



# WRIGHT

carbon-free aviation

Title:

When will the deadline  
for zero-emissions  
aviation be?

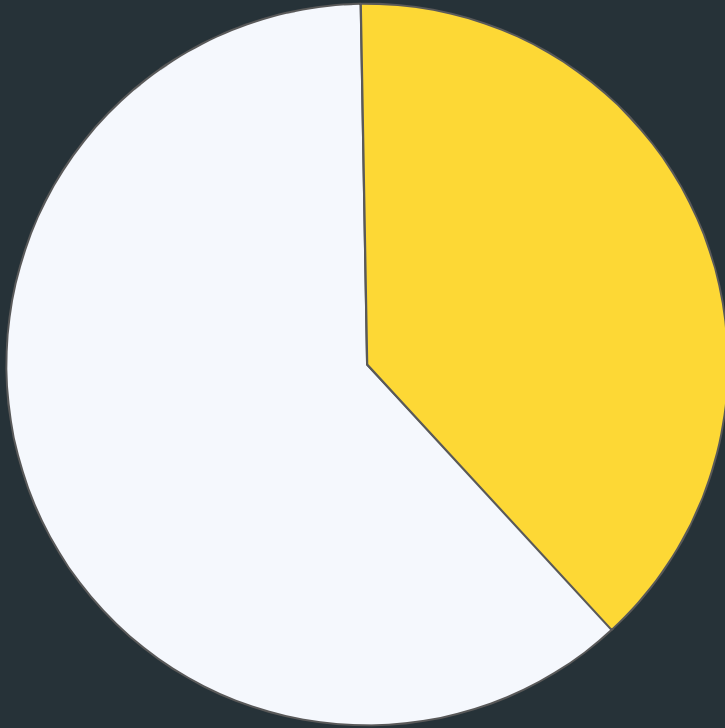
**BUSINESS TRAVELLER**

# EasyJet plans