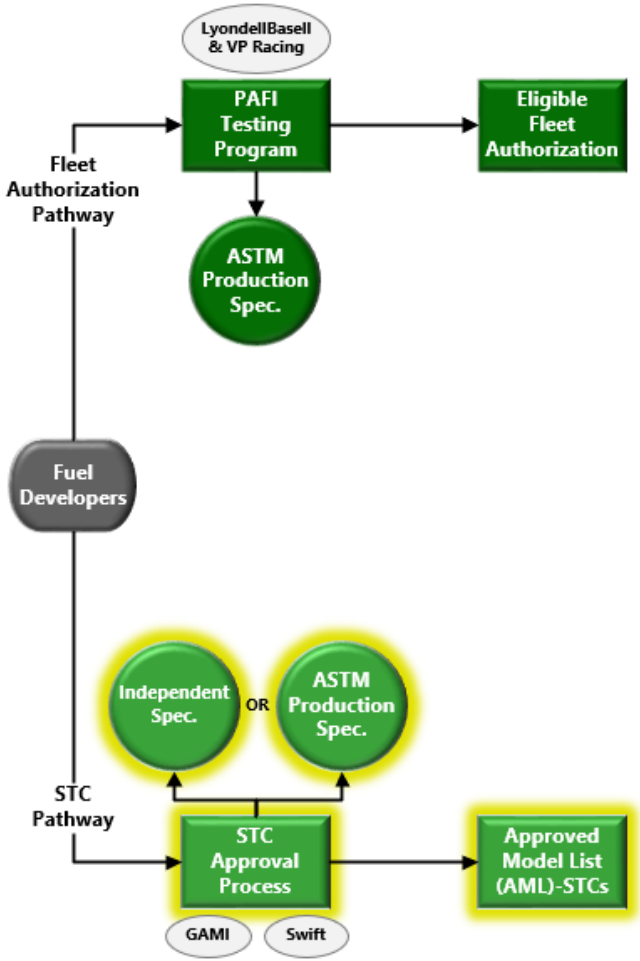
Fleet Authorization Pathway

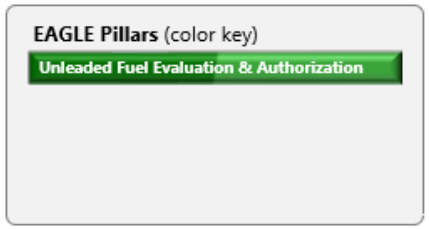




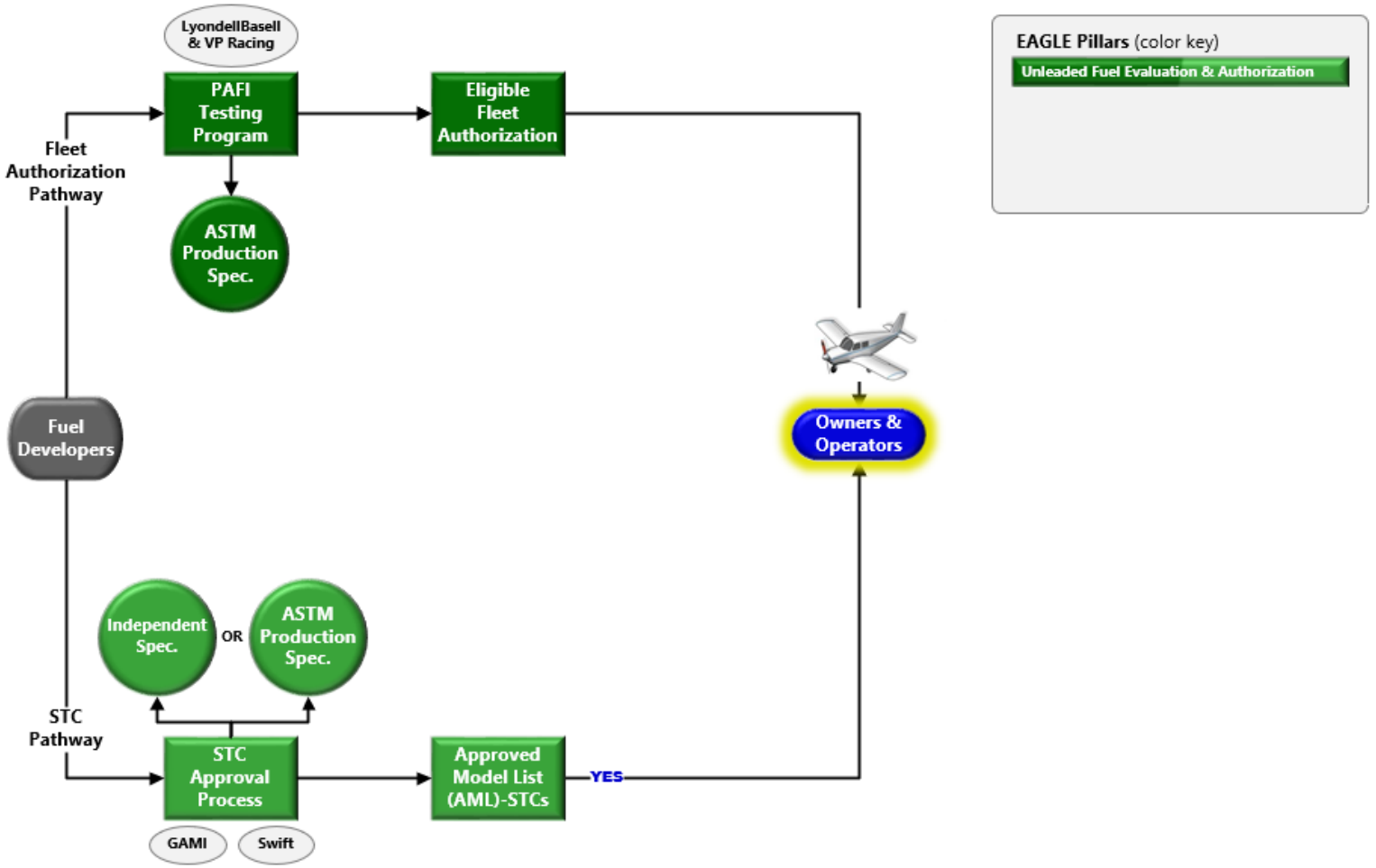
“Big Picture” – EAGLE Unleaded Fuel Evaluation and Authorization Pillar

