



# Kansas Economic Council at Wichita State

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General Aviation Manufacturers Association (GAMA)  
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# Who is GAMA?



- GAMA Represents Worldwide Industry of General Aviation Aircraft Manufacturers
  - Business Jets
  - Turboprops
  - Rotorcraft
  - Piston Airplanes
  - AND Pre-Revenue Electric/Hybrid Aircraft and Engine Manufacturers
- 132 Member Companies
- Founded in 1970
- Offices in
  - Washington, DC
  - Brussels, Belgium

# Business & General Aviation Turbine Airplane Market

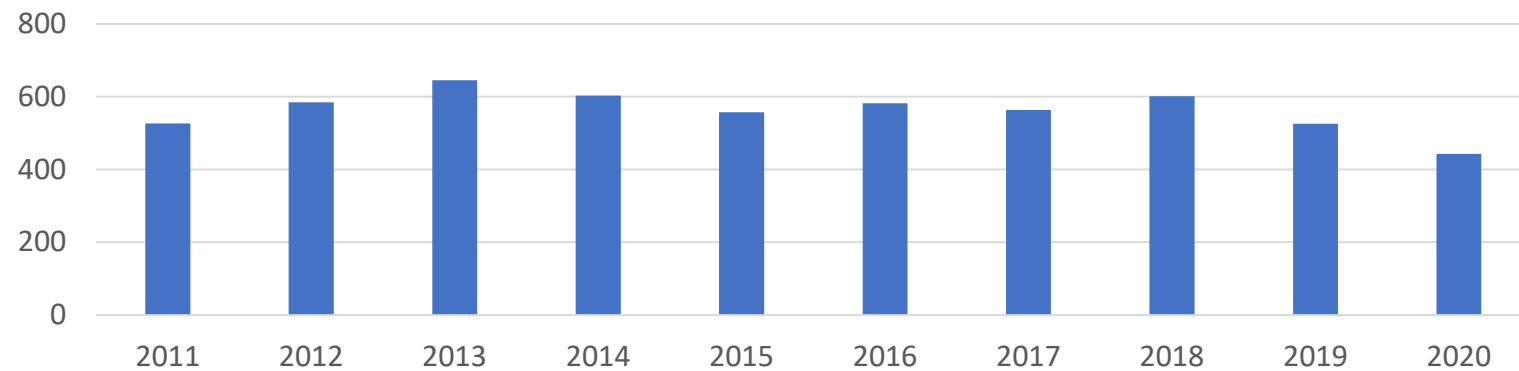


- 2011-2020 Deliveries

- Turboprop Airplanes

- 5,629 Units
    - \$16.6B

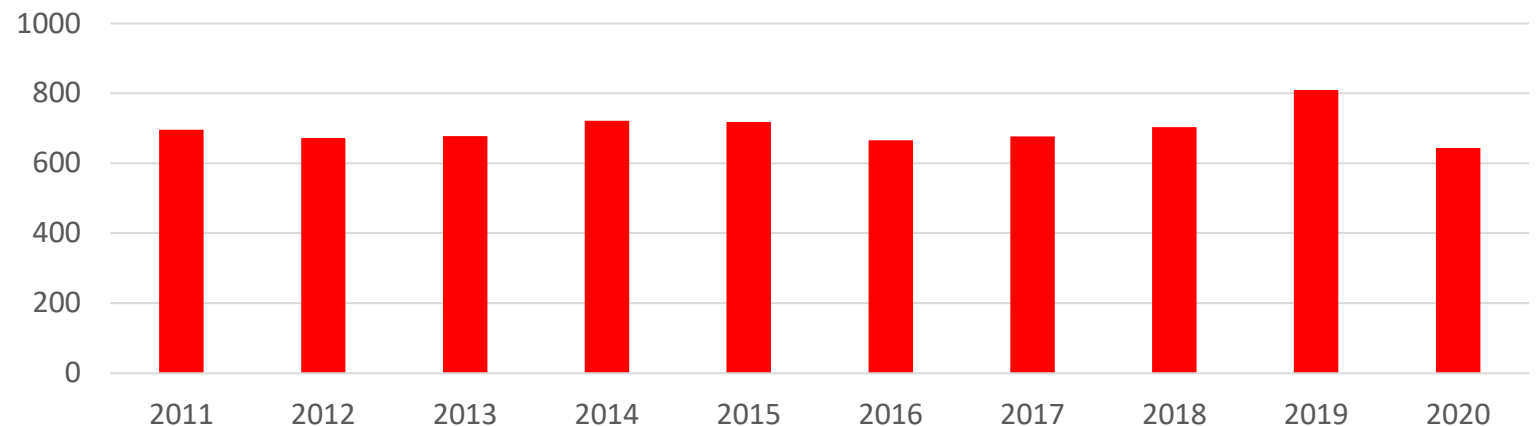
Turboprop Airplanes (with Utility and Agricultural)