electric planes by 2030

Lianne Kolirin • Updated 30th October 2018

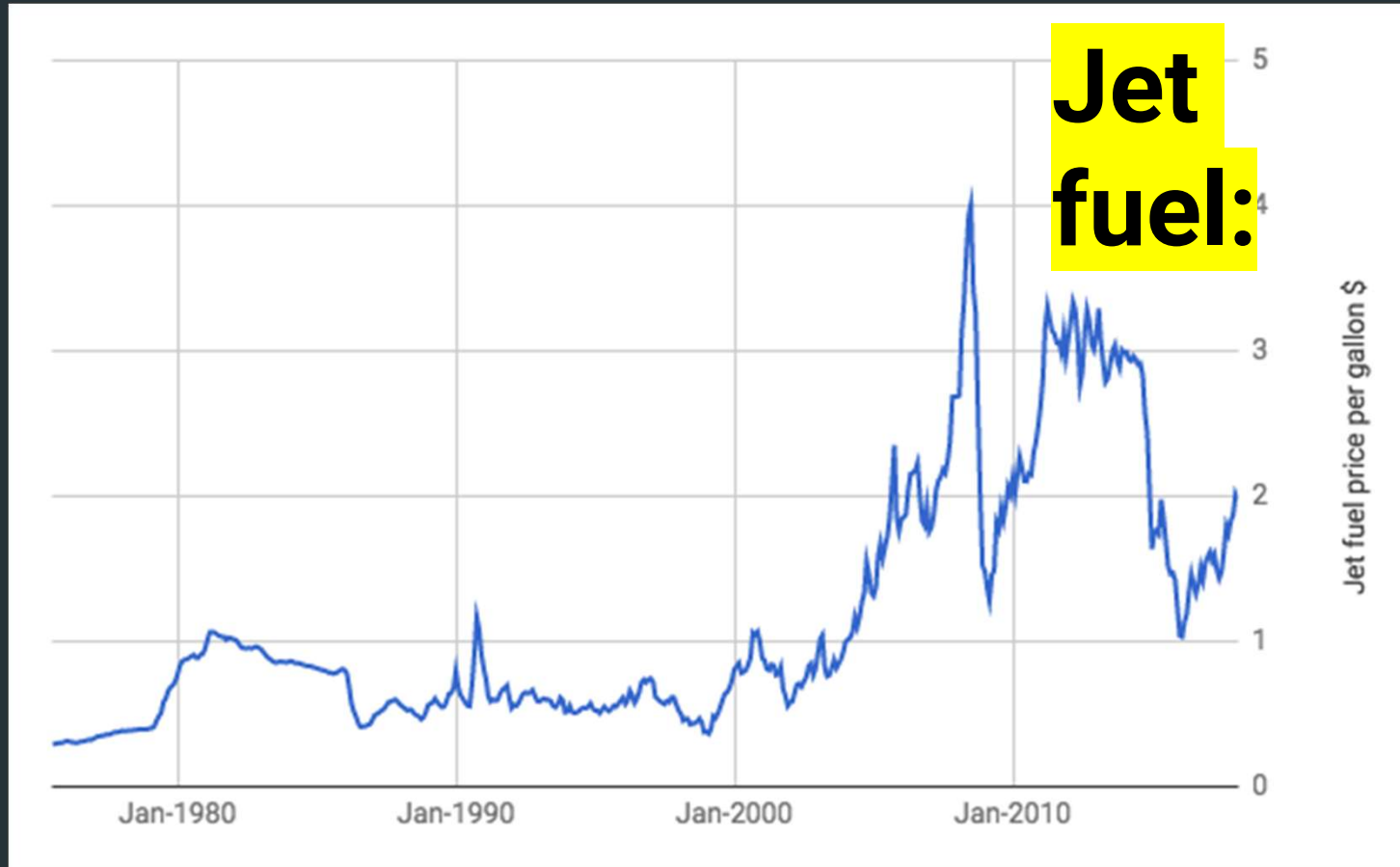


Costs

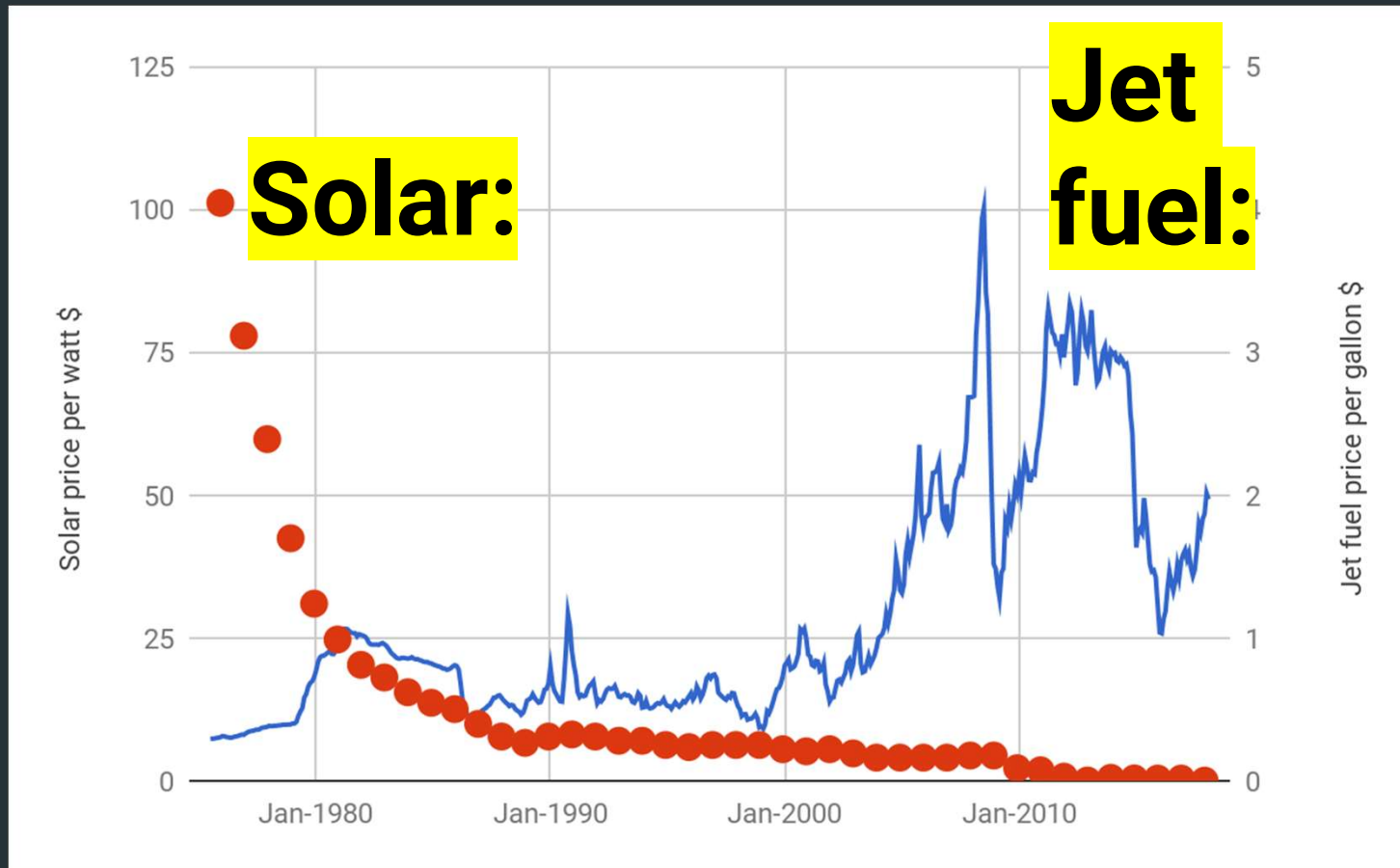


$1/3$   
fuel

