

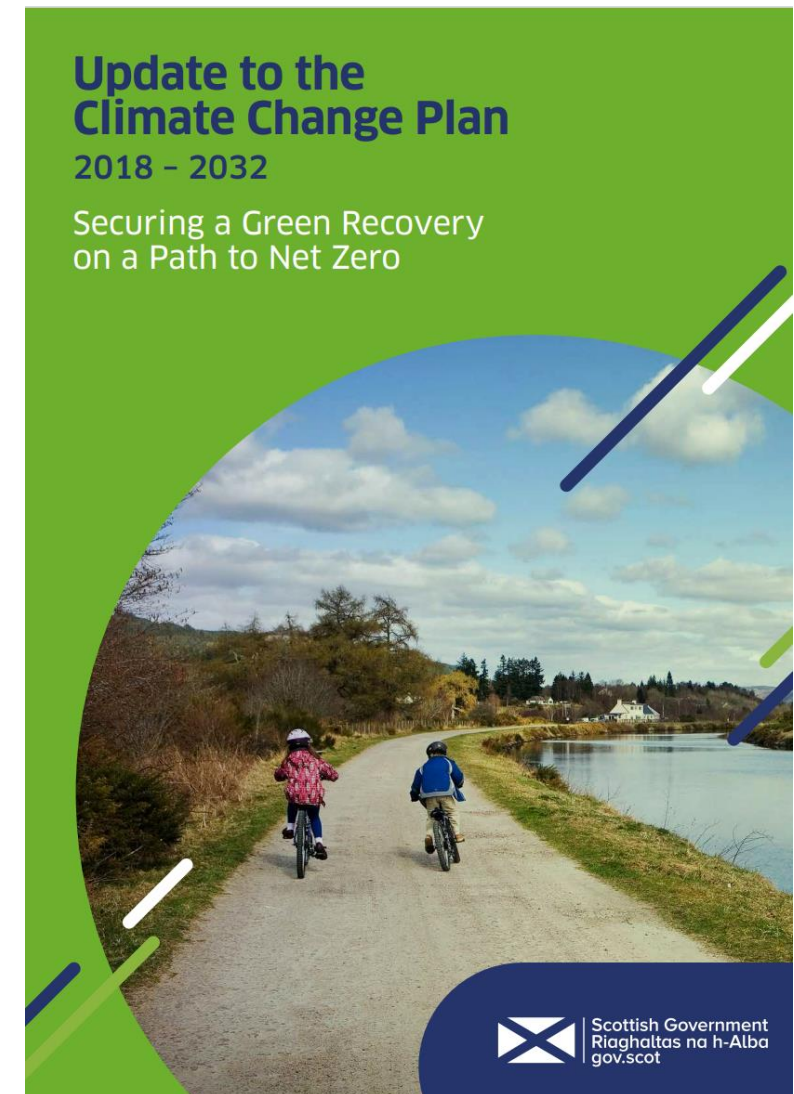
Fleet Transition to Net Zero – Hydrogen

The ACC journey to Net Zero for our vehicles and plant;
Our strategy and tactical direction

