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# Electrification of air travel

**Matt Knapp**

Founder, Zunum Aero





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ZUNUM Aero



jetBlue

technology  
ventures.



Department of Commerce  
Clean Energy Fund

MONTREAL, CANADA, NOVEMBER 29-30, 2017



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Jet engines have powered a boom in global air travel...



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## Driving a long-term decline of regional air services



96% of air traffic  
in 1% of airports



96% of regional  
trips on ground

Door-to-door times worse today  
than 50 years ago

1,000s of communities without  
high-speed links

Inflexible and capital-heavy  
alternatives, e.g., HSR



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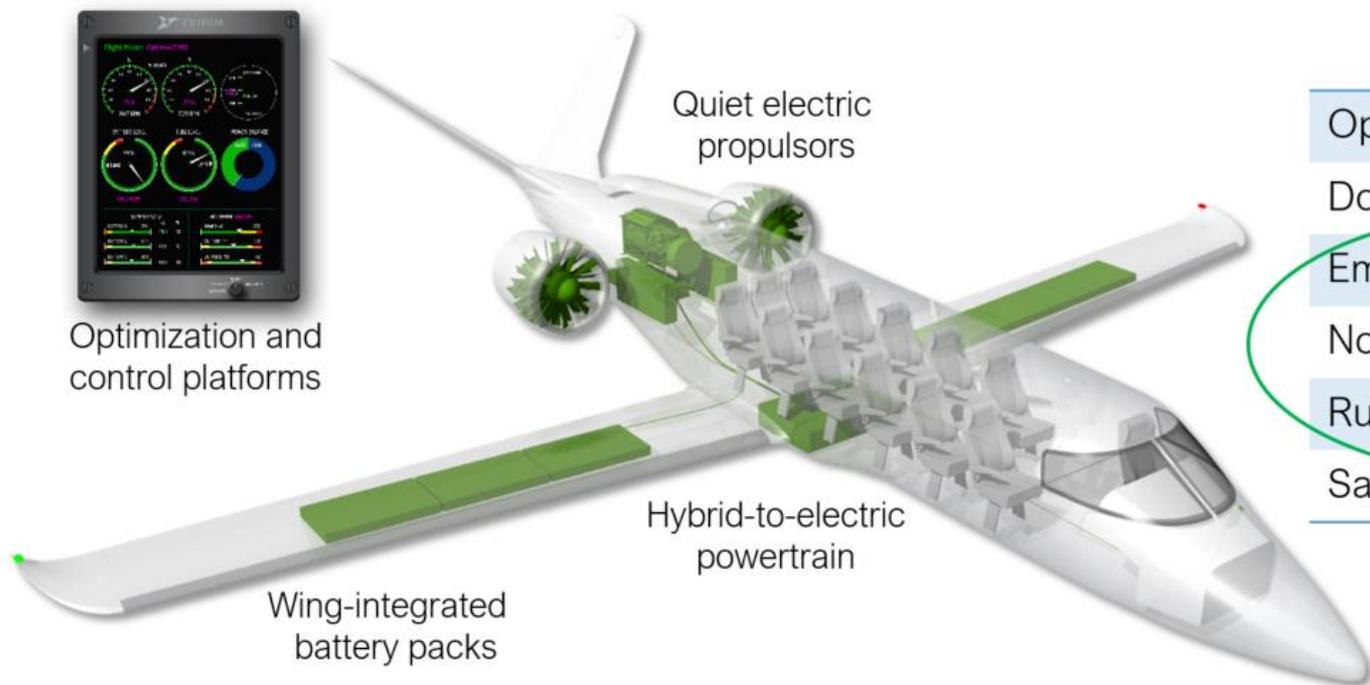
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# Breakthrough series hybrid-to-electric regional aircraft

