



GRIDSERVE

Hybrid Solar and Electric Forecourts®



| APSE – Electric Vehicles are here but...

- When will the tipping point arrive?
- What about Infrastructure, Generation and Storage?
- How can local authority engage?

APSE – When will the tipping point arrive?



noun

noun: **tipping point**; plural noun: **tipping points**

the point at which a series of small changes or incidents becomes significant enough to cause a larger, more important change.

I will try to justify the idea that the tipping point is now

Environmental Drivers

- *It has to be now*

Economic Drivers

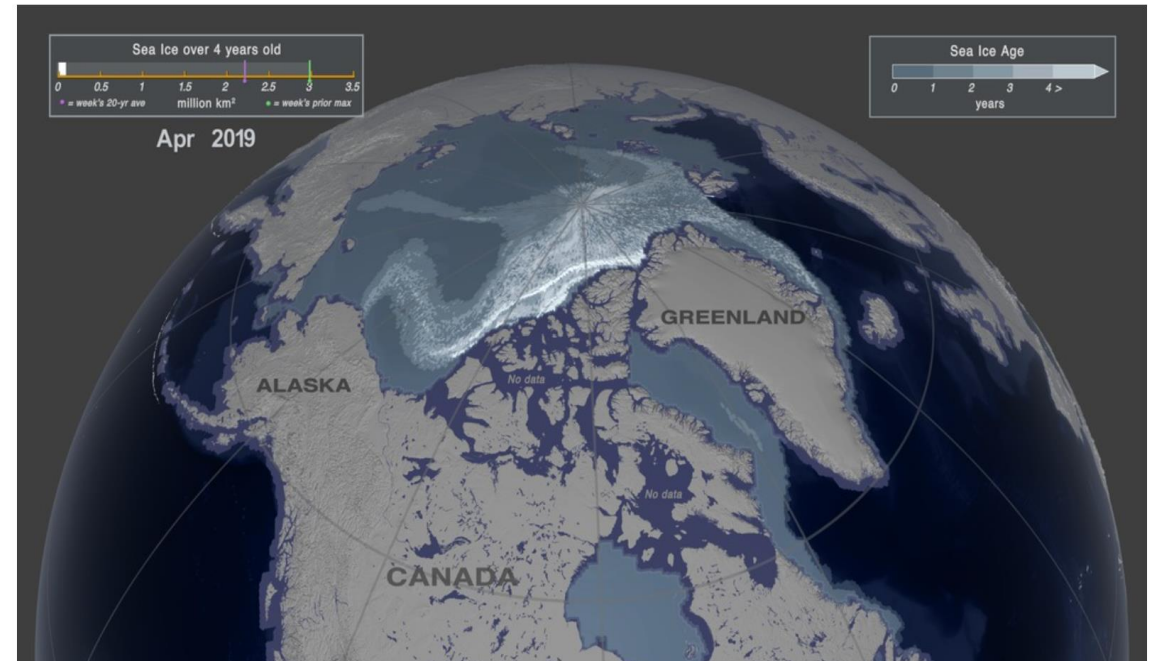
- *It is now*

Policy Drivers

- *We can help it to
be now for more
people*

APSE – When will the tipping point arrive?