Supplemental Type Certification (STC) Approved Model List (AML) Pathway

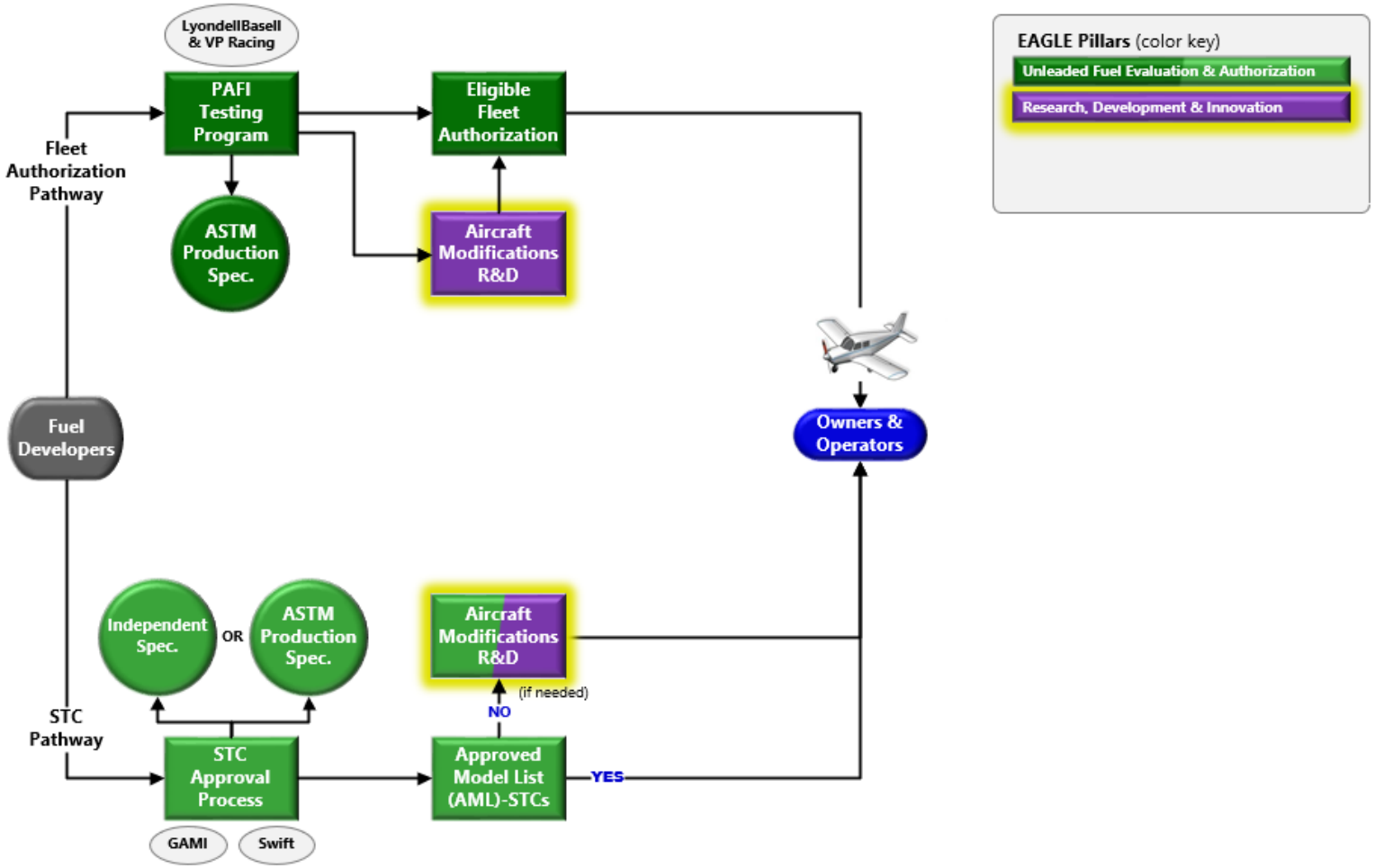




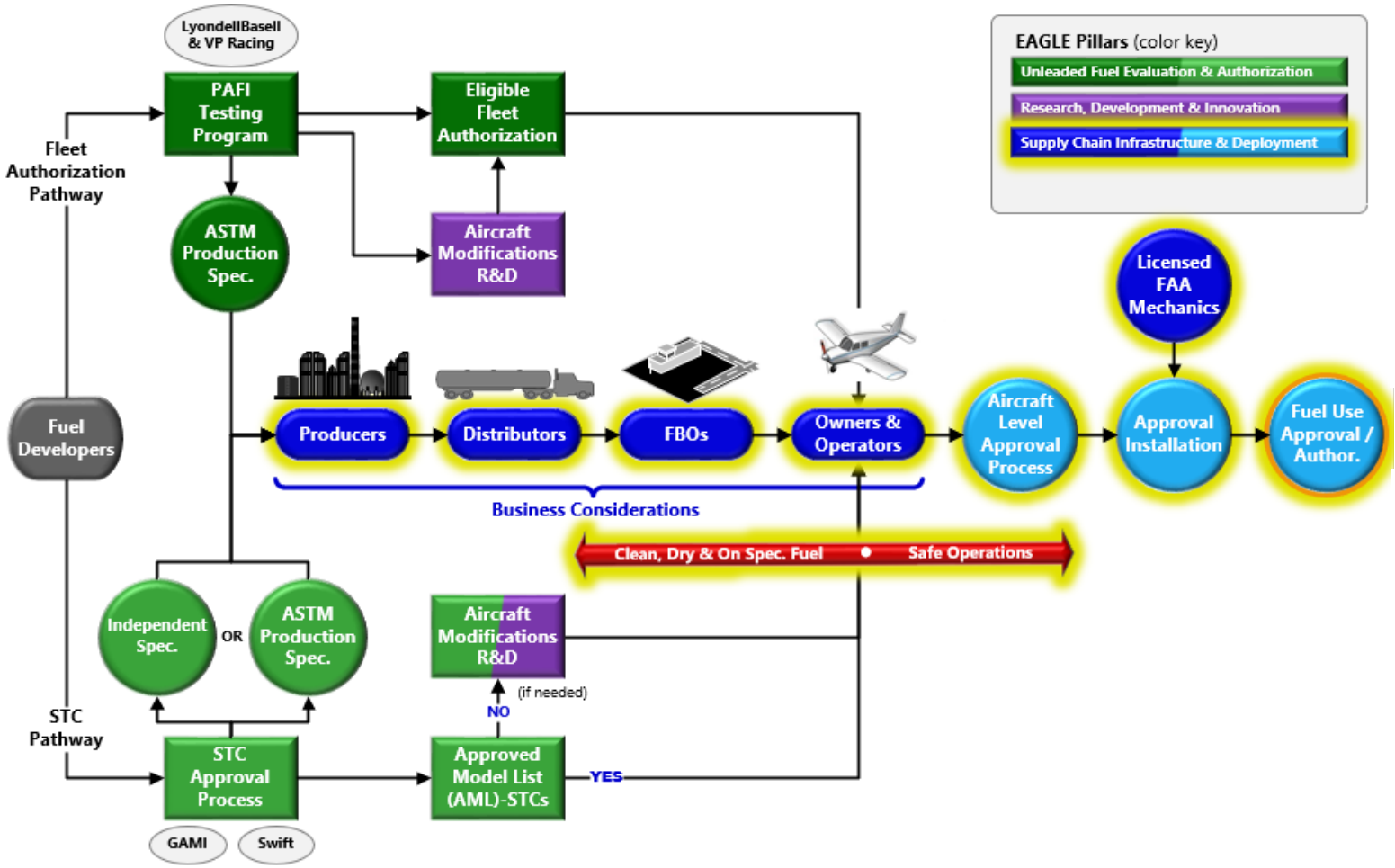
“Big Picture” – Aircraft Owner and Operator Guidance



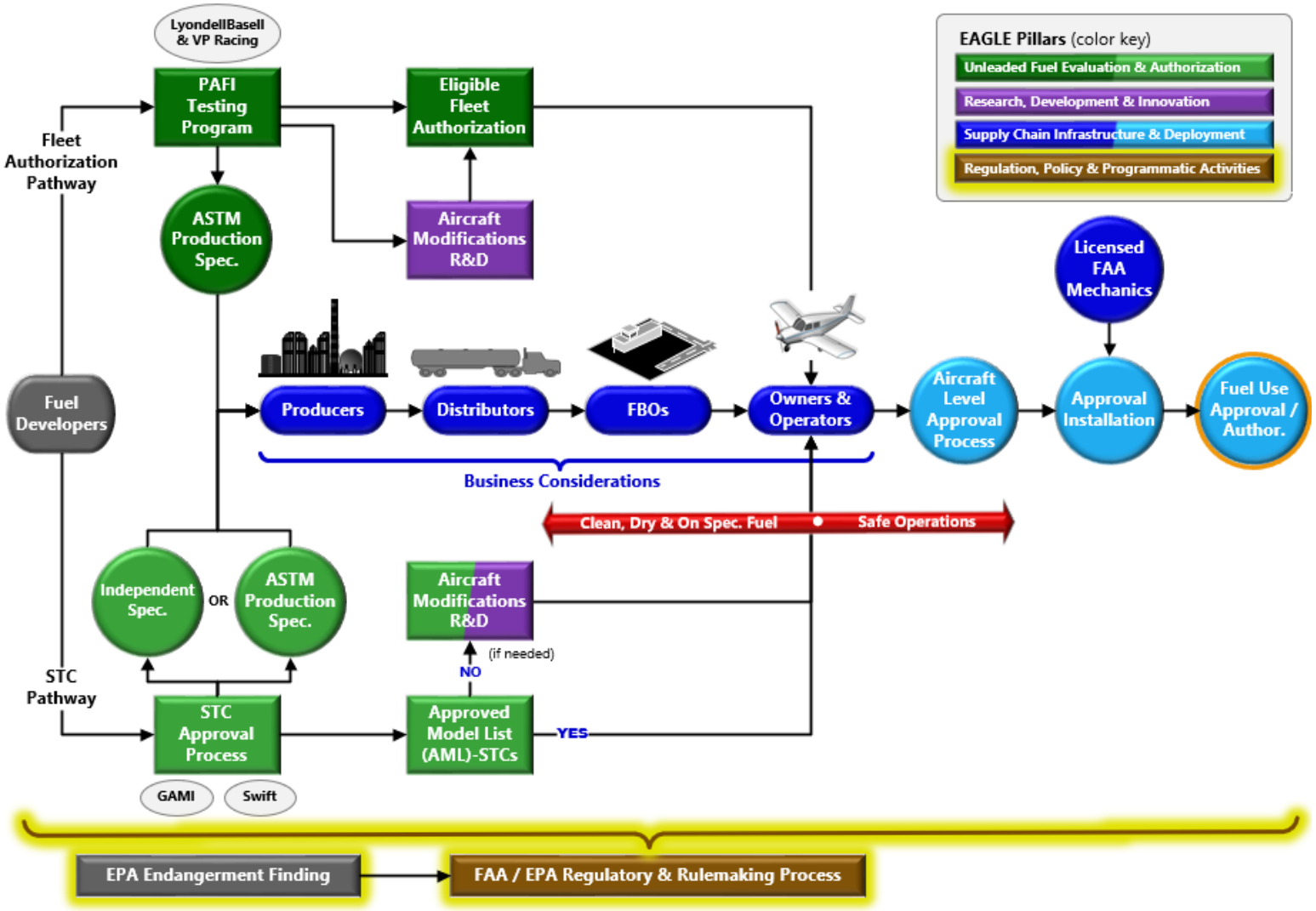
“Big Picture” – EAGLE Research and Development (R&D) Pillar