- Business Jets

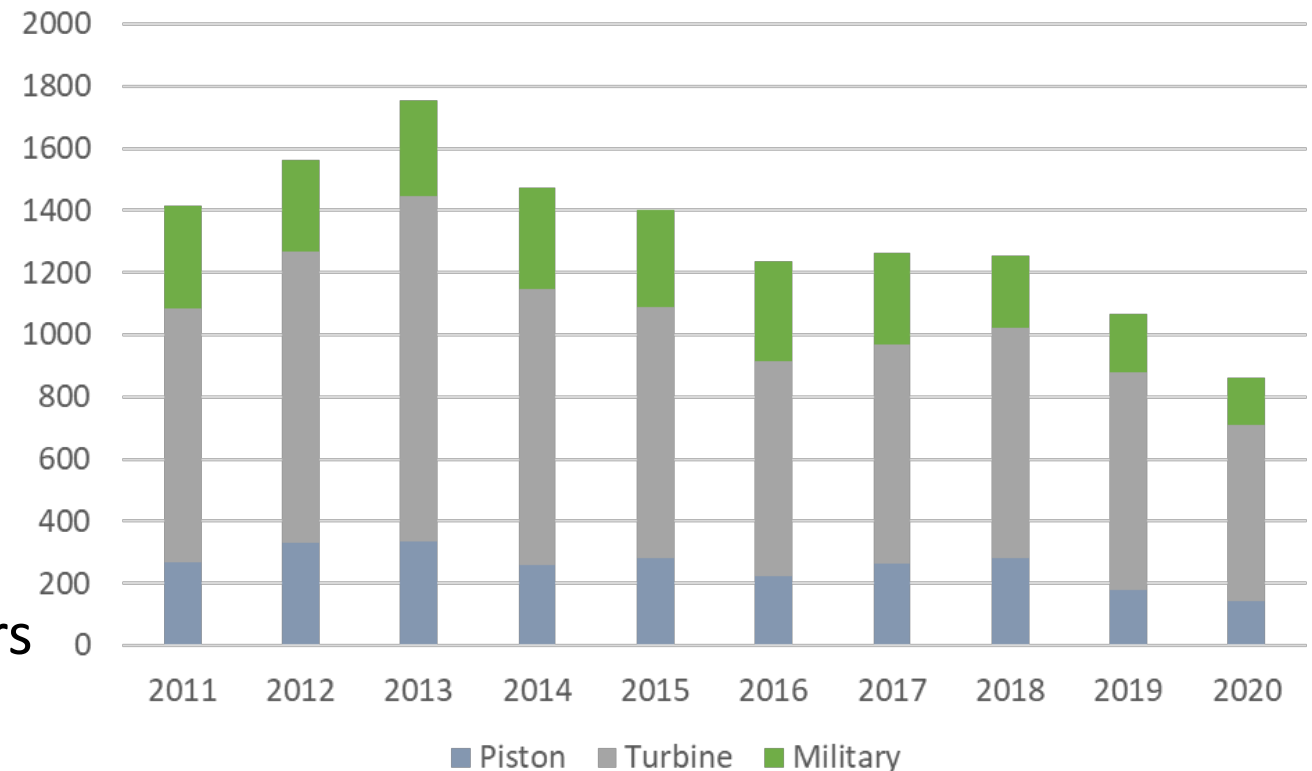
- 6,985 Units
    - \$192.7B

Business Jets



# Current Vertical Market Size

- 2011-2020 (with Military)
  - 10 Year at ~13,167 Units
- 2011-2020 (Civil/Commercial):
  - 10 Year New Aircraft: \$47.5B
- Worldwide Fleet 2019:
  - 31,839 Turbine/Piston Helicopters
  - Courtesy: JETNET, LLC.





