

SHAPING A SUSTAINABLE FUTURE FOR AEROSPACE:
THE PATH TO ELECTRIFICATION

AMPAIRE

REVOLUTIONARY AIRCRAFT
PRACTICAL. COMPELLING. ELECTRIC.

Aviation Noise & Emissions Symposium 2020
March 1-3, 2020

Dahlia Pham
Associate Mechanical/Aerospace Engineer, Ampaire
dahlia@ampaire.com

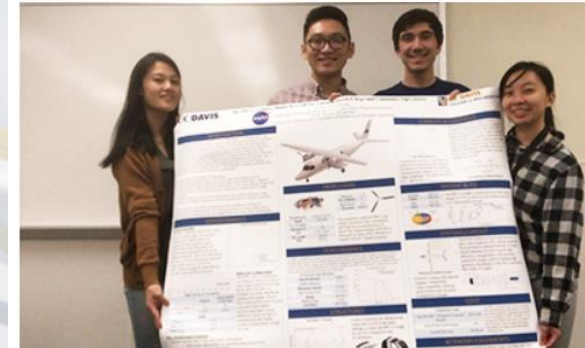


The NASA Aeronautics University Design Challenge 2018-2019 Academic Year

WINNERS, SELF-PILOTED AIRCRAFT FOR CRITICAL RURAL/SUBURBAN NEEDS

1st Place: UC Davis, Davis, CA

 BW-1 Abstract



Erina Kitamura, Simon Chang, Ryan Han, and Dahlia Pham
(not pictured: Alosha Belov)



Artist concept of The BW-1 "Big Skipper", a self-pilot
commuter aircraft by UC Davis BovineWorks

- Associate Aerospace Engineer @ Ampaire
 - *Vehicle Engineering Team*
- UC Davis Class of '19
 - *Mechanical Engineering (B.S.) and Aerospace Engineering (B.S.)*
- Mechanical Design Eng. Intern @ Tesla
 - *Autopilot & Electronics Product Design Team*
- NASA Aeronautics University Design Challenge 2018-2019
 - *First Place Winner/ Team Captain/ Aerodynamics, Concept Evolution & Performance*

Aviation Per Year

**4.1 Billion
Passengers**

**\$6.4 Trillion
Of Goods**



Today's Connectivity Comes At A Significant Cost



900M Tons CO₂
Noisy Flights

2.5% of global CO₂ emissions
On track to increase to 20% of global
emissions by 2050



■ Significant operating costs

- Fuel is 40% of OpEx
- Maintenance is 15% of OpEx

■ Survival through subsidies

- Government subsidies have increased by more than 500% since 1997, not accounting for inflation

■ Decreased service offerings

- \$33.7 billion reduction in revenues from passengers flying short-haul sectors below 500 miles, 2000-2017.



AMPAIRE®



But We're Entering A New Era Of Mobility



The same factors that make electric cars inevitable also apply to aviation.

The Third Revolution In Aviation Has Begun





We Are Unleashing A New Mobility Market

10x Destinations

Increased Accessibility

\$178 Billion
UBS



70% - 90%
fuel cost savings



25% - 50%
maintenance cost savings



Low Emissions

Ultra quiet takeoff and landing

Our Mission

Trusted

Practical

Compelling

Electric Aircraft



Company Milestones

**Founded
2016**

- Identified key value propositions for electric aviation.

**Ground Test
DONE. 2018**

- Developed and built systems to meet customer needs.