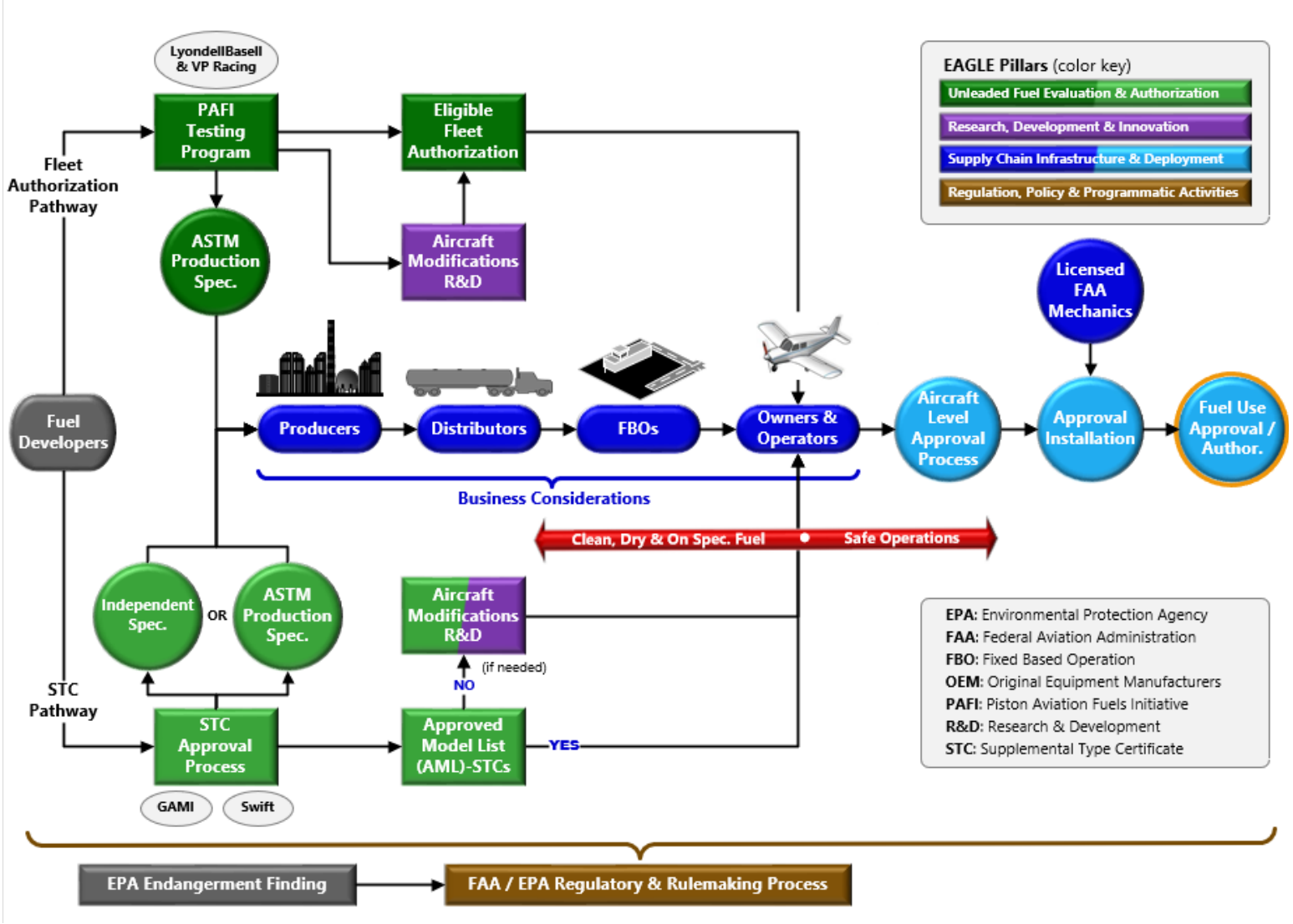
“Big Picture” – EAGLE Supply Chain Infrastructure and Deployment Pillar



“Big Picture” – EAGLE Regulation, Policy and Programmatic Activities Pillar



Transition to Unleaded Aviation Gasoline "Big Picture"



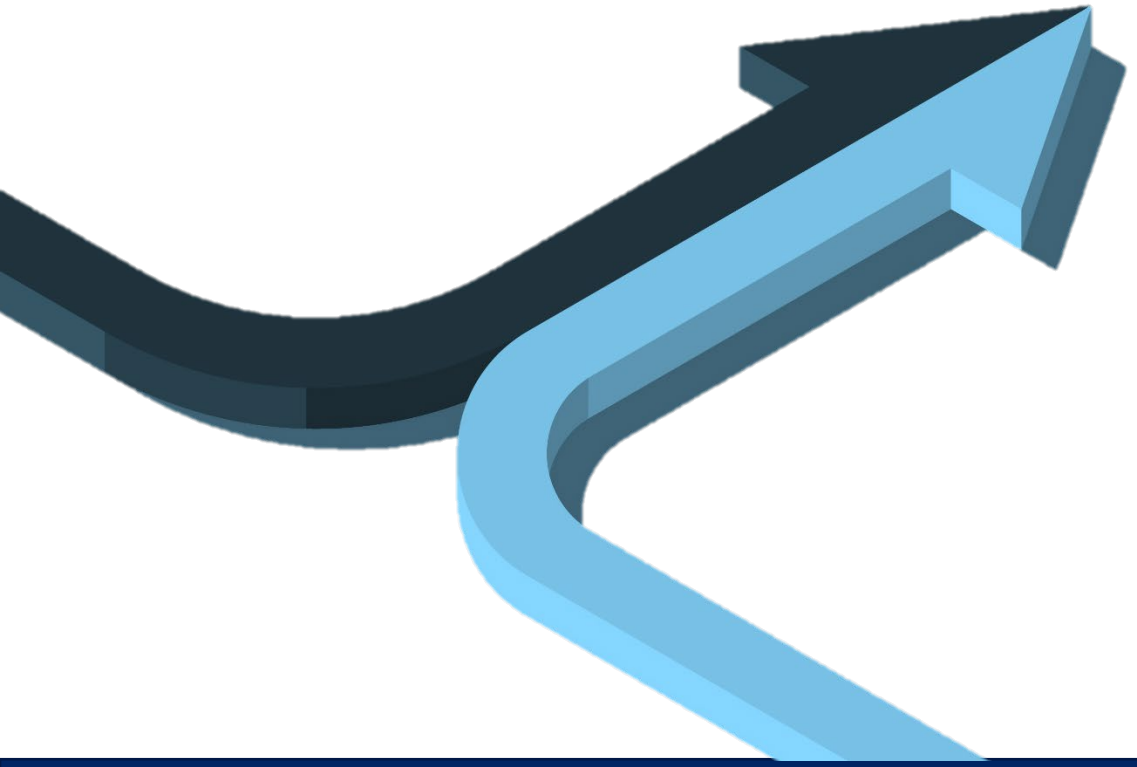
Unleaded Fuel Evaluation and Authorization

Two Pathways to Approve Use of Fuel

Two Paths to Approve Use of Fuel

Supplemental Type Certificate Process

- Traditional FAA aircraft type certification process
- GAMI and Swift Fuels are pursuing FAA STC approval for high-octane unleaded fuel use



Fleet Authorization Process

- FAA aviation fuel fleet authorization process established by Congress through a collaborative industry/government testing program
- LyondellBasell/VP Racing are pursuing FAA authorization of a high-octane unleaded fuel through the PAFI.