# 2021 H1 Update Relative 2020 and 2019

Airplane	2019	2020	2021	%-Change
Piston	573	503	565	+12.3%
Turboprop	231	152	221	+45.4%
Business Jet	333	244	264	+8.2%
<b>TOTAL AIRPLANE</b>	<b>1,137</b>	<b>899</b>	<b>1,050</b>	<b>+16.8%</b>
ROTORCRAFT	2019	2020	2021	%-Change
Piston	115	63	83	+31.7%
Turbine	299	194	258	+33.0%
<b>TOTAL HELICOPTERS</b>	<b>414</b>	<b>257</b>	<b>341</b>	<b>+32.7%</b>

## 2021 Schedule:

- Q3: November 17 (TBC)
- Q4: February 23, 2022

<https://gama.aero/facts-and-statistics/quarterly-shipments-and-billings/>

# Policy Topics

# COVID-19 Recovery Policy Actions

## 2020 Activities

- U.S.
  - FAA: Exemptions, Extensions, Process Updates, and Special Federal Aviation Regulation
  - TSA: Extensions to Training Authorization
  - National Interest Exception (NIE) Waivers
- Europe
  - Extensions of Authorizations
  - Return to Normal Operations

## 2021 Activities

- U.S.
  - Aviation Manufacturing Jobs Act (part of American Rescue Plan)
  - Cabinet Level Task Force about Section 212(f) Restrictions
- Europe
  - EU Digital Covid Certificate Passport – July 1, 2021

# Role of Border Constraints on Operations?



## 3.Monthly Trends

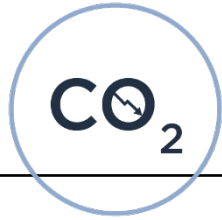
3.Monthly Trends										Total			
Month	2020-2021	2019-2020	Change	2020-2021	2019-2020	Change	2020-2021	2019-2020	Change	Month	2019-2020	2018-2019	Change
Sep	316,022	373,362	-15.36%	280,788	320,278	-12.33%	35,234	53,084	-33.63%	Sep	373,362	367,528	1.59%
Oct	346,864	401,880	-13.69%	308,138	348,080	-11.47%	38,726	53,800	-28.02%	Oct	401,880	402,306	-0.11%
Nov	311,496	368,566	-15.48%	269,620	313,090	-13.88%	41,876	55,476	-24.52%	Nov	368,566	387,060	-4.78%
Dec	328,914	375,576	-12.42%	278,054	316,880	-12.25%	50,860	58,696	-13.35%	Dec	375,576	354,452	5.96%
Jan	325,856	363,402	-10.33%	277,142	304,656	-9.03%	48,714	58,746	-17.08%	Jan	363,402	360,924	0.69%
Feb	313,862	359,568	-12.71%	273,442	303,900	-10.02%	40,420	55,668	-27.39%	Feb	359,568	353,508	1.71%
Mar	411,182	278,300	47.75%	354,818	228,906	55.01%	56,364	49,394	14.11%	Mar	278,300	394,684	-29.49%
Apr	402,464	97,742	311.76%	345,988	85,032	306.89%	56,476	12,710	344.34%	Apr	97,742	389,114	-74.88%
May	421,562	192,926	118.51%	367,420	175,068	109.87%	54,142	17,858	203.18%	May	192,926	392,716	-50.87%
Jun	438,584	280,714	56.24%	384,866	252,836	52.22%	53,718	27,878	92.69%	Jun	280,714	369,474	-24.02%
Jul	456,088	307,218	48.46%	396,246	267,628	48.06%	59,842	39,590	51.15%	Jul	307,218	370,078	-16.99%
Aug	447,410	318,026	40.68%	390,596	278,522	40.24%	56,814	39,504	43.82%	Aug	318,026	384,038	-17.19%
Total	4,520,304	3,717,280	21.60%	3,927,118	3,194,876	22.92%	593,186	522,404	13.55%	Total	3,717,280	4,525,882	-17.87%

Source: ETMSC

Note: International flights include US to Foreign, Foreign to US and all foreign operations.