## Energy Trends




## Energy Trends



By 2050, aviation  
emissions could be  
**24% of all CO<sub>2</sub>**

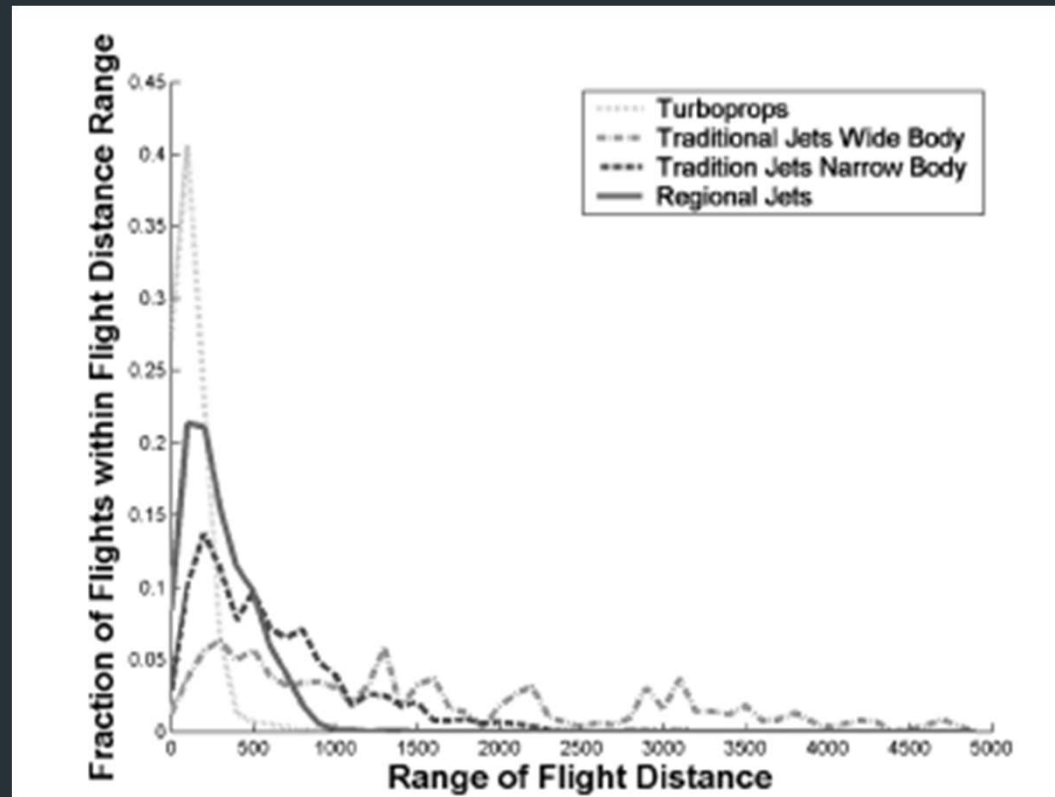
Source: Roland Berger 2018.