**Takeoff
DONE. 2019**

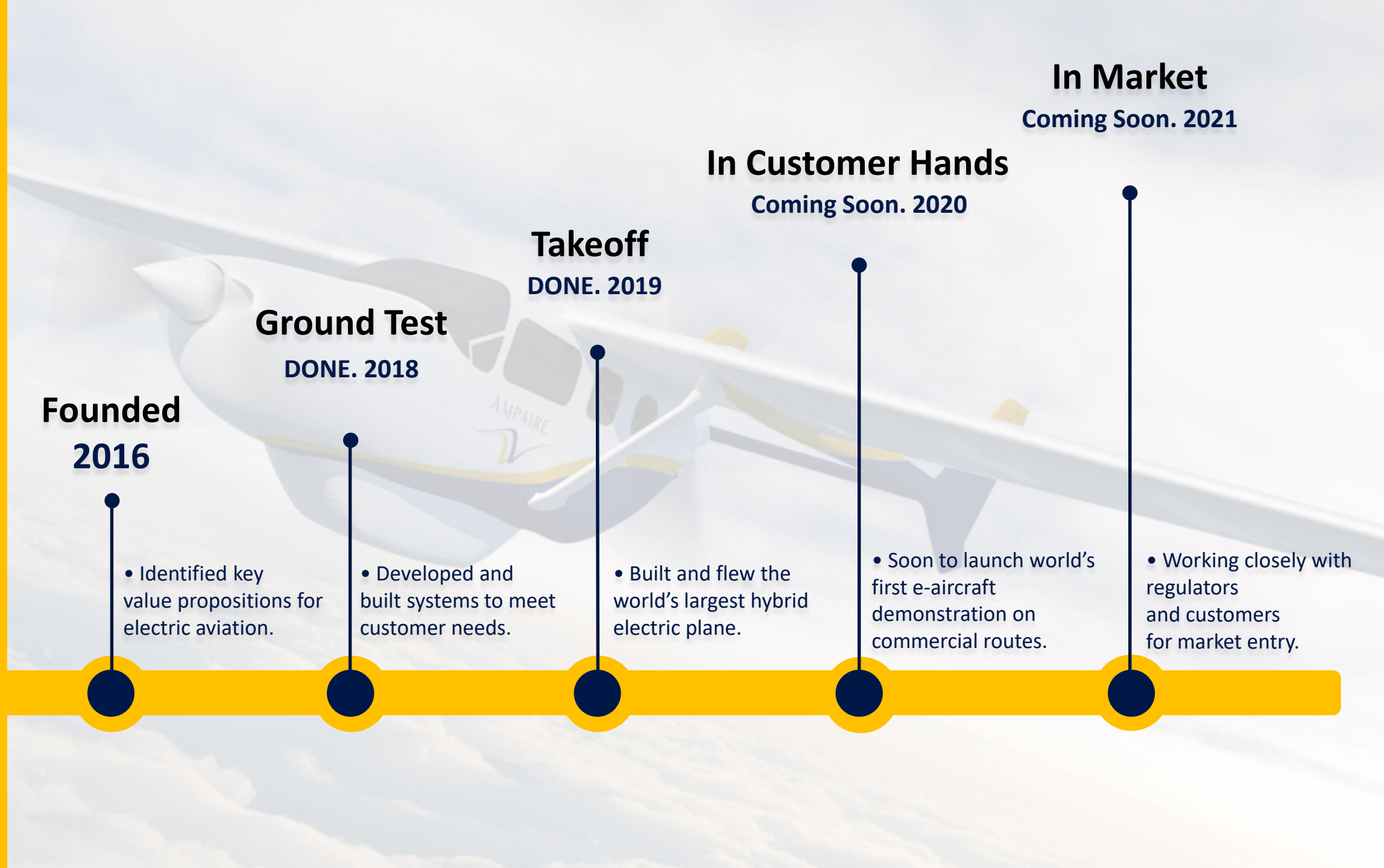
- Built and flew the world's largest hybrid electric plane.

