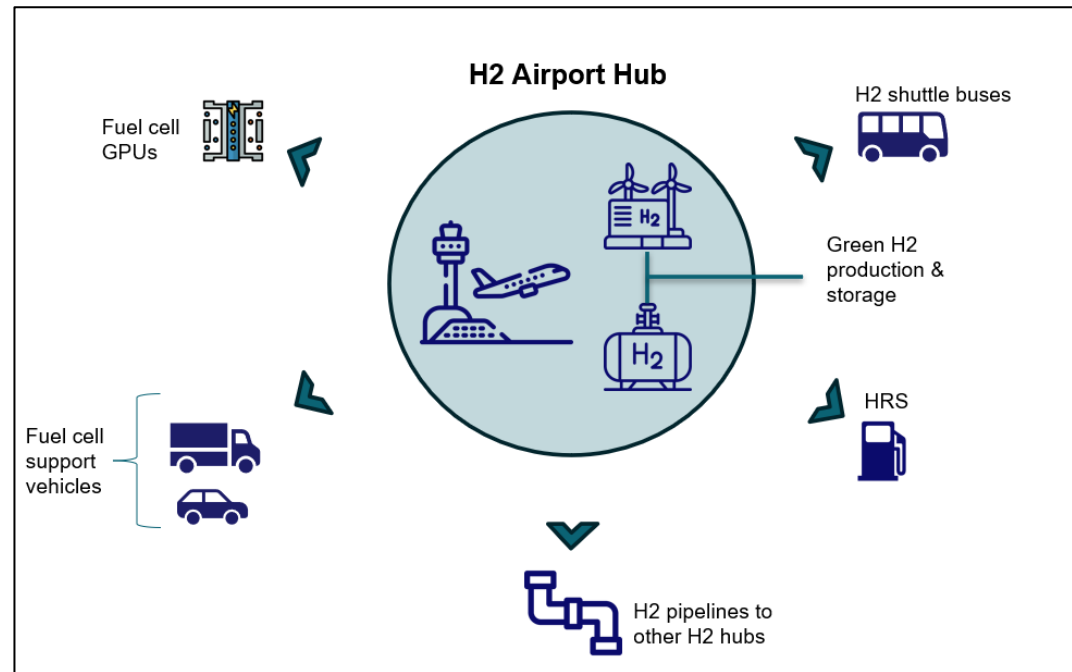


# H2 Airport Hub

Richard Henahan, Peter Diakow, Lloyd Rude, Gregory Bohn

- Stage 1 (2030 – 2035)
  - Install H2 storage, compressors, HRS, and safety stations;
  - Replace current ground transport vehicles with FCEV's;
  - Replace ground power units (GPUs) with FC GPU's.
- Stage 2 (2035 – 2040)
  - Onsite H2 production from RES from installed solar panels and certified green electricity;
  - Expansion of HRS and storage capacity;
- Stage 3 (2040 – 2045)
  - Refuelling infrastructure for H2 aviation fuel (or H2 derived synthetic fuel)
  - H2 Pipeline connection with other logistics hubs
  - H2 blending with natural gas.



The concept of a hydrogen airport hub represents a visionary step towards achieving sustainable air travel. With the urgent need to reduce carbon emissions and mitigate the environmental impact of aviation, this innovative concept offers a comprehensive solution by utilizing hydrogen as a clean and renewable energy source. A hydrogen airport hub would serve as a key infrastructure element in transitioning the aviation industry toward a greener future.

The proposed Hydrogen airport will be developed in 3 stages, where Stage 1 has a narrow focus, establishing the key technologies and identifying low hanging fruit opportunities to integrate market available H2 technologies. Stage 2 and Stage 3 become progressively more integrated, where Stage 2 will establish onsite H2 production and storage and Stage 3 will integrate infrastructure for H2 aviation fuel and connect H2 production with other logistic hubs, such as ports or ground transportation hubs, to create an integrated H2 network. The current model focuses on Stage 1 activities.

**Key Elements for Stage 1:**

1. **Hydrogen storage and compressors:** The hub would include on-site facilities for hydrogen storage and compressors to supply fuel cell applications.
2. **Hydrogen Refueling Stations:** The airport hub would feature multiple hydrogen refueling stations strategically placed to serve a fleet of hydrogen-powered support vehicles.
3. **Hydrogen fuel cell applications:** Market available fuel cell vehicles and ground power units will replace existing fossil fuel powered vehicles. For example, shuttle buses, baggage tuggers, ground power units, cars, forklifts, etc. Further, emergency back-up stations will be transitioned to fuel cell emergency back-up stations.

**Benefits:**

1. **GHG reduction:** Stage 1 will immediately decarbonise a significant amount of ground airport operations.
2. **Energy Security and Independence:** In Stage 2, by producing hydrogen on-site using renewable energy sources, airports can achieve greater energy security and reduce reliance on fossil fuels.
3. **Integration with other logistic hubs:** The envisioned hydrogen airport hub can be integrated with other logistics centers, such as ports and ground transportation hubs, and improve economies of scale which can increase H2 integration into hard to decarbonise transportation sectors and decrease the price for green H2.

**CAPITAL EXPENDITURE**

Storage	32,205,600
Transition Vehicles	148,750,000
Ground Power Units	10867500
Compressor	5,000,000
Dispensing Stations	3,000,000
Pre-tax Capex	199,823,100
Sales Tax	1,873,341.56
Total Capex	201,696,442