John Weir: Fleet Manager, Aberdeen City Council

Policy Background

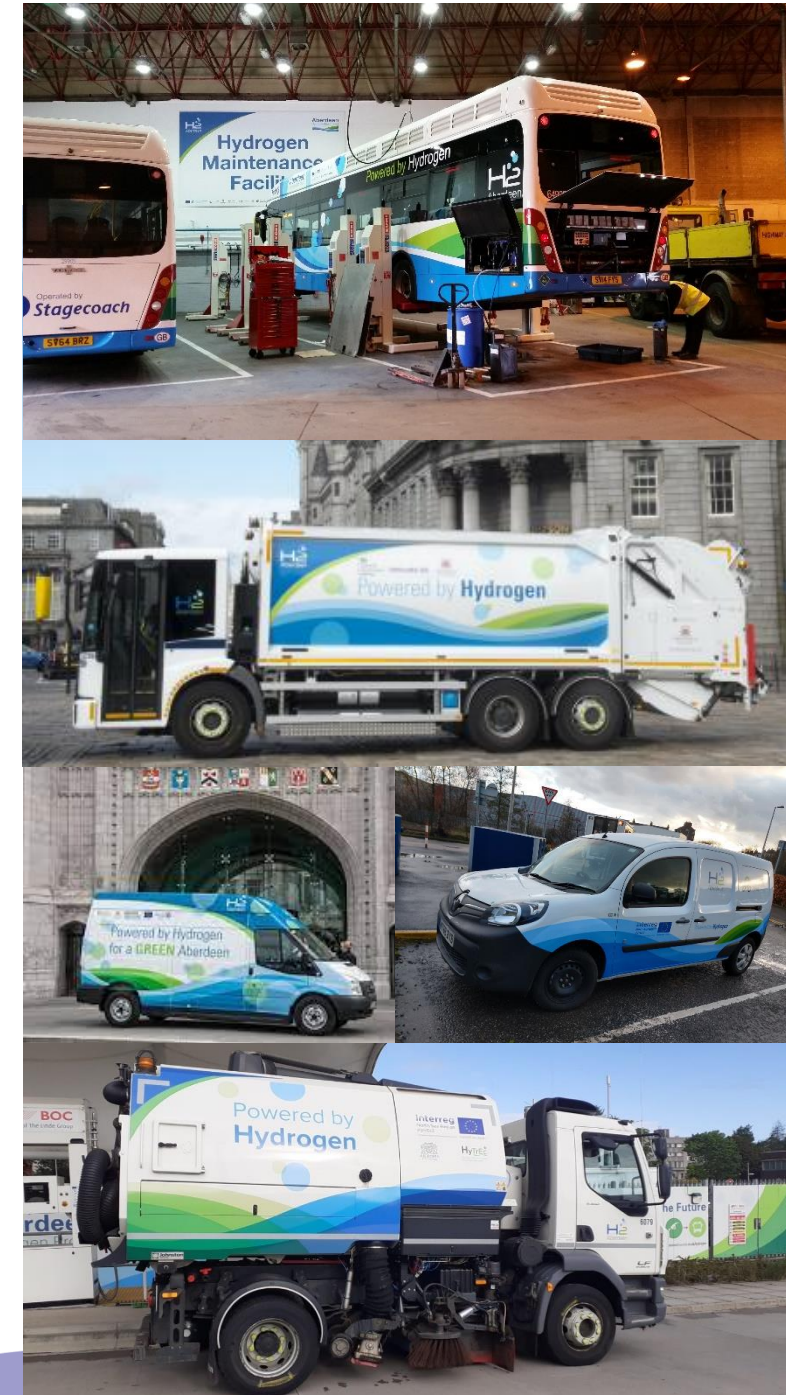
- The Scottish Government's Climate Change Plan commits to the phase out of petrol and diesel cars and vans by 2030
- For Local Authorities is reduced to 2025, with expectations that the large vehicle fleet will become net zero by 2030
- Council has adopted its own Climate Change Plan that commits to:
 - Zero emission fleet: Phase out the need for new fossil fuelled small vehicles by 2025 and for larger vehicles by 2029, switching to electric and hydrogen powered fleet vehicles
 - Low carbon fleet infrastructure Plan, test and implement an expanded EV charging and hydrogen refuelling infrastructure for Council fleet



Fleet Journey to Net Zero – Hydrogen Focus



- As early as 2002 the Council was trialling electric cars on the pool car fleet
- In 2015 Aberdeen City Council's European Hydrogen journey started with Fuel Cell buses introduced into the City and a portion of the Council's Fleet Workshop was adapted to accommodate two hydrogen maintenance bays
- In 2016 two Ford Transit vans were converted to hydrogen-diesel technology
- By 2017 Fleet Services started looking at dual fuel vehicles (hydrogen-diesel) for the heavy vehicles and worked with ULEMCo to retrofit two RCVs
- 2018 saw the deployment of the worlds first dual fuel road sweeper
- 2019 the HyTrEc2 roadsweeper was retrofitted and we adopted electric – hydrogen range extended vans for our Building Services to use
- 2020 we worked with ULEMCo to fit hydrogen/ diesel engines to both the main and donkey engines of a roadsweeper
- In 2021 we committed to the HECTOR project to introduce the UK's first Fuel Cell Electric Waste truck – which we launched last year



Practicalities of a Carbon Friendly Journey

- Fleet Replacement Programme: we replace our heavy vehicles every 7 years
- Availability of Vehicles: limited vehicle availability, especially for the HGVs
- Cost analysis / benefit: electric and hydrogen would be at least double the price of diesel if we committed now and require infrastructure to support
- Maintenance impact and Workshop Facility: currently have 2 bays in our workshop for hydrogen, if we went all electric and hydrogen would need to replace all the bays. Would also need to more clearly separate out functions – no welding, for instance
- Technician skill sets: additional training required as technicians working on both electric and fuel cell electric vehicles need some sort of high voltage training at a minimum
- Practicalities: suitability of vehicles for job purpose. FCEV and EVs tend to be heavier than diesel – resulting in reduced payload for fuel used.
- Driver training required!