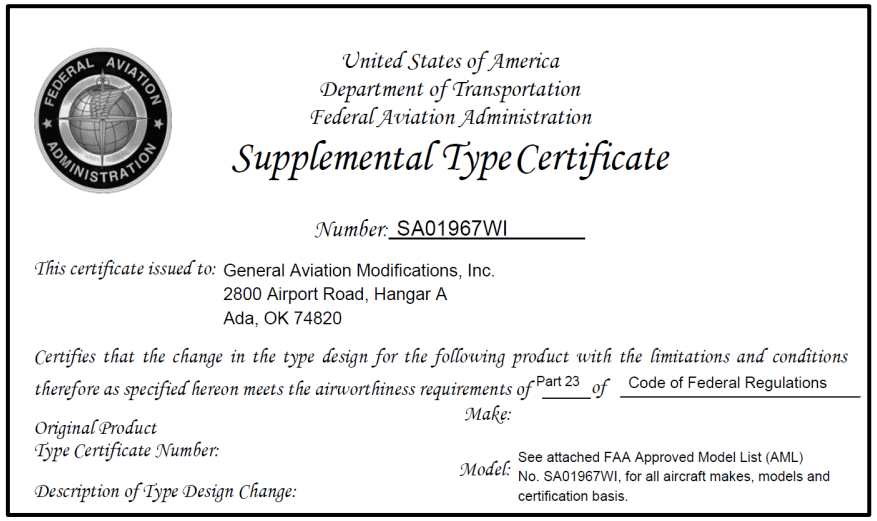
Unleaded Fuel Development – Stakeholder Understanding of New Fuels

- **STC Process – Proprietary between applicant and FAA**
  - Applicant Controls Visibility to Required Tests and Evaluations
  - Applicant Controls Visibility of Company Fuel Specification

- **PAFI Authorization Process – Collaborative Industry/FAA**
  - Aircraft/Engine OEMs and Key Stakeholders Directly Involved (TAC)
  - Establish Agreed Test Requirements
  - “Envelope” of Test Program on flyeagle.org (materials, engines, aircraft, etc)

- **ASTM Consensus Standard Process**
  - Industry Custom & Practice for ALL Transportation Fuels (Aviation, Automotive, etc)
  - ASTM Production Specification Supports Commercialization
    - Includes ALL Stakeholders in Production, Distribution, and Use

Unleaded Fuel Development – Stakeholder Installation to Use New Fuels



United States of America
Department of Transportation
Federal Aviation Administration

Supplemental Type Certificate

Number: SA01967WI

This certificate issued to: General Aviation Modifications, Inc.
2800 Airport Road, Hangar A
Ada, OK 74820

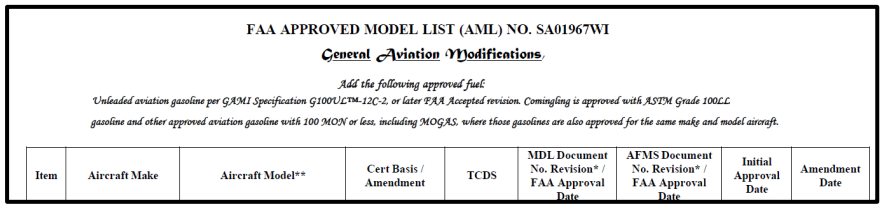
Certifies that the change in the type design for the following product with the limitations and conditions therefore as specified hereon meets the airworthiness requirements of Part 23 *of* Code of Federal Regulations

Original Product Type Certificate Number:

Make:

Model: See attached FAA Approved Model List (AML) No. SA01967WI, for all aircraft makes, models and certification basis.

Description of Type Design Change:



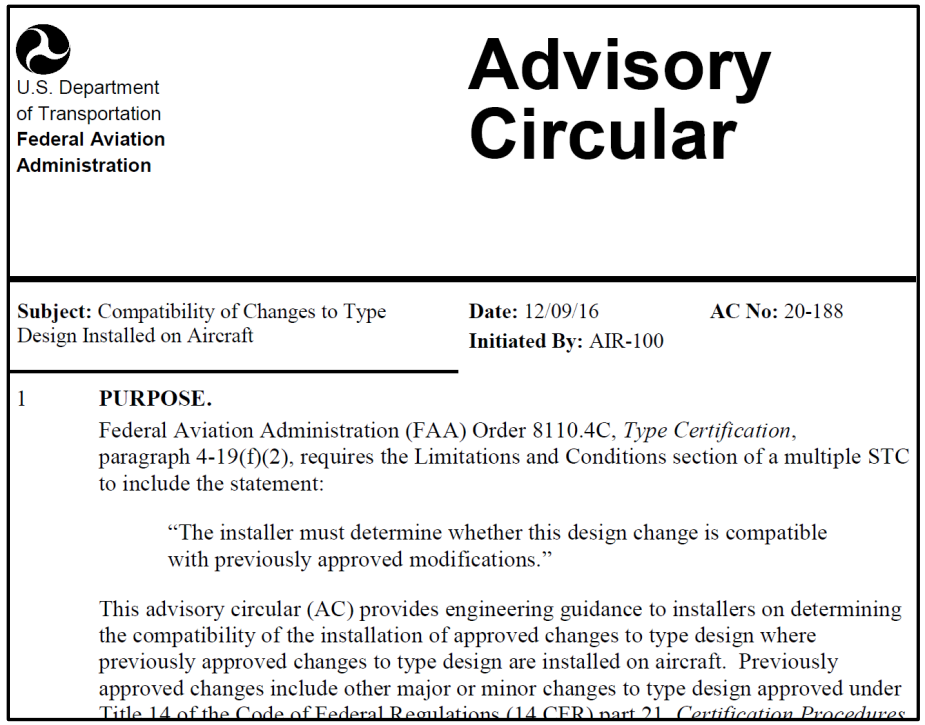
FAA APPROVED MODEL LIST (AML) NO. SA01967WI

General Aviation Modifications

Add the following approved fuel:

Unleaded aviation gasoline per GAMI Specification G100UL™-12C-2, or later FAA Accepted revision. Comingling is approved with ASTM Grade 100LL gasoline and other approved aviation gasoline with 100 MON or less, including MOGAS, where those gasolines are also approved for the same make and model aircraft.

Item	Aircraft Make	Aircraft Model**	Cert Basis / Amendment	TCDS	MDL Document No. Revision* / FAA Approval Date	AFMS Document No. Revision* / FAA Approval Date	Initial Approval Date	Amendment Date



U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Compatibility of Changes to Type Design Installed on Aircraft

Date: 12/09/16 **AC No:** 20-188
Initiated By: AIR-100

1 **PURPOSE.**

Federal Aviation Administration (FAA) Order 8110.4C, *Type Certification*, paragraph 4-19(f)(2), requires the Limitations and Conditions section of a multiple STC to include the statement:

> "The installer must determine whether this design change is compatible with previously approved modifications."

This advisory circular (AC) provides engineering guidance to installers on determining the compatibility of the installation of approved changes to type design where previously approved changes to type design are installed on aircraft. Previously approved changes include other major or minor changes to type design approved under Title 14 of the Code of Federal Regulations (14 CFR) part 21, *Certification Procedures*

AML STC Limitation: "The installer must determine whether this design change is compatible with previously approved modifications."

AC 20-188, Compatibility of Changes to Type Design Installed on Aircraft

Form 337, record compatibility assessment conducted by the installer

Unleaded Fuel Development – Stakeholder Installation to Use New Fuels

PAFI FLEET AUTHORIZATION PROCESS

FUEL TESTING

FAA WJHTC

PAFI Testing and Evaluation

SEC. 565 (a)(1)

Test Reports

ASTM Specification Development

FUEL EVALUATION & APPROVAL

SEC. 565 (a)(2)

FAA Determination of Aircraft/ Engine Eligibility

ASTM Production Specification

SEC. 565 (b)(2)

Eligible Fleet Authorization Summary Report (Approved Data)

Installation procedures and information

FUEL AUTHORIZATION (OTHER THAN TRADITIONAL MEANS)

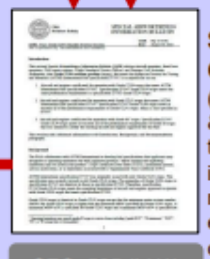
SEC. 565 (a)(3)

Implementation of Alteration for Each Aircraft / Engine

14 CFR Part 43

AVGAS ONLY

Each Owner/Operator of an Eligible Aircraft/ Engine Configuration processes Alteration per 14 CFR Part 43 to add Fuel Spec to AFM Ops Limitations and Placard



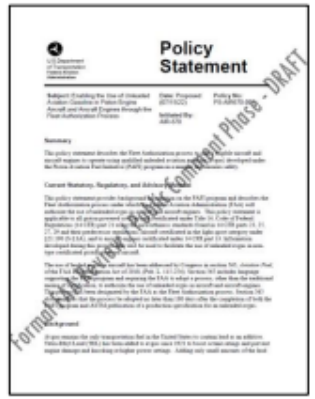
SAIB Communicates: (Qualified Fuel, aircraft & engines able to use the qualified fuel and information and references necessary to enable use of the qualified fuel)

SEC. 565 (b)(1)

GAMA update to Specification 3 for New Fuel Placards

PAFI SECTION 565 (a), (b) IMPLEMENTATION

ELIGIBLE FLEET AUTHORIZATION



Policy Statement to establish process per Section 565 (a)(3)