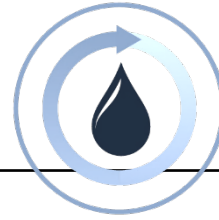


# Business Aviation Commitments



## OBJECTIVE 1

Reducing CO<sub>2</sub> emissions 50% by 2050, relative to 2005



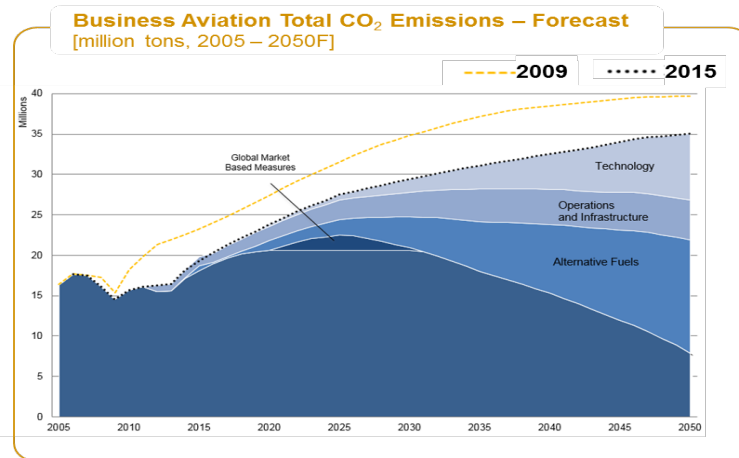
## OBJECTIVE 2

Improving fuel efficiency 2% per year from 2010 until 2020



## OBJECTIVE 3

Achieving carbon-neutral growth by 2020



# Sustainable Aviation Fuel

- Sustainable Aviation Fuel (SAF) is Jet-A Generated from One of Seven Sources and Meets Required Standards:
  - [ASTM D7566](#) (Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons)
  - Manufacturers Do Not Need to Recertify Engines to Use Updated Fuel Specification
- Wider Use Among Business Jet and Turboprop Airplane OEMs, but Also Several Announcements by Helicopter OEMs in 2021!



