

Digital Innovation and Efficiency Committee

Item No.

Report title:	Electronic and Autonomous Vehicles
Date of meeting:	13th March 2019
Responsible Chief Officer:	Tom McCabe – Executive Director, Community and Environmental Services, Simon George – Executive Director, Finance & Commercial Services
Strategic impact Use of Electric Vehicles (EVs) is increasing in Norfolk and trials of Autonomous Vehicles (AVs) and autonomous features are progressing rapidly. The impact of these emerging and mainstreaming technologies should be considered in the Norfolk context.	

Executive summary

In July 2017 the Government announced that “it will end the sale of all new conventional petrol and diesel cars and vans by 2040.”

In May 2018 the Prime Minister announced a further target for 2040, that all new cars and vans should be “effectively zero emission.”

The Electric Vehicle industry is moving very quickly with all manufacturers offering electric or hybrid electric vehicles in their range and charging points across the country increasing year on year.

At the same time developments in autonomous vehicles are progressing significantly.

These developments are likely to have numerous impacts from how we manage highways to how people move around and therefore we need to monitor to ensure we inform our own strategies.

Recommendations:

- 1. Continue to closely monitor industry developments.**
- 2. Monitor relevant funding opportunities to help maximise Norfolk’s suitability for use by electric and autonomous vehicles.**

1. Background

- 1.1. In July 2017 the Government announced that “it will end the sale of all new conventional petrol and diesel cars and vans by 2040.”

- 1.2. In May 2018 the Prime Minister announced a further target for 2040, that all new cars and vans should be “effectively zero emission.”
- 1.3. The *Road to Zero Strategy* (July 2018) set an aspiration for “at least 50%, and as many as 70%, of new car sales and up to 40% of new van sales being ultra-low emission by 2030.
- 1.4. The market share of electric vehicles in the UK is growing: SMMT data shows over 1,300 battery electric vehicle registrations in January 2019, compared to just over 600 in January 2018 (not including hybrid vehicles).

2. Electric Vehicles

- 2.1. An electric car / electric vehicle often referred to as “EV” is a plug-in electric car that is propelled by one or more electric motors, using energy typically stored in rechargeable batteries.
- 2.2. Electric vehicles and Hybrid electric vehicles (engine + electric) are becoming more prevalent in the market place with most manufacturers offering at least one in their range.
- 2.3. Currently electric vehicles are limited by the distance they can travel due to the size of battery and efficiency of the car; where Hybrid electric vehicles provide greater range as they also have a traditional engine.
- 2.4. A number of vehicles use the engine and braking of the car to top up the battery whilst driving.
- 2.5. **Charging**
- 2.6. To charge an Electric Vehicle it can be plugged in at home and / or at one of the 13,000+ public charging stations across the UK.
- 2.7. Government grants have been available to encourage the take up and provide financial support for the installation of home charging stations. However, they typically cover the upfront installation costs, but not the ongoing running costs.
- 2.8. A typical Electric Vehicles takes between 40 minutes and 5 hours to charge at home and has an electric range of approximately 100 – 200 for pure electric (20 – 50 miles for hybrid)
- 2.9. Public charging stations allow quick charging to 80% of the battery over much shorter periods of time.
- 2.10. Norfolk County Council accessed a government grant in the mid-2000s for the installation of charging points for electric vehicles. This resulted in four charging points being installed;

Two at Harford Park and Ride
Two at the Airport Park and Ride
- 2.11. There are various commercial applications showing locations of charging stations, such as <https://www.zap-map.com/live/>.
- 2.12. From this, it can be seen that there are numerous chargers across the county, provided by the commercial market, mostly sited in the urban centres.

- 2.13. The stance of the county council to date has been that the market will provide the necessary infrastructure to support the transition to electric vehicles.

The main reasons for this are:

- The county council is not in the business of running a system of charging points
 - Grants typically cover only the capital funding for installation of charging points
 - The county council does not have the budget to support ongoing revenue costs including back-office systems for management of the points, or maintenance and replacement and running costs.
- 2.14. To date no charging points in Norfolk have been provided on the public highway. This has been due to the issues above, together with concern about the liabilities that might arise from, for example, trailing leads on the highway that might present a hazard.
- 2.15. The council does however need to recognise some of the issues related to this position. This includes that the market might not provide sufficient charging points in rural areas; that people who do not have off-street parking facilities at home might find it difficult to charge their vehicles (most people charge them overnight at home); and the council is not influencing the take-up of electric vehicles.
- 2.16. In June 2018, the county council, in partnership with Norwich City, Broadland District and South Norfolk councils, submitted a bid to the Department for Transport for a share of the Transforming Cities Fund (TCF). We have been shortlisted as one of 12 city areas to be eligible for a share of £1.2bn capital funding. A more detailed bid needs to be submitted in the summer for this funding, and the council is currently working through priorities for this with the other partners. We remain in discussion with bus companies and others about whether electric vehicles and associated infrastructure form an element of the bid.
- 2.17. The council would expect private sector investment to install rapid charge points at service stations and public parking spaces at pubs, offices etc.

3. Autonomous Vehicles

- 3.1. An autonomous vehicle also known as a self-driving car, or driverless car, is a vehicle that is capable of sensing its environment and moving with little or no human input.
- 3.2. Autonomous vehicles combine a variety of sensors to understand their surroundings, and then advanced control systems interpret sensory information to identify a path of navigation signs and obstacles.
- 3.3. Autonomous vehicles have the potential to increase opportunities for people to connect; particularly those unable to use traditional vehicles.
- 3.4. They also can potentially lead to other benefits such as a reduction in casualties or an increase in the efficiency of the road network, eg through HGV platooning.

- 3.5. Government has supported the development of Connected and Autonomous Vehicles (CAVs) including trials of fully autonomous vehicles.
- 3.6. To date the county council has not participated in trials of autonomous vehicles.
- 3.7. The existing vehicle fleet includes vehicles with some level of autonomy, for example vehicles with adaptive cruise control or lane control; or which have self-parking capabilities.
- 3.8. The authority should be aware of a number of matters when considering the further development and roll-out of CAVs:
 - Implications of maintenance of the road network: Will CAVs place demands on the quality of the infrastructure and require for example road markings or other traffic-management interventions to navigate the network?
 - Streetscape and Public realm: Is the authority implementing measures within town and city centres (eg multi-modal spaces) that will meet safety requirements for future fully or semi-autonomous vehicle operation?
 - What standards should the local authority be working to in its design of highways or traffic management infrastructure to ensure they are fit for the future?
 - In the longer-term, will fully autonomous vehicles lead to additional vehicle movements on the network (because some will be circulating empty to pick up passengers; or there will be additional movements being made by people who currently don't travel alone in a vehicle, eg children).

4. Financial Implications

- 4.1. None at this time.

5. Background

- 5.1. Wikipedia Electric Vehicles
https://en.wikipedia.org/wiki/Electric_vehicle
- 5.2. Wikipedia Autonomous Vehicles
https://en.wikipedia.org/wiki/Self-driving_car
- 5.3. Automotive revolution – perspective towards 2030
<https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/disruptive-trends-that-will-transform-the-auto-industry/de-de>
- 5.4. Highways England has launched a competition to support the development of 'digital roads' and improve air quality.
https://www.ukauthority.com/articles/highways-england-calls-for-digital-roads-ideas/?utm_source=alert&utm_medium=email&utm_campaign=11feb19
- 5.5. Warwickshire County Charging Strategy
<https://www.warwickshire.gov.uk/driveelectric>