The H2ICEd Journey



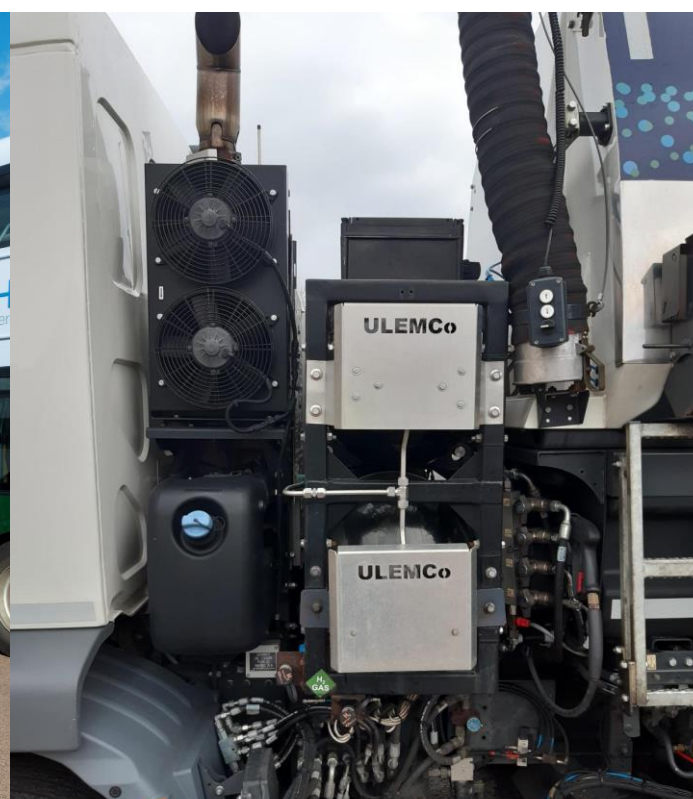
- While Council still pursuing electric and hydrogen technologies we are also looking at H2ICEd in the short term with ULEMCo
- Consider this a bridging technology until further options are available on the market
- Benefits include:
 - Don't require hydrogen to operate so if there are any issues with refuelling then the vehicle can still undertake collections (especially important for bin lorries!)
 - Train mechanics in hydrogen maintenance and start them on a hydrogen programme
 - Trains the drivers in driving more carefully to conserve fuel
 - Helps management understand practicalities and issues of moving to a Zero Emission Fleet
 - Doesn't blow the budget but allows for reduced carbon emissions to help with the journey to net zero
 - Refuel in 8 mins as opposed to overnight if they were full electric



Fleet Transition to Net Zero - Hydrogen

Our journey continues....

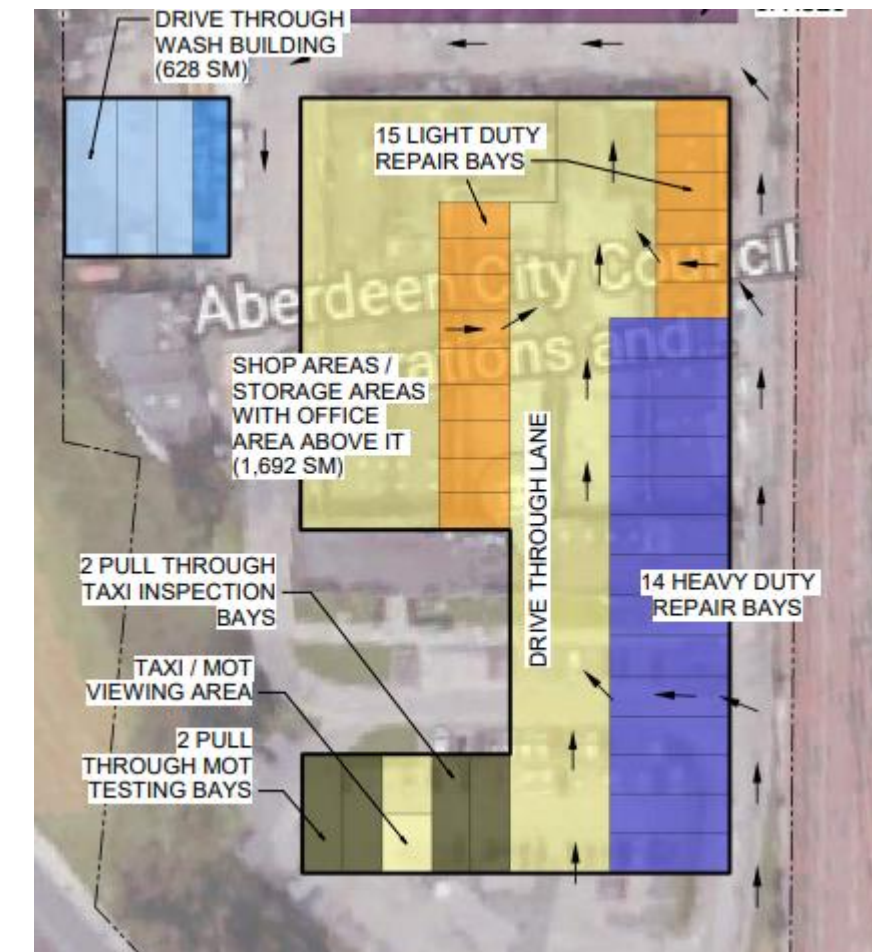
- Converted 12T, 18T and 26T RCVs last year
- Programme of 15 retrofits start of this year – tippers, tractors, vans
- Already train our mechanics in hydrogen maintenance ... looking to upskill to be able to retrofit RCVs as well



Fleet Transition to Net Zero

Our journey continues....

- UK and Scottish Government drivers
- EV vs Hydrogen : Financial Budget vs Carbon Budget ??
- Decision of hydrogen or electric ? Future likely to be both – but must be undertaken
- Leap of Faith Understood
- Investment required – not only in the vehicles but in the people and the facilities required to run and maintain the vehicles
- Collaborative approaches needed for vehicle purchase and sharing bespoke workshop facilities?





Thank you