# U.S. CO2 Regulation Published

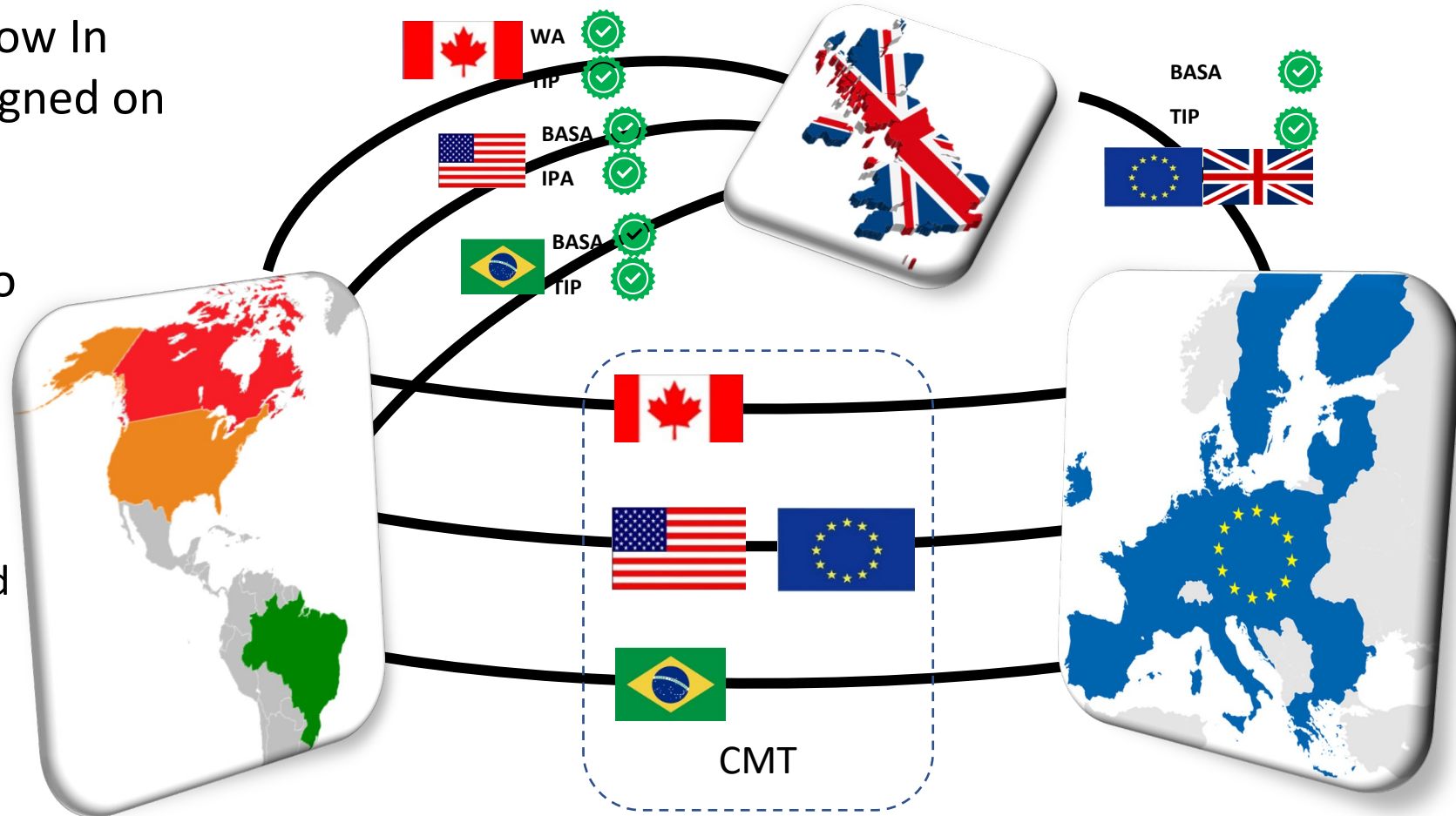
- U.S. Environmental Protection Agency (EPA) Finalized Greenhouse Gas (GHG) [Emission Standards](#) in December 2020:
  - Achieves U.S. Compliance with 2017 ICAO CO2 Standard
  - FAA Will Issue Complementary Rule for Certification
    - Applicability for Jet Airplanes Greater than 5,700kg (12,500 Pounds) and Turboprops Greater than 8,618kg (19,000 Pounds)
    - GHG Standards Apply to New Type Designs and In-Production on or After January 1, 2028