Environmental Drivers for EV adoption – *It has to be now*

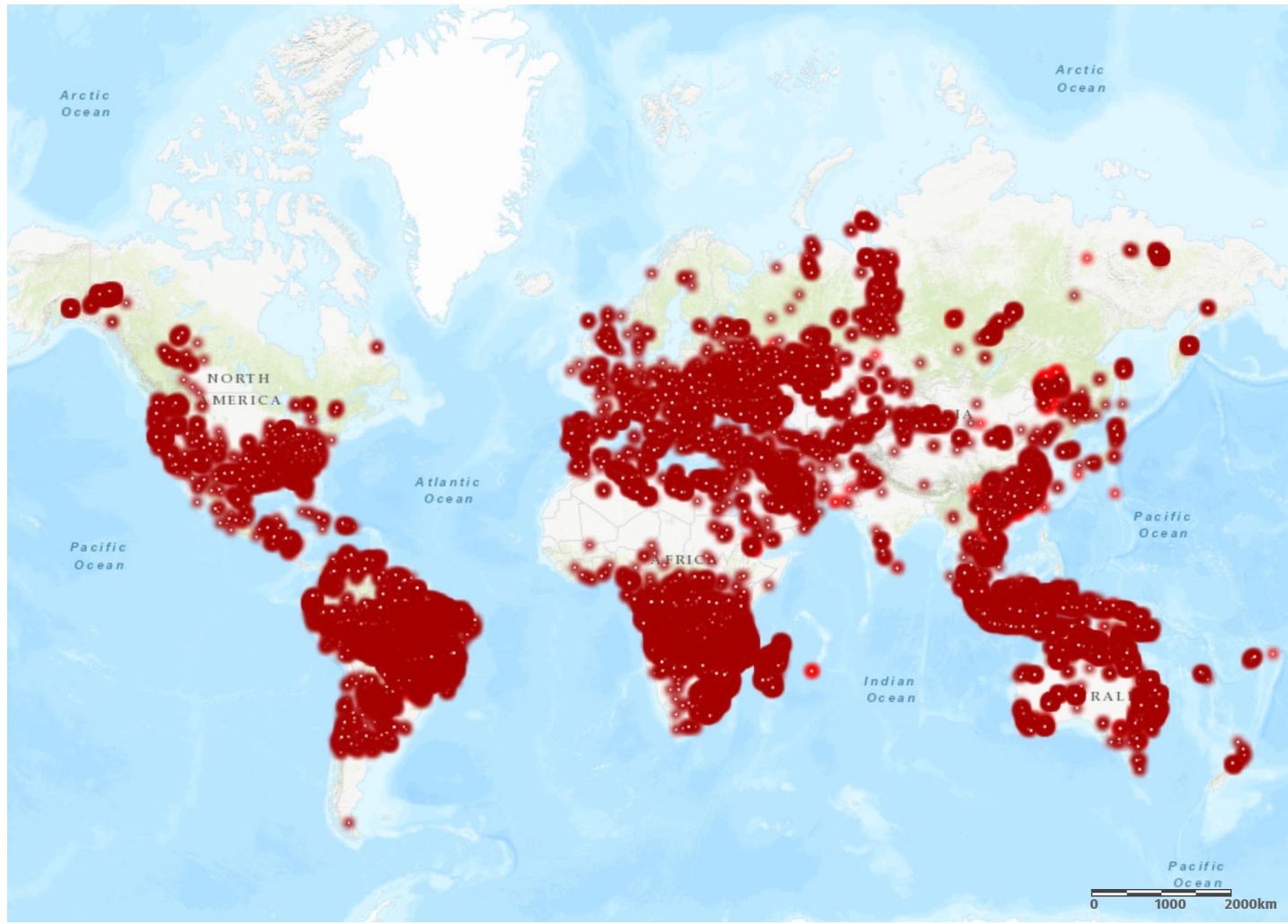


Images from NASA's Scientific Visualisation Studio
2,791,000 square kilometres of sea ice in April 1986 vs 89,000 in April 2019

APSE – When will the tipping point arrive?

Environmental Drivers for EV adoption – *It has to be now*

- Shown here are the forest fires active within a 24 hour period as of the 13th September 2019
- Striking how far north some of these fires are, and of course the density of these within the world's rainforests