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UL Fuel Candidates Update

General Aviation Modifications Inc. (GAMI) G100UL

Swift Fuels 100R

LyondellBasell/VP Racing UL100E

Unleaded Fuel Candidates Update

- **GAMI "G100UL"**
  - FAA Approved Model List STC (AML STC) – Certified Piston Engine Airplanes
    - SE01966WI Part 33 Engine AML STC includes all FAA type-certificated spark-ignition piston engines
    - SA0196WI Part 23 Airplane AML STC includes all type-certificated fixed-wing airplanes
  - Project for Rotorcraft STC Ongoing
  - Vitol Aviation has produced 1.3 million gallons
  - G100ULCurrently Available at Reid-Hillview-CA, Watsonville-CA, Tupelo-MS

- **Swift Fuels "100R"**
  - FAA Issued initial STCs for limited airframe and engine
    - SE4651CH Part 33 Engine STC for Lycoming IO-360-L2A engines
    - SA04652CH Part 23 Airplane STC for Cessna 172 R/S
  - Project for FAA Engine & Airplane AML STCs Ongoing
  - Working with ASTM International to obtain an industry consensus Production Specificatio…

Unleaded Fuel Candidates Update

- **LyondellBassel/VP Racing “UL100E”**
  - Fuel Evaluation Testing Being Conducted Under Joint FAA/Industry Piston Aviation Fuels Initiative (PAFI) Test Program
    - Status of Materials, Engine & Aircraft Testing on the following slides
  - Working with ASTM International to obtain an industry consensus production specification

Unleaded Fuel Evaluation and Authorization

UL100E Piston Aviation Fuel Initiative (PAFI) Testing Status

PAFI Unleaded Fuel Testing Protocols – UL100E as of 11-Feb-2025

PAFI Initial Testing

COMPLETE (GATES 1, 2, and 3)

☑ Mini-Materials Compatibility
Subset of full materials compatibility testing involving articles representative of sealants, fuel bladders, and elastomers, performed by fuel developer

☑ Engine Performance/Fuel Properties
Rated power check of TIO-540-J2BD to compare engine operational parameters and CoA to 100LL

☑ Performance & Detonation
Comparative testing between minimum specification 100LL and test fuel performed in altitude test cell on TSIO-520-VB engine

☑ Mini-Durability
Engine test to evaluate the deposit forming characteristics and effects of the fuel during a § 33.49 150-hour endurance test, TSIO-550-K engine

Full Scale PAFI Testing

IN PROGRESS (GATE 4)

➡ Materials Compatibility *(26% Complete)*
Full materials compatibility lab and bench tests
- **Rig Testing**: Storage stability, cold soak storage, hot surface ignition temperature, low temperature flow ability

➡ Performance & Detonation *(32% Complete)*
Testing of multiple engine models at simulated altitude, hot day conditions

➡ Durability *(25% Complete)*
1) § 33.49 150-hour endurance engine test followed by
2) 200-hour flight duty cycle durability test per AC 33.19-1 to characterize effects on engine durability and TBO on multiple engine models

➡ Additional Testing *(15% Complete)*
Evaluate propeller stress levels compared to 100LL for multiple engine / propeller combinations and cold starting and fuel tank quantity sensing

➡ Aircraft *(6% Complete)*
Ground and flight testing on multiple aircraft to evaluate engine and aircraft operability, handling, cooling, and fuel system hot weather

PAFI GATE 4 – UL100E Full Scale Testing Status as of 11-Feb-2025

Detonation & Performance

32.2%

93%	Continental TSIO-520-VB
0%	*Lycoming TIO-540-J2B*
100%	Lycoming IO-540-K1A5
0%	*Continental IO-550-D*
0%	*Continental O-470-U*
0%	*P&W R-1830 S1C3-G*

Durability & Performance

(150 Hr. § 33.49 + 200 Hr. flight duty cycles)

25.0%

350 hr	Continental TSIO-550-K
0 hr	*Lycoming IO-360-C1F*
0 hr	*Air Repair W670-6N*
0 hr	*Lycoming O-360-A1A*

Aircraft Testing (Operation, Cooling Climb, Hot Fuel)

6.0%

100%	Lancair Super Legacy
2%	Robinson R44 II
2%	Cirrus SR22T
2%	Beechcraft G36
2%	Cessna T206H
0%	*Cessna 402C*
2%	Piper PA-46-350
0%	*Cessna 182Q*
5%	T-6G (Harvard 4)

R&D Testing (CHT, OAT/MAT, Timing)

30.0%

Additional Testing

15.0%

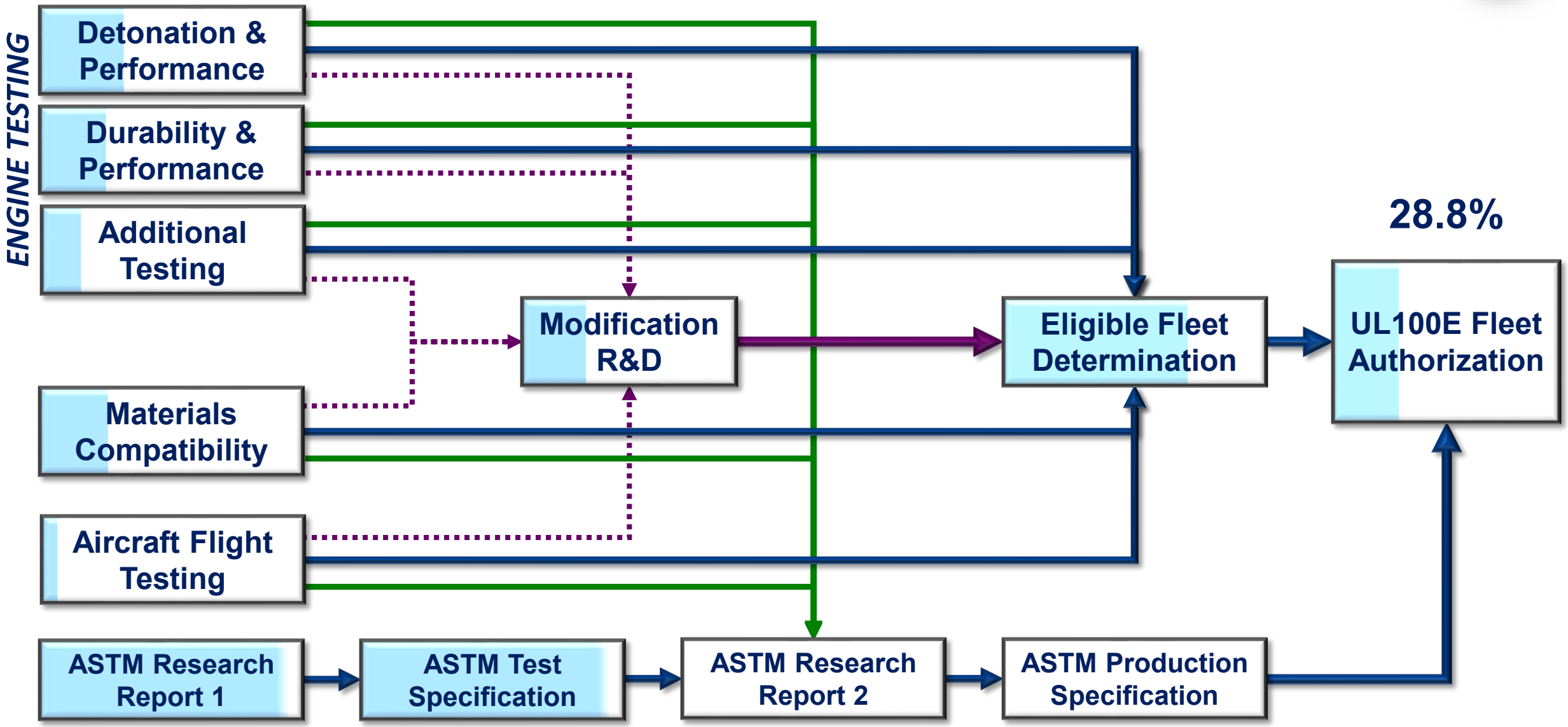
25%	Propeller Vibe
0%	*Cold Starting*
20%	Fuel Qty Gauging