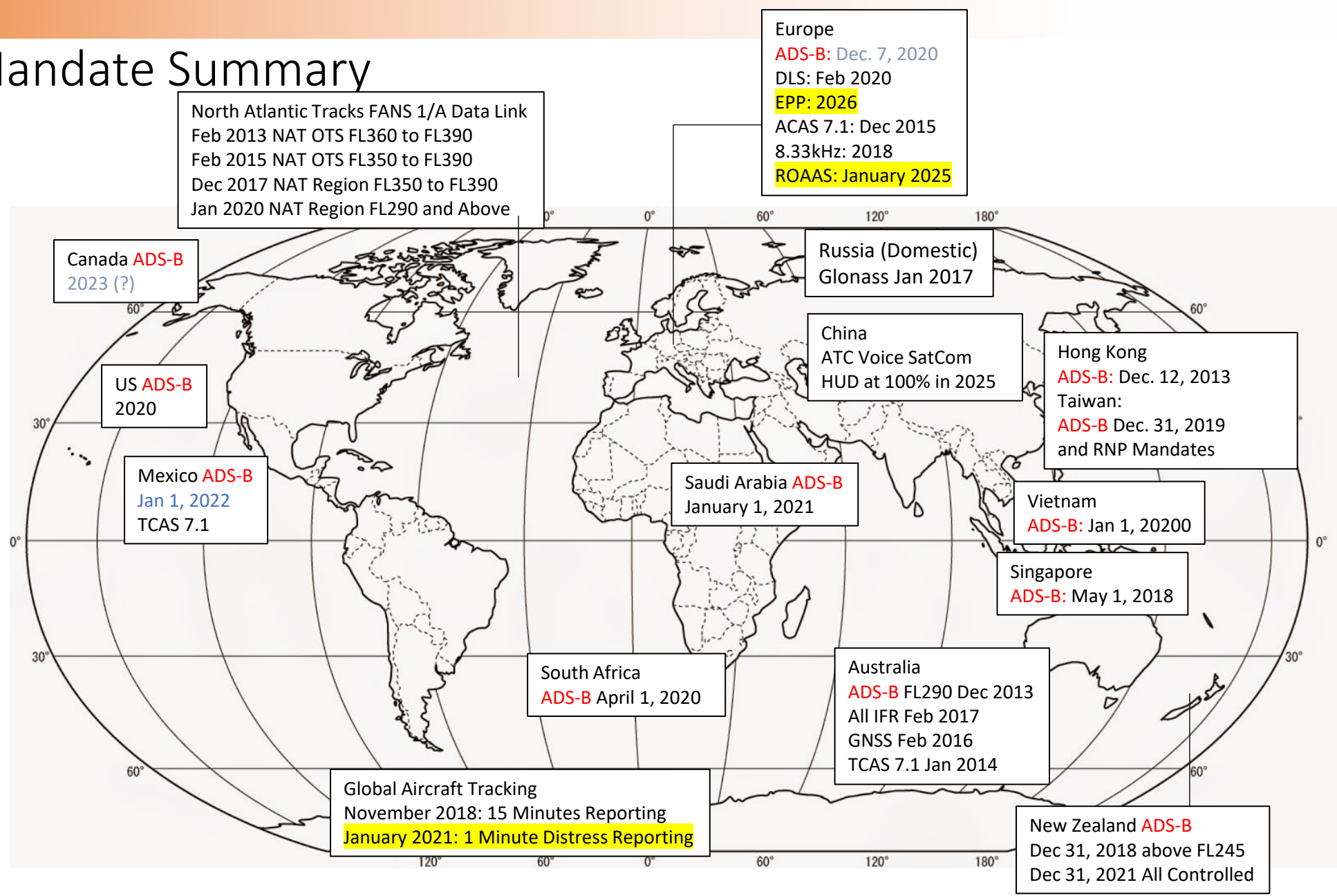
# Post-Brexit Regulatory Landscape



- Final Post-Brexit Agreements Between States of Design Now In Place including EU-UK TIP Signed on May 17, 2021
- But, Factors Causing Delays to Certification & Validation:
  1. COVID travel restrictions
  2. MAX Impact on Increasing LOI in Some Areas; e.g., Operational Evaluation and Human Factors
  3. Some Emerging Resource Constraints at Authorities



# Global Mandate Summary



Source: GAMA Adapted from EASA, FAA, Gulfstream, and Collins Aerospace

# Electric and Vertical Considerations



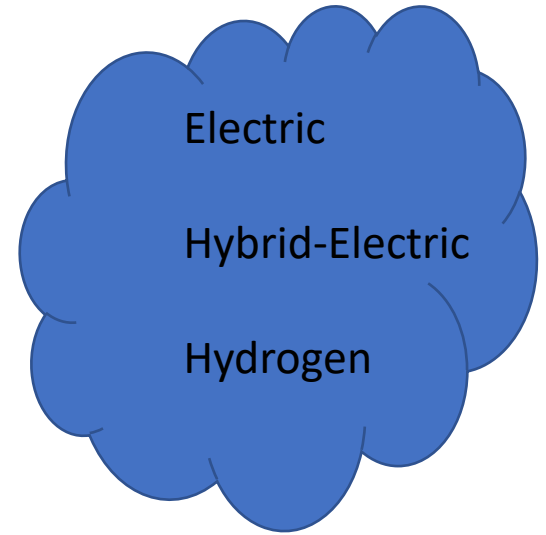
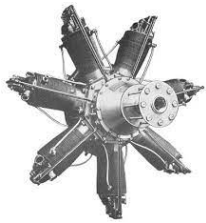
# E-VTOL Considerations



- Update Focuses on Vertical Advanced Air Mobility
  - You may see reference to eVTOL, Urban Air Mobility, etc., in public communications
  - Briefing does not include traditional airplanes shifting to electric/hybrid propulsion (which is underway...)
- GAMA Started Regulatory and Standards Work in this Space in 2015 with Five Companies and Today Broad Participation