*From 700 miles in the early 2020s to 1,000 miles by 2030*

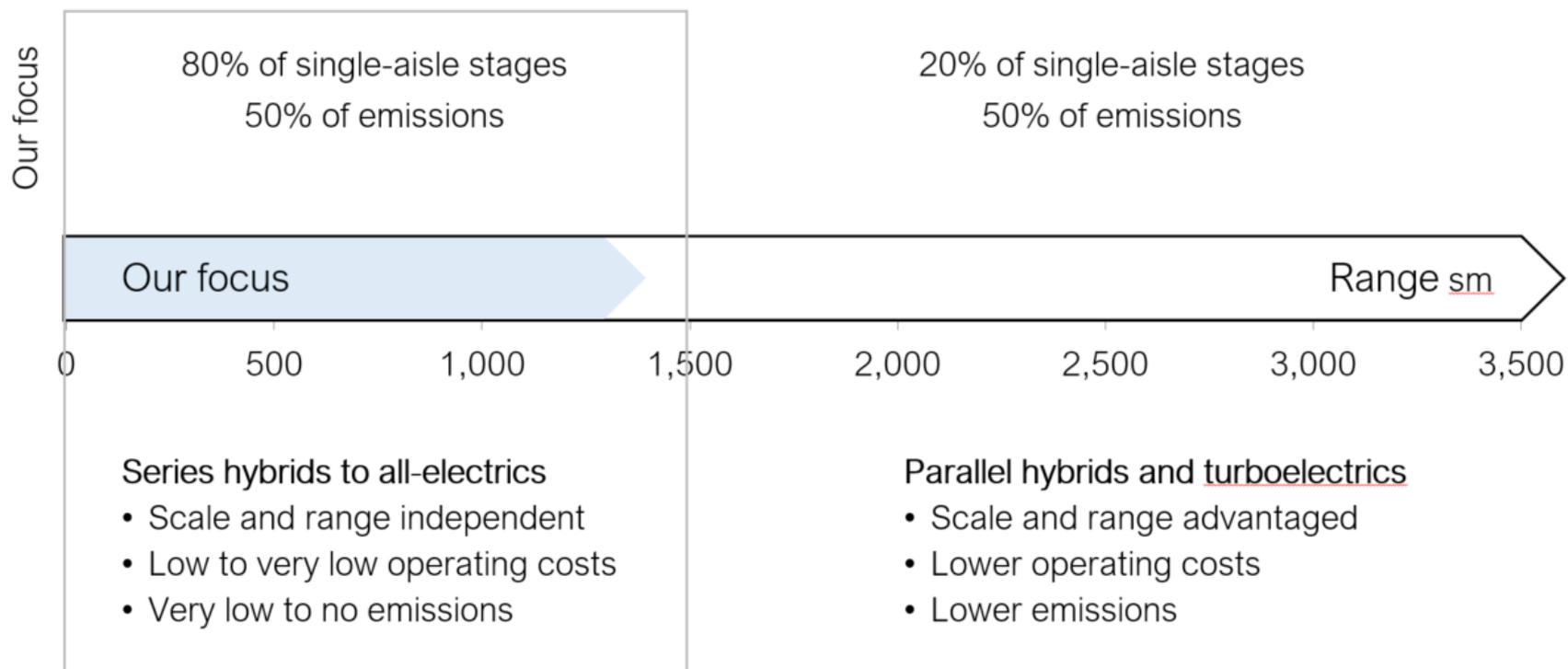


Operating costs	⬇️ ⬇️
Door-door times	⬇️ ⬇️
Emissions	⬇️ ⬇️
Noise	⬇️
Runway	⬇️
Safety	⬆️



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# And “energy agnostic” all-electric propulsion





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## Scalable platform addressing the range of regional needs



Mid-2020s  
1,609 km



Late 2020s  
2,414 km



2022  
1,127 km



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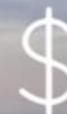


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Arriving in 2022: fast, green and affordable air



Operating cost  
**5¢/seat km**



Max range  
**1,127+ km**



Max cruise speed  
**547 km/h**



Take-off distance  
**671 m**

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Fast, affordable, and everywhere!

Get there on  
your schedule

2 to 4x  
faster

Breakthrough  
economics

Much lower  
fares

Fly to every  
community

30K+ airports

Tread lightly

Quiet and  
green

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# Airports as self-sustaining powerplants

	Today	2020s		
<b>Electricity needs</b> per passenger	2 kWh Airport	2 kWh Airport	+ 4 kWh Ground	+ 25 to 50 kWh Air
	<b>Green airports</b>	<b>Secondary</b>	<b>Hub</b>	
	<ul style="list-style-type: none"> <li>• EV charging infrastructure</li> <li>• Onsite generation, storage</li> </ul>	<ul style="list-style-type: none"> <li>• Level 2 charging</li> <li>• Fast swap</li> <li>• Walk-on/walk-off transit</li> <li>• Plane-side drops, no belts</li> <li>• Quick targeted security</li> <li>• Ground-air coordination</li> </ul>	<ul style="list-style-type: none"> <li>• High-rate charging</li> <li>• Onsite generation, storage</li> <li>• Non-interfering feeders</li> <li>• Split feeder vs long-haul</li> <li>• Fast biometric screening</li> <li>• Network load balancing</li> </ul>	
				



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Thank You!