How to get  
there

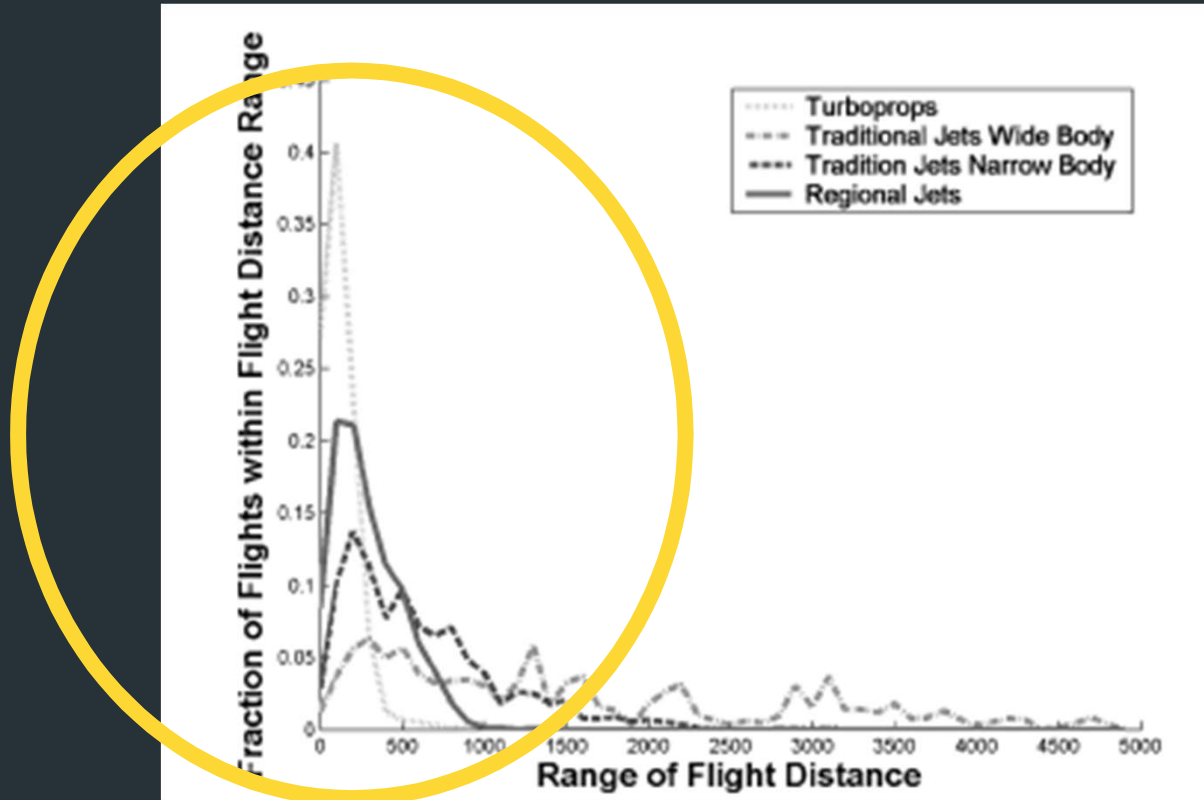


## Flights



Source: Evaluation of Regional Jet Operating Patterns in the Continental United States. Aleksandra Mozdzanowska and R. John Hansman. 2014