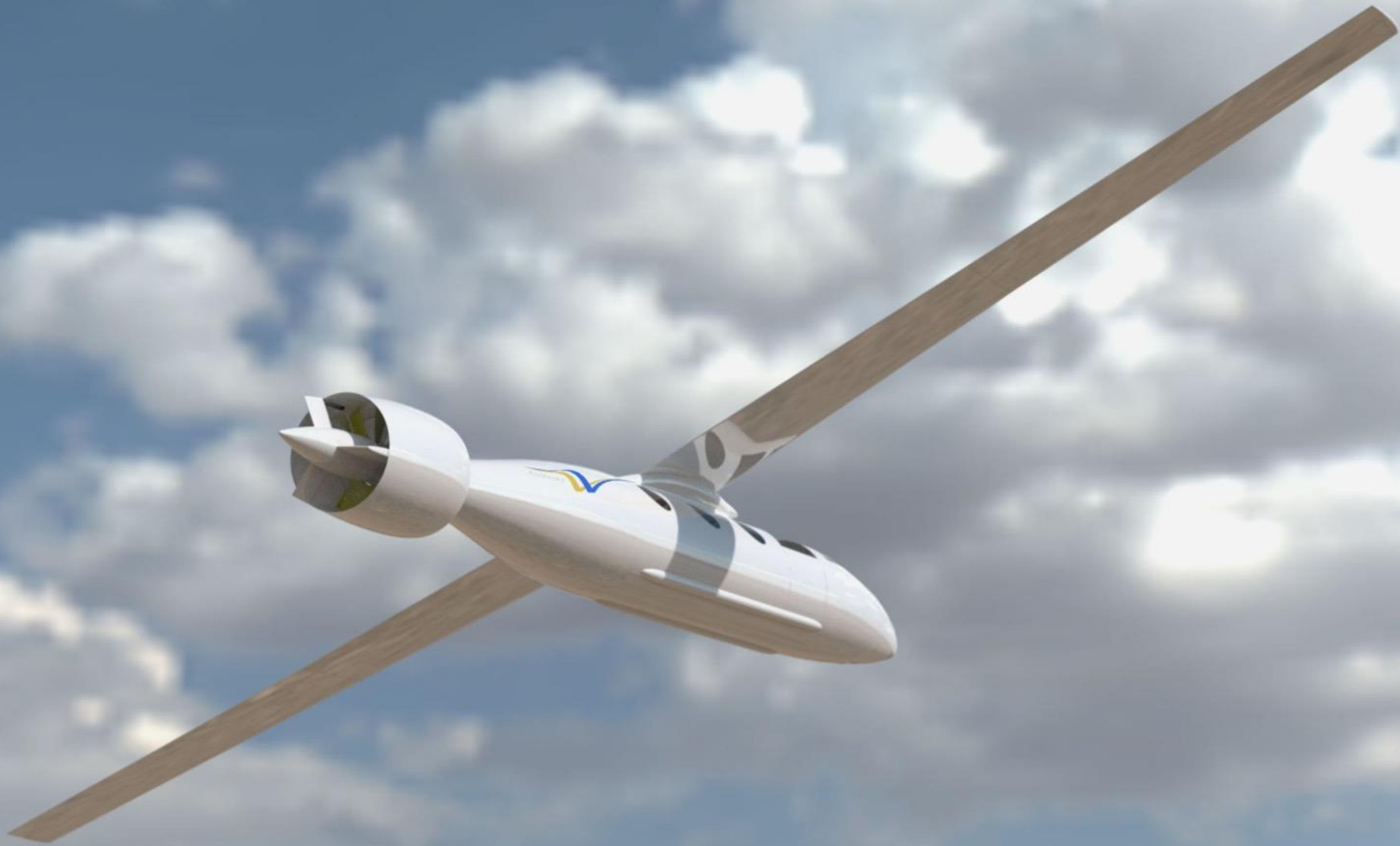
**In Customer Hands
Coming Soon. 2020**

- Soon to launch world's first e-aircraft demonstration on commercial routes.

**In Market
Coming Soon. 2021**

- Working closely with regulators and customers for market entry.









AMPAIRE
EXPERIMENTAL

N72342

AMPAIRE



AMPAIRE



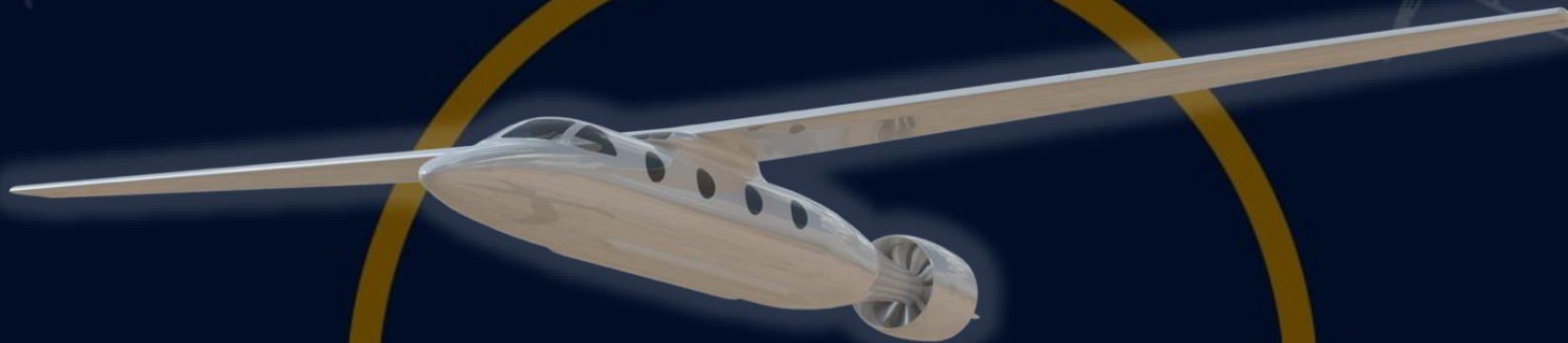
- Scalable to larger planes.



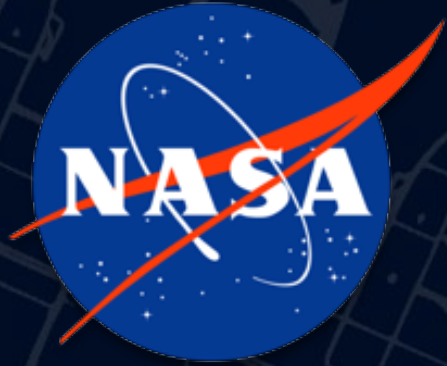
- Resilient to technology changes.



- Operating within existing infrastructure



AMPAIRE



We've Built The Right Team



We're Getting Support
and Recognition

Aerospace Partners



Startup Ecosystems



Media Recognition



International Awards



\$70M Backlog

Focusing On Customers



Our First Delivery: Hawaii

TRIP DETAIL

- Kahului
Central Maui
- Hana
Destination



FLY

TIME 15 min
DIST 28.0

DRIVE

TIME 2hr 4 min
DIST 50.2 mi

FLIGHT COST

Traditional Fuel	\$150
Near-Term Hybrid	\$90
Long-Term Electric	\$30

Worlds-first demonstration of daily operations.
Partnered with Hawaii's #1 Island Hopper airline.

We'll demonstrate game-changing benefits:

- **88% time reduction** compared to driving
- **40% cost reduction** compared to flying fueled





The Bottom Line:

AMPAIRE



Leading The Charge

Dahlia Pham
Associate Aerospace Engineer
dahlia@ampaire.com