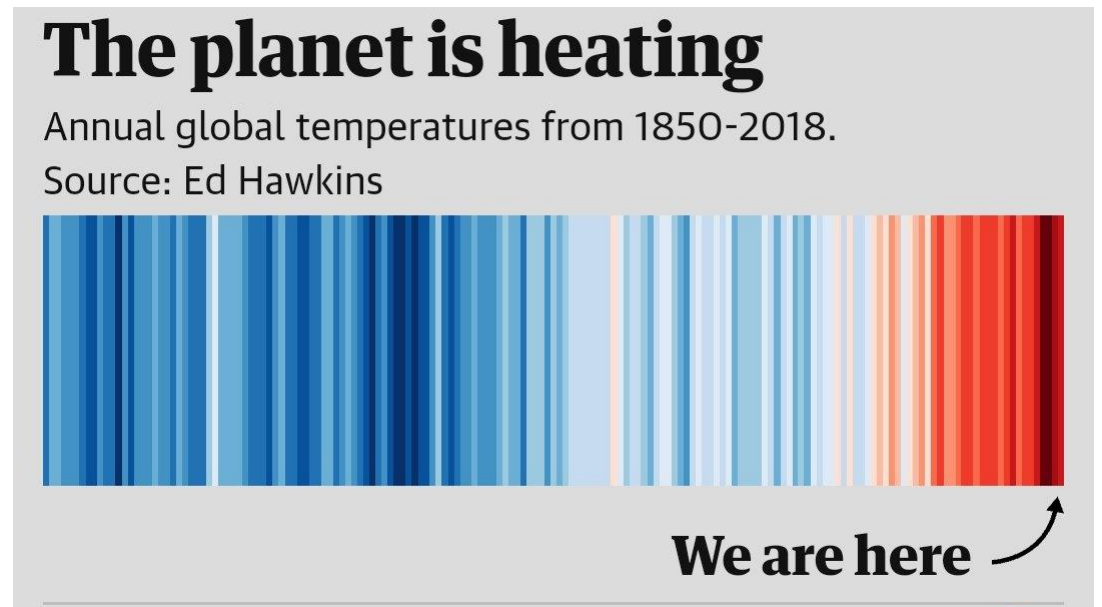


APSE – When will the tipping point arrive?

Environmental Drivers for EV adoption – *It has to be now*

- 415ppm CO₂ recorded in May 2019, the highest figure in 800,000 years¹
- July 2019 the hottest month on record for the planet²
- 5 hottest ever years are 2018, 2017, 2016, 2015, 2014³
- CO₂ emissions for transport make up 26% of the UK's Greenhouse Gas emissions, the largest source of any sector in the UK, road transport being 85% of this⁴

1 – Live Science 14/05/2019
2 – NOAA
3 – Climate Central
4 – Green Alliance EV Report



APSE – When will the tipping point arrive?

Economic Drivers for EV adoption

- Lithium ion batteries are 15% of the price they were in 2010, with \$176/kWh at the pack level today falling further to \$87/kWh in 2025 and \$62/kWh in 2030¹
- Crossover for ICE vs. EV on pure purchase price in 2022 for some sectors, due to battery price reductions.
Only 25% of purchase price by 2025
- EV drivers can save enormously on running costs (some of which are through policies):
 - 4-6pence per mile vs. 9-14pence per mile for efficient and modern hybrids ~ 50% cheaper
 - £0 road tax
 - ~50% saving on service costs
 - Taking into account the purchase price through leasing, already a 5% saving over an ICE vehicle in the UK²
- Indirect subsidy to fossil fuels found to be £10.5bn a year in the UK²

1 – BNEF Electric Vehicle Outlook 2019

2 – The Guardian 12/02/2019


APSE – When will the tipping point arrive?

Policy Drivers (Financial incentives?) for EV adoption

- Climate Emergency declared
- Net Zero by 2050
- Banning sale of ICE cars by 2040
- EU Emissions standards
- Government buying EVs for 25% of it's fleet by 2022 ~ 1,250 cars annually
- Benefit in Kind – 0% as of April 2020
- ULEZ – London ULEZ implemented in 2019 and expanding 2021. Newcastle and Gateshead announced ULEZ recently
- Planning Policy
- Road Tax – EVs are exempt from Vehicle Excise Duty
- EV Grants - £3,500 available (already cut from £5,000)
- Norway has already achieved great penetration of EVs (58% of all car sales in March 2019) through taxation of non-EVs

APSE – When will the tipping point arrive?

..... By 2030 By 2040 By 2050



- At least 50 per cent, and as many as 70 per cent, of new car sales being ultra-low emission.



- End the sale of new conventional petrol and diesel cars and vans.
- All new cars and vans to be 100 per cent zero emission, or to have significant zero emission capability.



- Almost every car and van to be zero emission.

| APSE – When will the tipping point arrive?