# Aircraft Innovation Driven by Powerplant



1903

1940s

2000

2020s and Beyond



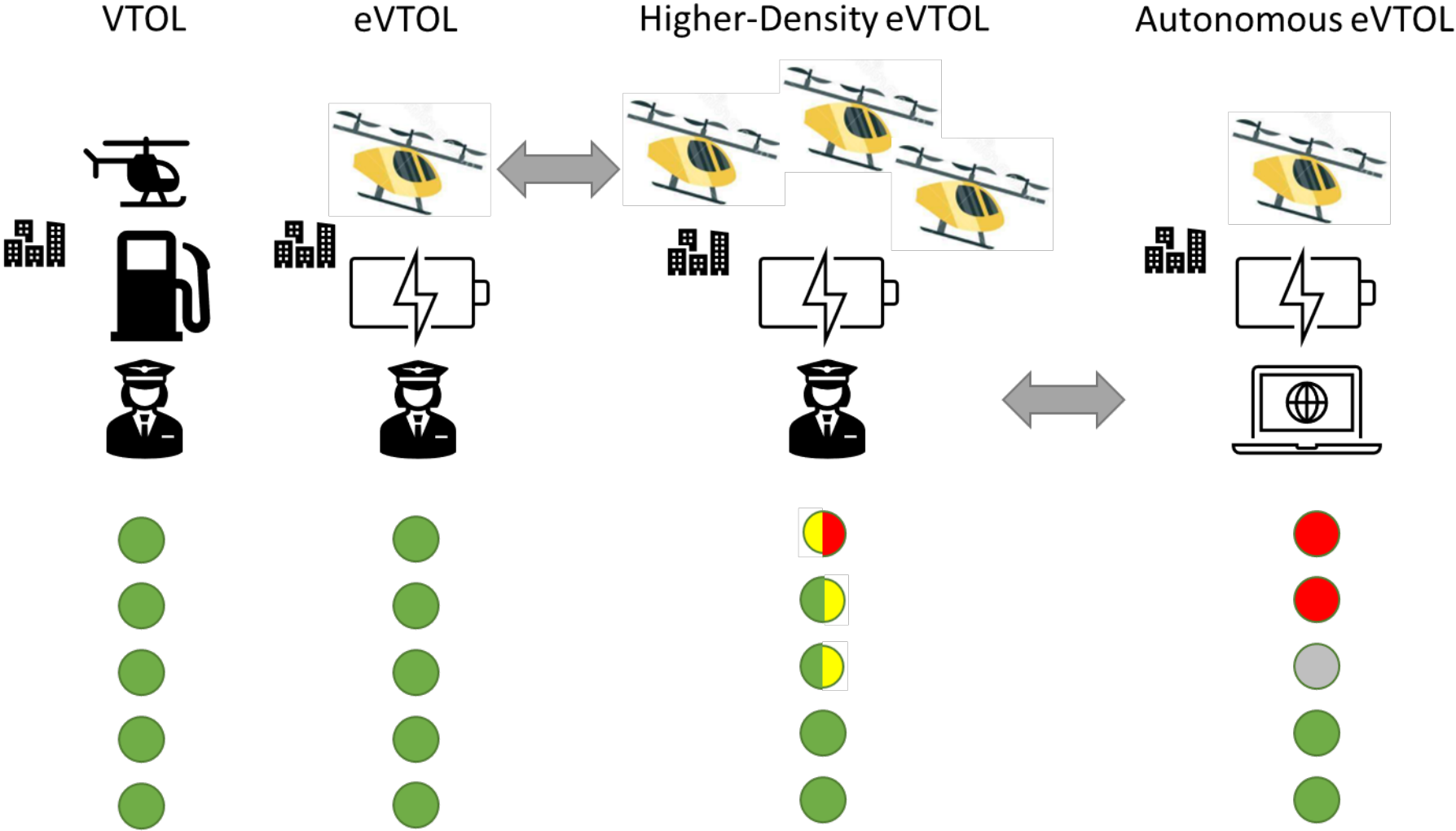
# Regulatory Readiness: A Snapshot of a Heterogenous Emerging Industry