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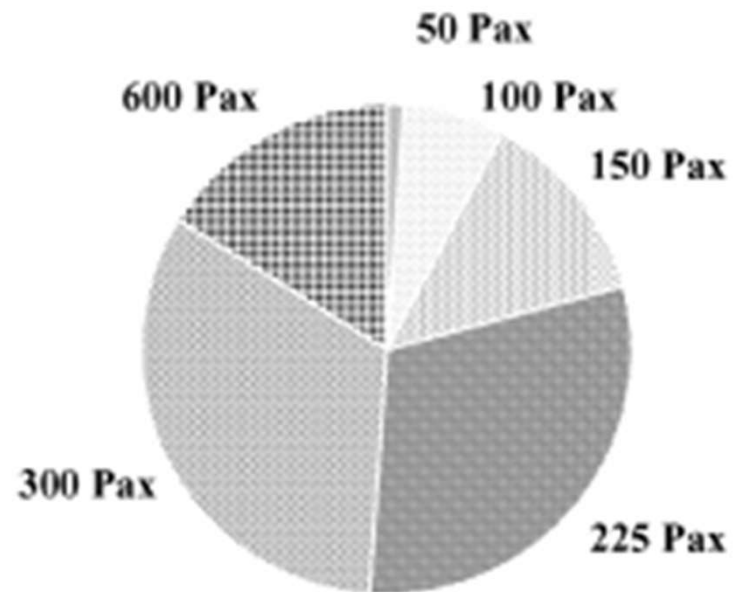


9-seats, hybrid-electric



flying 2 seat version, built by partner Axter Aerospace

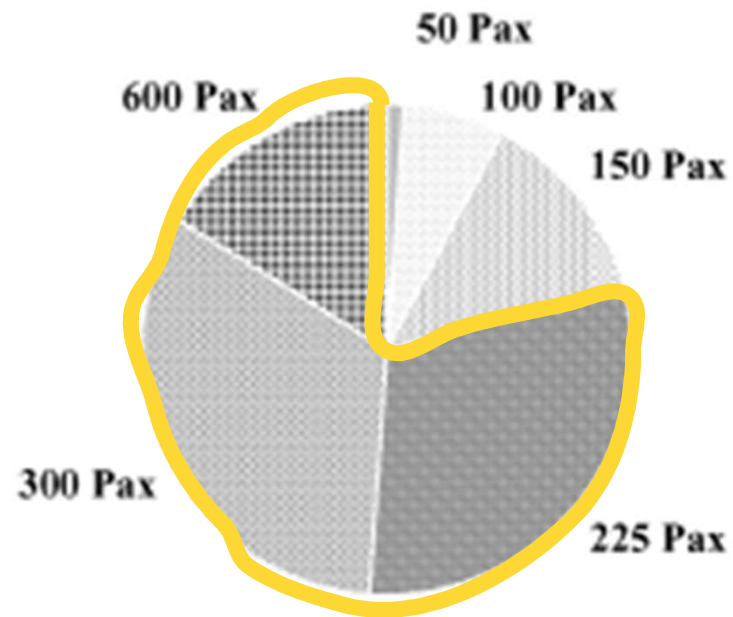
## Seat-Miles (Emissions)



(b) Number of available seat-miles flown.

Source: Evaluation of an Aircraft Concept With Over-Wing, Hydrogen-Fueled Engines for Reduced Noise and Emissions. Mark D. Guynn and Erik D. Olson. 2002.