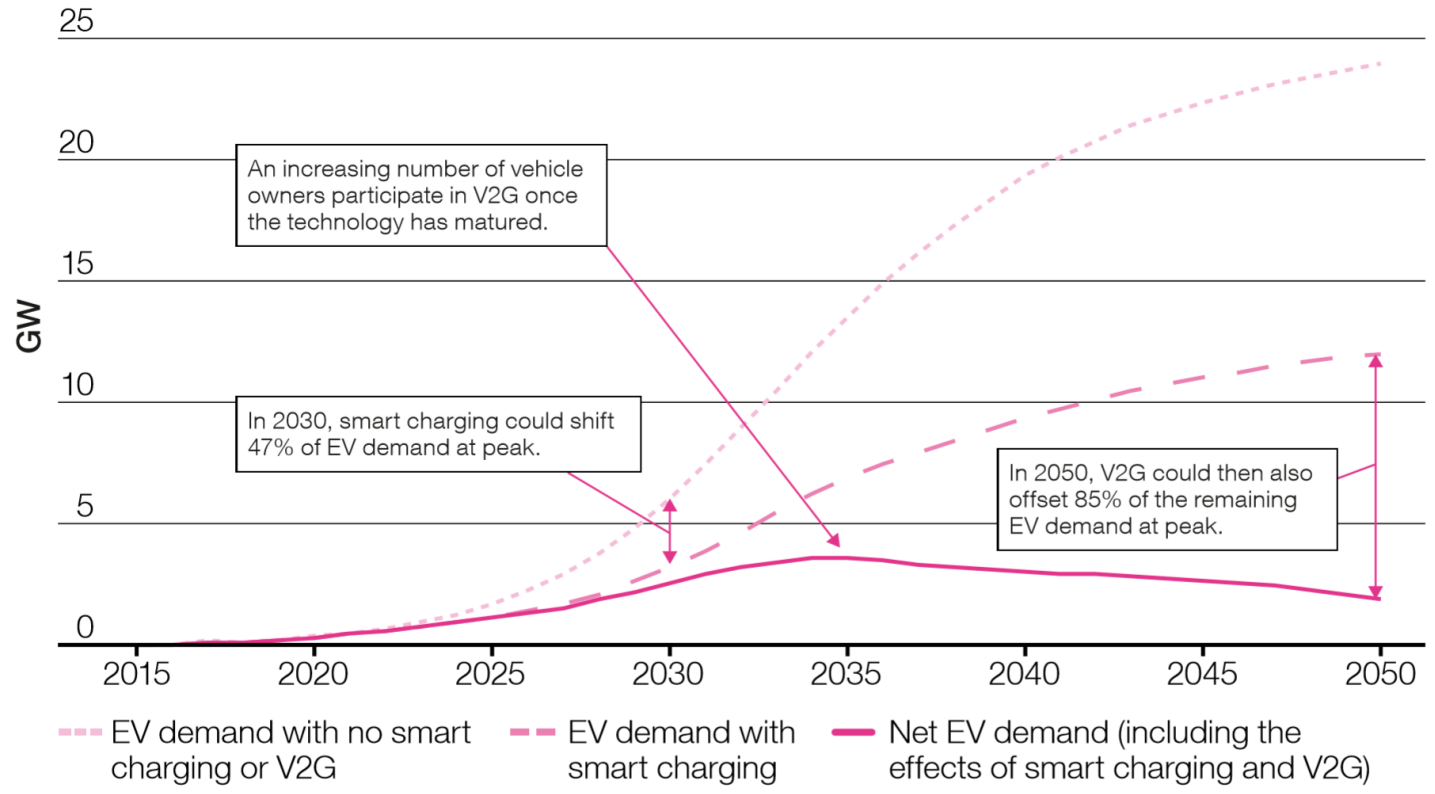
- Over 35m Electric Vehicles in the UK by 2050¹
- \$300bn from global automakers being invested into battery manufacturing and technology over the next 10 years²
- VW forecasts to sell 22 million EVs globally by 2029³