Materials Compatibility

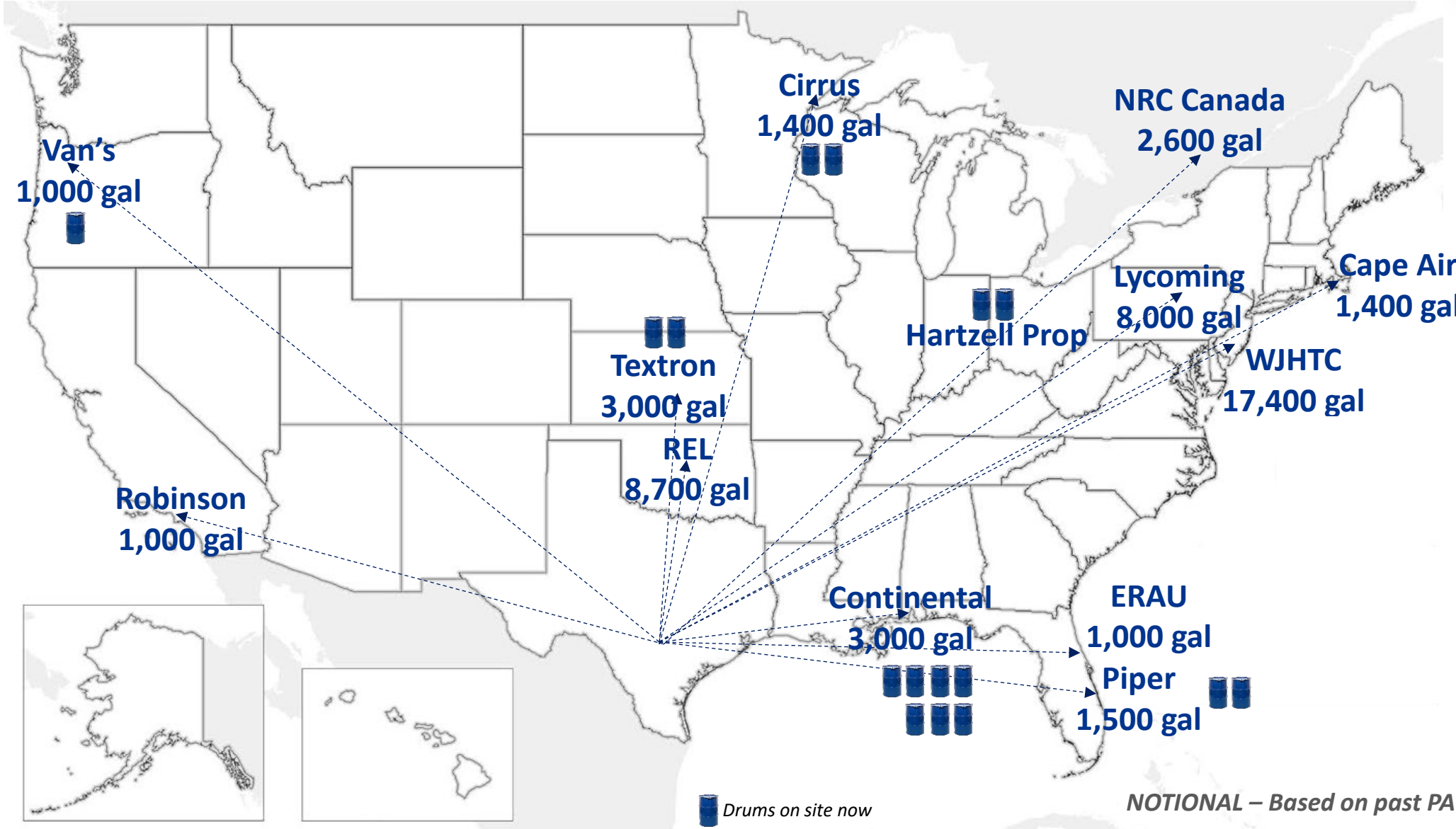
26.0%

9%	Metallics (32)
19%	Non-Metallics (26)
0%	*Finished Parts (5)*
90%	Paint Systems (10)
0%	*Fabric Systems (5)*
35%	Polysulfides (17)
100%	O-Rings (5)
20%	Aircraft Hoses (5)
0%	*Distrib. Sys. (13)*
0%	*Fuel Bladders (2)*
0%	*Comp. Resins (16)*
0%	*Composites (7 - 21)*
0%	*OEM Materials (5)*
90%	OEM Wing Test (4)

PAFI Fleet Authorization Process / Status - UL100E as of 11-Feb-2025



PAFI GATE 4 – Full Scale Testing – ~ 50,000 gallons of UL100E



NOTIONAL – Based on past PAFI activities

Materials Compatibility Testing Matrix

Paint Systems

- ✓ **Primer: Axalta Corlar 13580s Epoxy, Base Coat: Imron AF400, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**
- ✓ **Primer: AN 10P8-11 VOC compliant Epoxy Primer, Base Coat: Imron AF400, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**
- ✓ **Primer: Axalta Corlar 13580s Epoxy, Base Coat: Imron AF700, Clear Coat: AF740, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**
- ✓ **Primer: AN 10P8-11 VOC compliant Epoxy Primer, Base Coat: Imron AF700, Clear Coat: AF 740, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**
- ✓ **Primer: Axalta Corlar 13580s Epoxy, Base Coat: Imron AF3500, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**
- ✓ **Primer: AN 10P8-11 VOC compliant Epoxy Primer, Base Coat: Imron AF3500, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**
- ✓ **Primer: Axalta Corlar 13580s Epoxy , Base Coat: Centari 5.10, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**
- ✓ **Primer: High Solids Epoxy Primer (CM0483787), Base Coat: Jet Glo Express 840, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**
- ✓ **Primer: 10P30-5Y [Fuel tank coating], Base Coat: NA, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**
- ✓ **Primer: 454-4-1 [Fuel tank coating], Base Coat: NA, 0.040" 2024-T3 aluminum per AMS-QQ-A-250/5B**

Fabric Systems

- ❑ Poly-Fiber, Fabric- Polyester, Cement, Coating- Vinyl
- ❑ Ceconite/Randolph, Fabric-Polyester, Cement, Coating- Butyrate Dope
- ❑ Ceconite/Randolph, Fabric-Polyester, Cement, Coating- Nitrate Dope
- ❑ Aircraft Spruce, Fabric- Superflite Fa315bric VI, Superflite U500 Cement, Coating 2 part Urethane Fabric Primer Catalyst
- ❑ Stewart Systems, Ecobond Glue, Ekofill, Superflight Fabric VI (Aircraft Spruce), Cleaner

O-Rings

- ✓ **BunaN (Nitrile) SAE-AMS-P-5315**
- ✓ **Fluorocarbon SAE-AMS-7276**
- ✓ **Fluorosilicone SAE-AMS-R- 25988, Type I**
- ✓ **Fluorocarbon SAE-AMS-7379**
- ✓ **Fluorocarbon SAE-AMS-7826**

Aircraft Hoses

- ❑ Low Pressure Rubber hose (MIL-H-6000)
- ❑ Med. Pressure Metal Braided hose (MIL-H-8794)
- ❑ Med. Pressure PTFE hose (MIL-DTL-27267)
- ✓ **MIL-DTL-6000 Nitrile Hose**
- ❑ MIL-DTL-5593 Hose

Fuel Bladders

- ❑ Meggitt Bladder
- ❑ EAGLE Fuel Cell

OEM Wing Test

- ❑ Cirrus Materials Tests
- ❑ Van's Aircraft Materials Tests
- ❑ Textron Aviation Materials Tests
- ❑ Piper Materials Tests

** Refer to PAFI-MTP-002*

Materials Compatibility Testing Matrix

Metallics

- ❑ 1100 Aluminum
- ❑ 2017 Aluminum
- ❑ 2024-T3 Aluminum
- ❑ 2024-T351 Aluminum, hard anodize
- ❑ 2024-T4 Aluminum, hard anodize and dry film lubricant coated
- ✓ **5052-0 Aluminum**
- ❑ 6061-T6 Aluminum anodized
- ❑ 7075 Aluminum
- ✓ **AMS 4505 Brass (~C260)**
- ❑ AMS 4610 Brass (~C360)
- ❑ CA122 (ASTM B187) Brass
- ❑ C46400 Brass
- ❑ Phosphor Bronze 510
- ❑ Copper
- ❑ Lead
- ❑ Monel
- ❑ Nickel plating, electro, QQ-N-290A over cold rolled Steel
- ❑ Chrome plate, over Steel
- ❑ Tin plate, ASTM B545, Class B (Bright) over cold rolled Steel
- ❑ Zinc plate ASTM B633 SC2, Type 2 over cold rolled Steel
- ❑ 1010 Steel, Cadmium plate
- ❑ 17-4 PH Steel, passivate
- ❑ 303 Steel
- ❑ 316 Steel, passivate
- ❑ 321 Steel, passivate (stainless)
- ✓ **416 Stainless Steel**
- ❑ 440C Steel
- ❑ Chrome Steel (4140 Alloy)
- ❑ 52100 bearing Steel
- ❑ AMS 4750, QQ-S-571-SN63 lead tin solder
- ❑ Silver braze
- ❑ Plated music wire (springs) RSA Carburetor P/N CF24-A10