## Seat-Miles (Emissions)

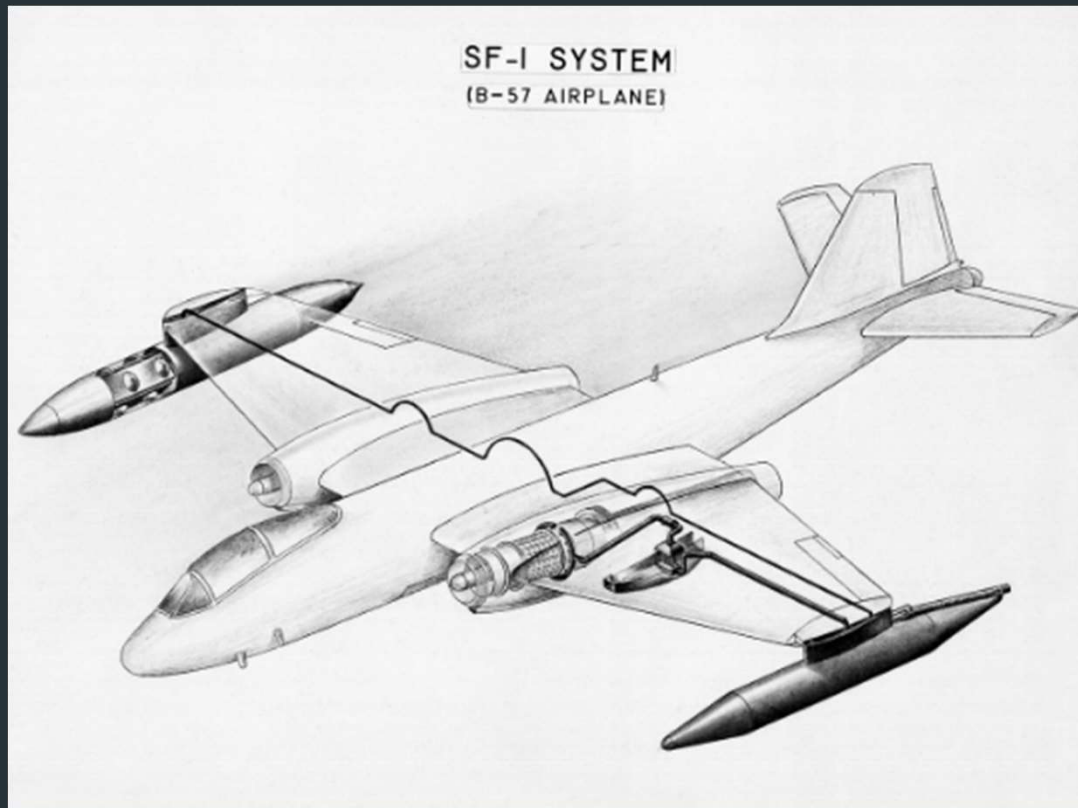


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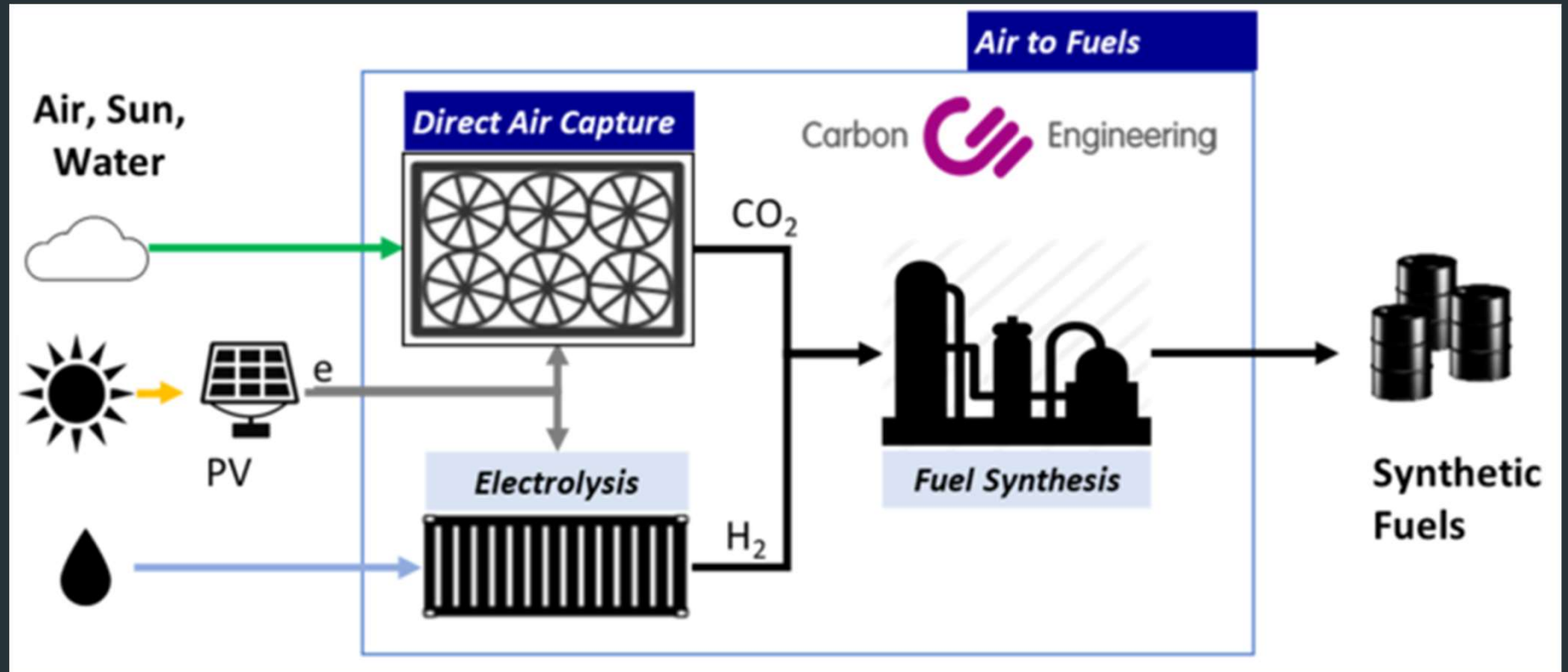
## Option 1: Hydrogen



Hydrogen:  
Demonstrated  
by NASA-  
precursor in  
1957

Studied by EU in  
2000s

## Option 2: Carbon Engineering

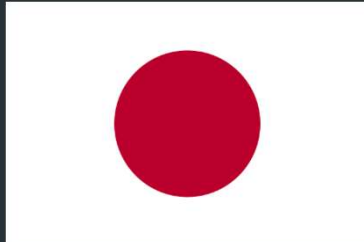
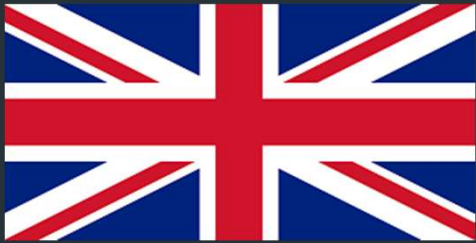




A photograph of a dense forest with tall, straight trees and green foliage. A yellow horizontal bar is at the top of the image. The text "When will the deadline be?" is overlaid in the center in a dark blue font.

When will the  
deadline be?

## Automotive



Government

*The New York Times*

**California Is Ready for a Fight Over Tailpipe  
Emissions. Here's Why.**

Norway

**The  
Guardian**

**Norway aims for all short-haul flights to  
be 100% electric by 2040**

The US

**The  
Guardian**

**The US** aims for all short-haul flights to  
be 100% electric by 2040

Long-Haul

**The  
Guardian**

The US aims for all long-haul flights  
to be emissions-free by 2040

## Research

1. Hydrogen fuel systems
2. Liquid hydrogen storage
3. Low-cost hydrogen creation
4. Water release at high altitudes



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