1 - National Grid ESO – Future Energy Scenarios 2019

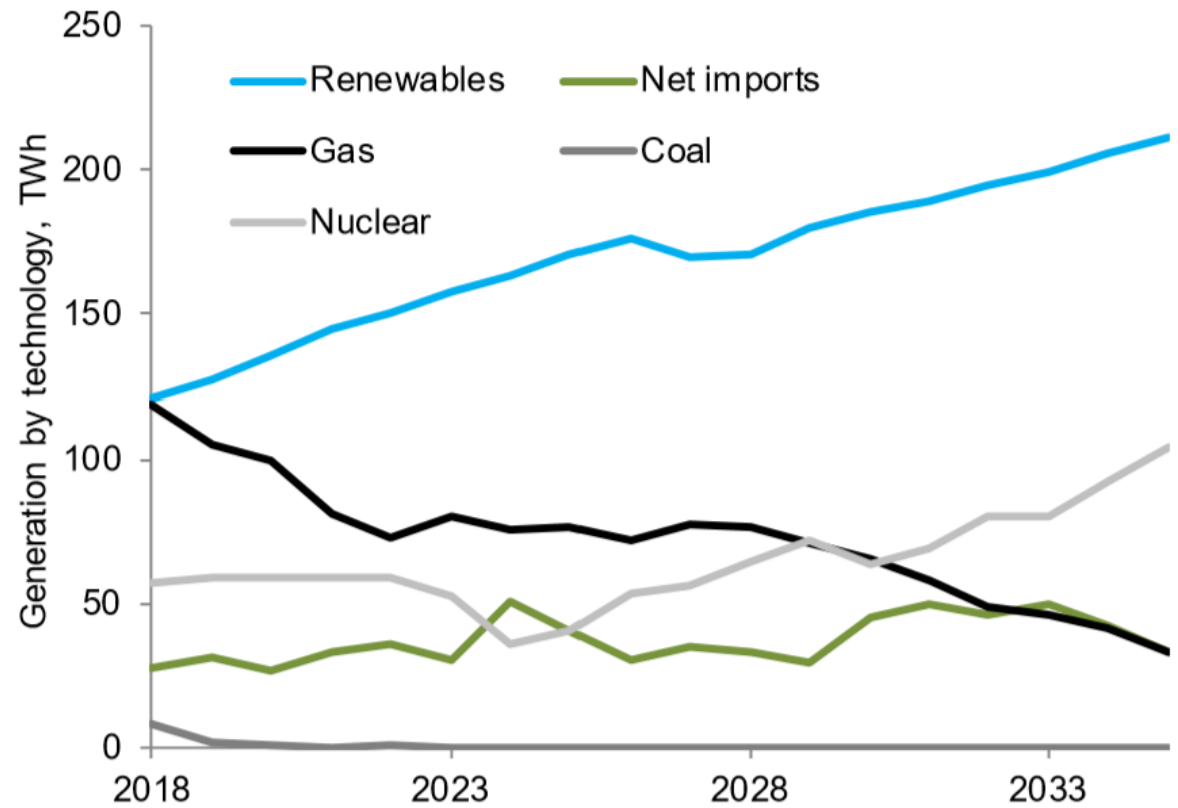
2- Reuters 6/01/2019

3 – CNBC 13/03/2019

APSE – What about Infrastructure, Generation and Storage?



APSE – What about Infrastructure, Generation and Storage?



GRIDSERVE is currently in construction of the 35MWp York Hybrid Solar Project (pictured) with a further 25MWp project in construction in Hull. GRIDSERVE developed, financed, is project managing construction and will operate both sites, in-house.







GRIDSERVE Electric Forecourts® are designed for the modern age and will make owning and operating an electric vehicle an enjoyable, ultra-convenient and stress-free experience.