Non-Metallic Slab / Flat Stock

- ❑ BunaN (Nitrile) Abrasion resistant (orange)
- ✓ **BunaN (Nitrile) Med (black)**
- ❑ Nitrile (foam)
- ✓ **Fluorosilicone**
- ✓ **Viton A (FKM)**
- ✓ **BunaN/vinyl (white)**
- ❑ Phenolic
- ✓ **ABS Thermoplastic (Acrylonitrile Butadiene styrene)**
- ❑ Cork, plain back
- ❑ Cork, neoprene
- ❑ Nylon 6/6
- ❑ Glass-filled Nylon 6
- ❑ Leather
- ❑ Safety Foam
- ❑ Fairprene RSA carb seal P/N 626536 fuel manifold valve
- ❑ Polyester sheet
- ❑ Neoprene
- ❑ Polyester film (Mylar)
- ❑ Silicone
- ❑ Teflon (adhesive ready)
- ❑ Polypropylene (flame retardant)
- ❑ Fiberglass Fabric reinforced silicone
- ❑ Epichlorohydrin - foam
- ❑ ASTM D710 vulcanized fiber (red)
- ❑ Polyurethane
- ❑ Delrin

Other OEM Parts

- ❑ Piper 187-433 Synthetic Rubber Sheet (MIL-PRF-6855); 2’ x 2’
- ❑ Piper 462-049 Gaskets (ASTM D2000); 10 ea.
- ❑ Piper 462-056 Gaskets (ASTM D2000); 10 ea.
- ❑ Piper 106927-001 Duckbill Check Valve (ASTM D2000); 10 ea.
- ❑ Lycoming BN-0002.05 Fairprene Sheet; 2’ x 2’ sheet

Non-Metallic Finished Parts

- ❑ Epoxy carb floats
- ❑ 3M Scotch Weld Epoxy adhesive, EC2216
- ❑ Hysol EA9628 Epoxy with Solvay BR-127 Epoxy Primer
- ❑ Loctite 290
- ❑ Loctite 569 (dimethacrylate ester)

** Refer to PAFI-MTP-002 and ASTM D7826*

Materials Compatibility Testing Matrix – Polysulfide Sealants

Polysulfide Sealants

- ✓ **PR-1773 B-2 Polysulfide AMS 3284**
- ✓ **P/S 890 A-2 Polysulfide, AMS 8802**
- ❑ P/S 890 A-2 Polysulfide, AMS 8802, 2 aluminum panels (each), AMS4045, sulfuric acid anodized in accordance with AS5127 (6.3) and coated with AMS-C-27725 Type 2.
- ✓ **PR 1422 Polysulfide AMS-S-8802 Type 1, Class B-2**
- ❑ PR 1422 Polysulfide AMS-S-8802 Type 1, Class B-2, See AS5127 §8.1.1
- ✓ **PR-1440B Polysulfide AMS-S-8802 Type 2, Class B-2**
- ❑ PR-1440B Polysulfide AMS-S-8802 Type 2, Class B-2, 2 aluminum panels (each), AMS4045, sulfuric acid anodized in accordance with AS5127 (6.3) and coated with AMS-C-27725 Type 2.
- ❑ PR-2001B Polythioether AMS-3277 Type 2, Class B-2
- ❑ PR-2001B Polythioether AMS-3277 Type 2, Class B-2, 2 Aluminum alloy, AMS4045, panels, sulfuric acid anodized in accordance with AS5127 (6.3) and coated with AMS-C-27725.
- ✓ **Aerospace Sealant AC-350 Polysulfide, AMS 3276 Type 2, Class B-2**
- ❑ Aerospace Sealant AC-350 Polysulfide, AMS 3276 Type 2, Class B-2, 2 Aluminum panels, AMS4045, sulfuric acid anodized in accordance with AS5127 (6.3) and coated with AMS-C-27725 Type 2.
- ✓ **PR1776M or AC-370 B-1/2 Polysulfide, AMS-3281 Type 1, Class B-1/2**
- ❑ PR1776M or AC-370 B-1/2 Polysulfide, AMS-3281 Type 1, Class B-1/2, 2 aluminum test panels chemically treated according to AS5127 (6.2) shall be used. After conversion coating, the sealing compound shall be applied to the peel strength test panels as described in AS5127/1 (8.1.1).
- ❑ PR1776M or AC-370 B-1/2 Polysulfide, AMS-3281 Type 1, Class B-1/2, 2 FRC (Toray Advanced Composites BT250E-1/E-glass) test panels shall be grit blasted with aluminum oxide and/or abrasion with aluminum oxide sandpaper. After abrading the surfaces, the sealing compound shall be applied to the peel strength test panels as described in AS5127/1 (8.1.1).
- ❑ PR-1005-L Buna-N fuel tank topcoat; “Slosh Coat”, AMS-S-4383
- ❑ AMS-S-83318 Class B (3M AC-250 or PPG PS860)
- ❑ AMS-S-83318 Class B (3M AC-250 or PPG PS860), 2 AMS4045 aluminum test panels chemically treated according to AS5127 (6.2) shall be used. After conversion coating, the sealing compound shall be applied to the peel strength test panels as described in AS5127/1 (8.1.1).

** Refer to PAFI-MTP-002*

Materials Compatibility Testing Matrix – Distribution Components

Distribution System

- ❑ Distribution Hoses
  - ❑ MFC
  - ❑ Continental ContiTech Aeropal refueling hose, Inner liner is NBR, exterior cover is CR (chloroprene)
  - ❑ Hewitt Husky 4113 permanent aviation hose, Inner liner is NBR, exterior cover is neoprene
  - ❑ Goodyear Advantage Petroleum Aircraft Fueling hose, Inner liner NBR, exterior cover Wingprene™ synthetic rubber
  - ❑ Parker Gold Label Aircraft Fueling Hose Series 7776 CT (cold temperature), Inner liner is NBR, exterior cover is conductive nitrile
- ❑ Lining
  - ❑ Chemliner 4000, High Solid, Novolac Epoxy Lining Coated Sheet of 1018 Low Carbon Steel
  - ❑ Chemthane 4200PW, Solvent-Free Two Component Polyurethane Coated Sheet of 1018 Low Carbon Steel
- ❑ Filters/Coalescers
  - ❑ Paper Pleated Fuel Filter, Facet Fuel-Gard, VF-21SB, Filter Cartridge P/N: CF-609-2PLO, CF-609-5PLO
  - ❑ Paper Pleated Fuel Filter for Velcon VF-61 Housing, P/N; FO512PL-05
  - ❑ Coalescer/ Separator Cartridge, Facet Fuel Guard, VF-21SB, P/N: CC-21-7
  - ❑ Coalescer/ Separator Cartridge, Velcon, P/N: OS-51288
  - ❑ Housing, Velcon, P/N: VF-61
  - ❑ Housing, Facet Fuel Gard Series