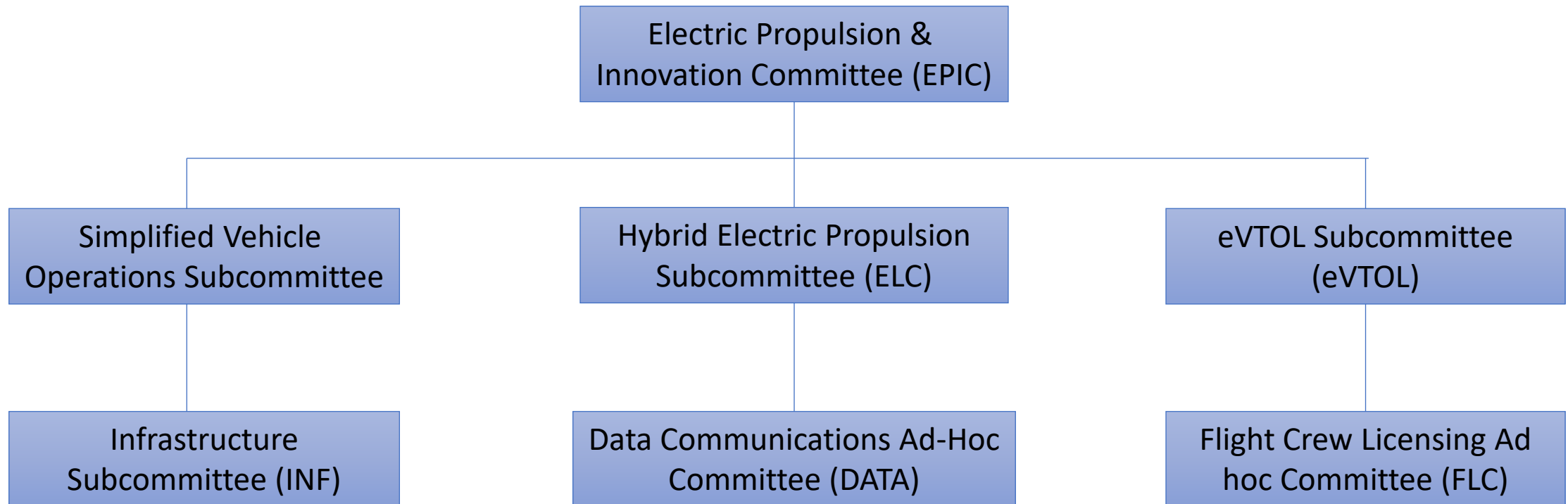
No Rules and / or Concepts in Public

Draft Rules and / or Concepts Exist in Public

Rules and / or Guidance Exist



# Work Underway at GAMA?



# Example Recent Policy and Regulatory Activities

- European Aviation Safety Agency (EASA)
  - 2021: [Special Condition](#) SC E-19 – Electric / Hybrid Propulsion Systems
  - 2020: [Special Condition](#) for VTOL and Means of Compliance
- U.S. Congress:
  - 2021: Advanced Air Mobility Act ([Senators Moran and Sinema](#))
- U.S. Federal Aviation Administration (FAA)
  - 2020: UAM Concept of Operations, [Version 1.0](#)
  - 2016: 14 CFR Part 23, Amendment 64, [Airworthiness Standard Normal Category Airplanes](#)
- GAMA [White Papers](#)
  - 2021: Data Communications Considerations and Approaches for Future
  - 2020: Transition to eVTOL and Other Aircraft Equipped for Simplified Vehicle Operations
  - 2019: Interim Procedure for Noise Certification for Emerging VTOL Aircraft
  - 2017: Hybrid and Electric Propulsion Performance Measures

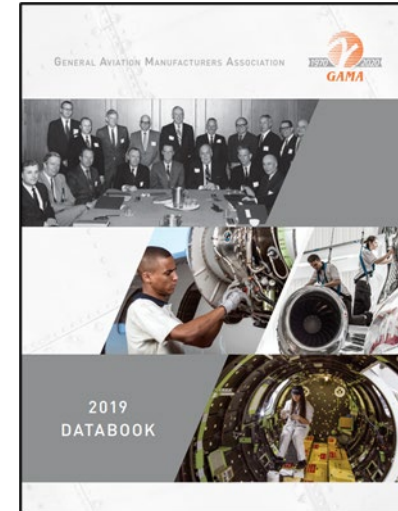
# Contact Information

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<https://gama.aero/facts-and-statistics/statistical-databook-and-industry-outlook/2020-annual-data/>