Refer to PAFI-MTP-002 and ASTM D7826

Materials Compatibility Testing Matrix – Composite Materials

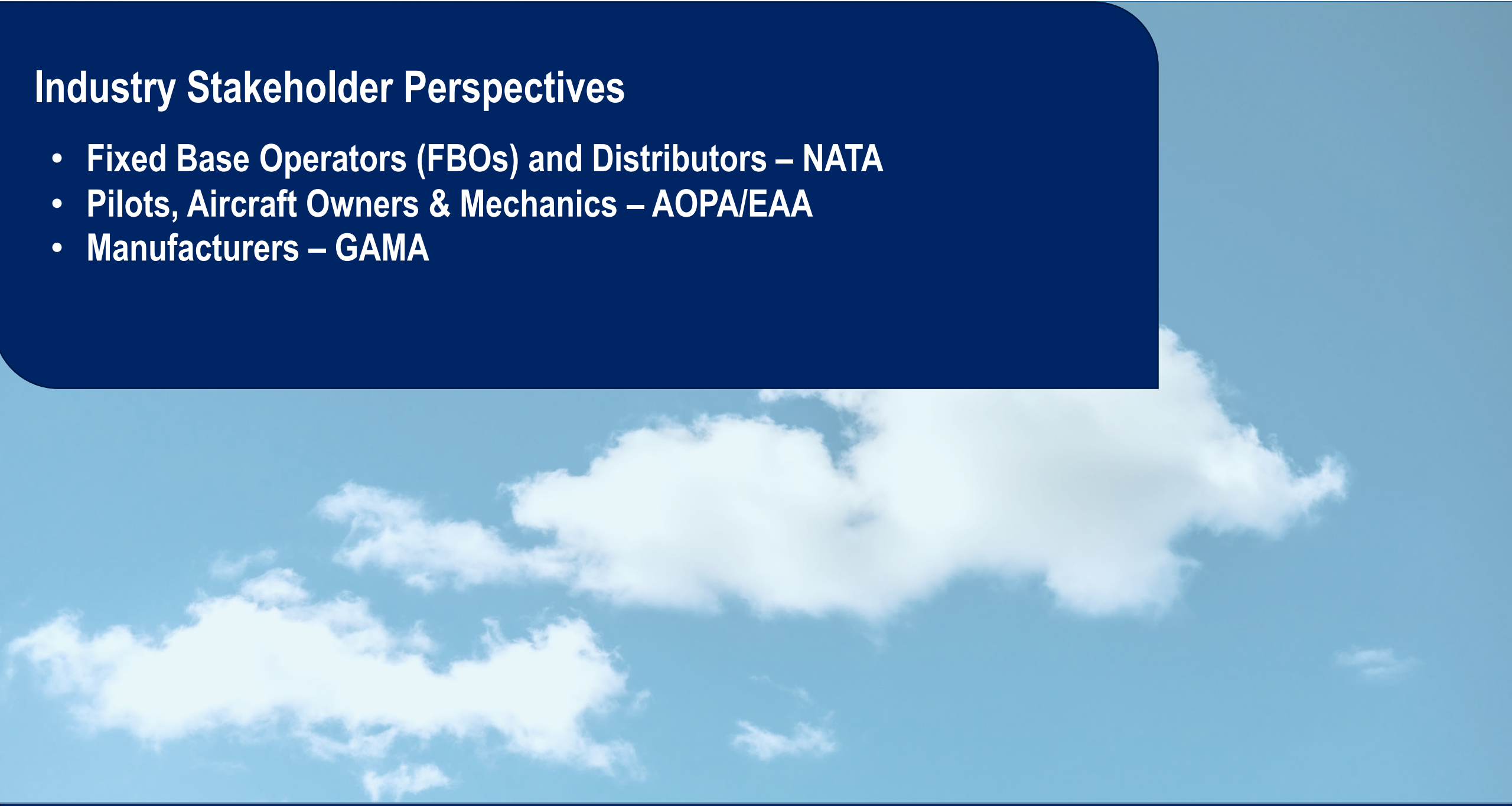
Composites

- ❑ **Resin Pre-Screening (16 materials)**
  - ❑ Bis A Epoxy with Slow Cure – EZ-Poxy EZ10A resin with EZ87B curative without fiber
  - ❑ Bis A Epoxy with Slow Cure – PTM&W Aeropoxy PR 2032 resin with PH3660 curative without fiber
  - ❑ *Bis A Epoxy with Fast Cure – Hexion MGS 285 with cycloaliphatic amine H287 curative without fiber
  - ❑ *Bis A Epoxy with Slow Cure – Hexion MGS 285 with cycloaliphatic amine H285 curative without fiber
  - ❑ Bis A Epoxy with Slow Cure – Hexion L 335 with cycloaliphatic amine H338 or H340 curative without fiber
  - ❑ Bis A Epoxy with Slow Cure – LAM-125 with LAM-229 curative without fiber
  - ❑ Bis F Vinyl – West System 105 with slow primary amine curative 209 without fiber
  - ❑ Bis F Vinyl – DPL 862 with TETA curative without fiber
  - ❑ Bis F Vinyl – RHINO 9700A with 9700B 30% TETA curative without fiber
  - ❑ *Bis F Vinyl with fast primary amine curative – Hexion 8014 with TETA curative without fiber
  - ❑ *Vinyl Ester – Derakane 470 with MEKP catalyst without fiber
  - ❑ Vinyl Ester – Derakane Signia 411-350 with MEKP catalyst without fiber
  - ❑ Epoxy – Toray Advanced 2510 Prepreg (unidirectional on T700G carbon fabric)
  - ❑ Non-toughened pre-preg – Toray Advanced Composites BT250 E1 on E-glass (fiberglass) fabric
    - ❑ PTM-W ES6292 low temperature cure epoxy paste adhesive samples using laminates constructed from Toray Advanced Composites BT250E-1 E-glass prepreg
  - ❑ Toughened Pre-preg – ACG MTM 45-1 on Carbon Fiber Fabric
  - ❑ Hysol EA 9360 low temperature cure epoxy adhesive samples using laminates constructed from ACG MTM 45-1 toughened pre-preg
- ❑ **Finished Composites - Property Testing. (6 to 18 materials)**
  - ❑ **Any of the above 12 resins not marked with * which have failed the pre-screening above: Built up on E-glass fiber**
  - ❑ *Bis A Epoxy with Fast Cure – Hexion MGS 285 with cycloaliphatic amine H287 curative on E-glass (fiberglass) fabric
  - ❑ *Bis A Epoxy with Slow Cure – Hexion MGS 285 with cycloaliphatic amine H285 curative on E-glass (fiberglass) fabric
  - ❑ *Bis F Epoxy with fast primary amine curative – Hexion 8014 with TETA curative on E-glass (fiberglass) fabric
  - ❑ *Vinyl Ester – Derakane 470 on E-glass (fiberglass) fabric
  - ❑ PVC Structural Foam (Diab Divinycell HT 61—Trademarked)
  - ❑ Rigid Polyurethane Foam (General Plastics FR-3700 Last-A-Foam—Trademarked)

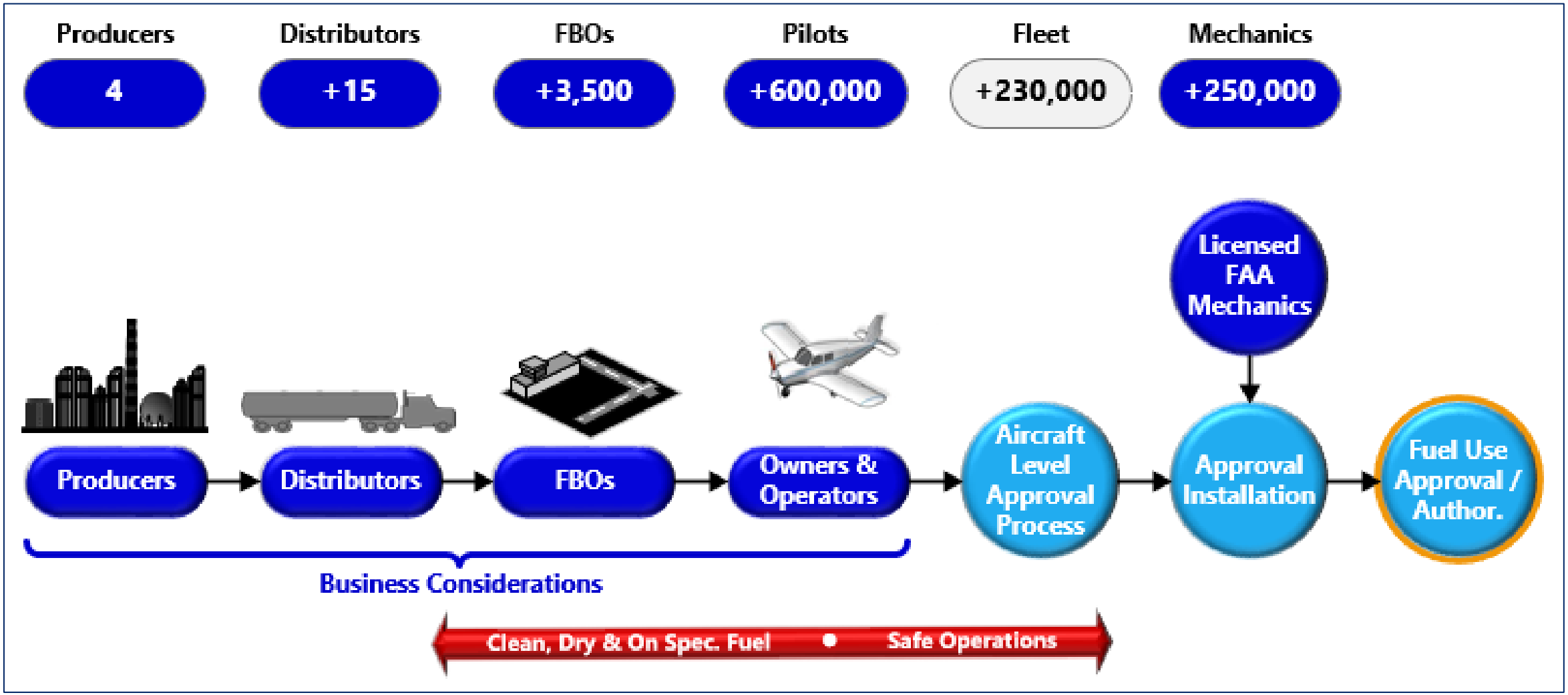
** Refer to PAFI-MTP-002*

Industry Stakeholder Perspectives

- Fixed Base Operators (FBOs) and Distributors – NATA
- Pilots, Aircraft Owners & Mechanics – AOPA/EAA
- Manufacturers – GAMA



Supply Chain Infrastructure and Deployment/FBOs



Thank you!

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