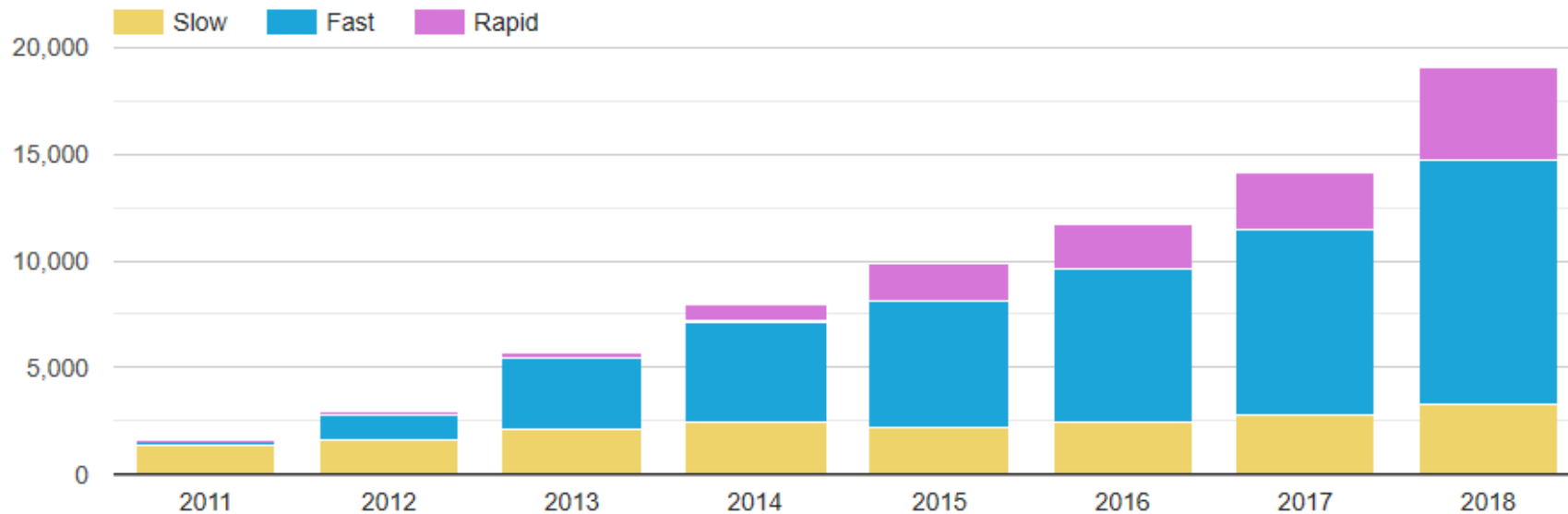


It will take less than 30-minutes to charge most vehicles, and during this time drivers will be able to take advantage of a range of facilities including a coffee shop and an airport-style lounge with high-speed internet.



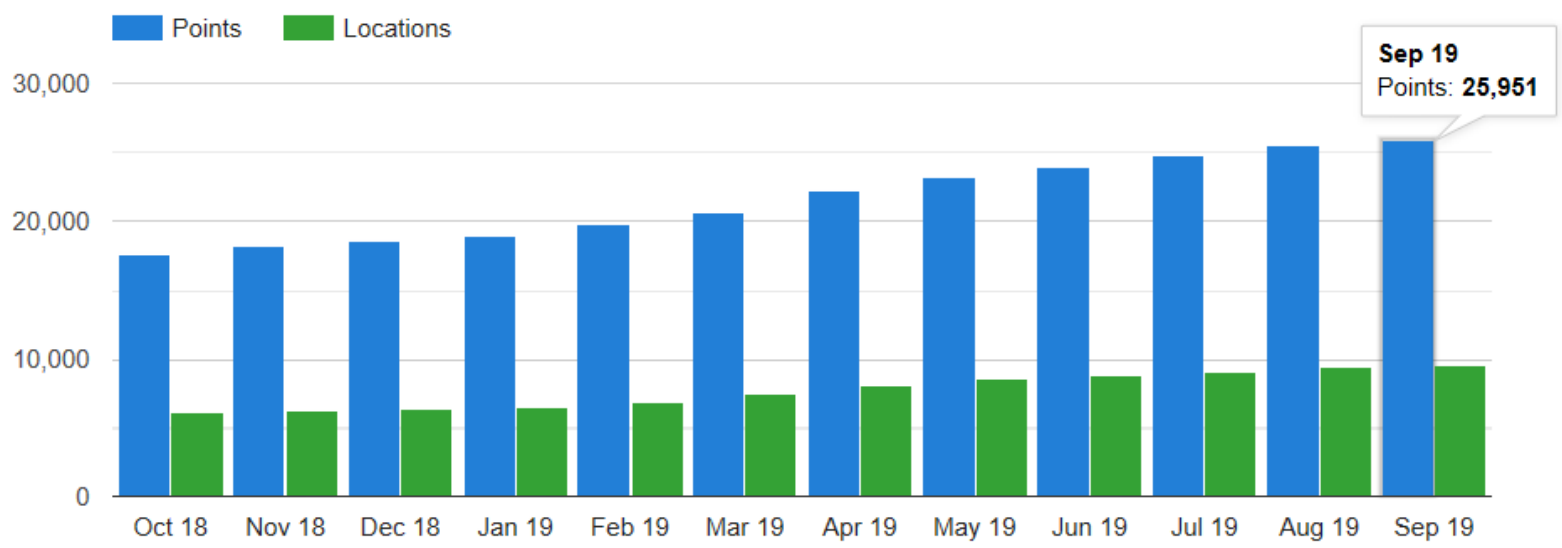
APSE – What about Infrastructure, Generation and Storage?

Charging connectors by type: Zap-Map, 2011-2018



APSE – What about Infrastructure, Generation and Storage?

Number of UK charging locations and connectors over past 12 months: Zap-Map, September 2019



17,621 connectors October 2018, 25,951 in September 2019





APSE – How can local authority engage?

Leader of Warrington Borough Council, Cllr Russ Bowden said: ‘This deal is good news for Warrington residents and good news for the environment. The solar farms will secure our energy supply, give us control over our energy prices, contribute to reducing fuel poverty and generate an estimated operating surplus of £150m over 30 years that can be invested back into the most important frontline services.’

APSE – How can local authority engage?

We all need to act now and Councils can act now. 322 Councils have declared a climate emergency, but what does this mean? What actions are Councils taking?

- Policy Drivers
 - ULEZ
 - Planning policy
 - 100% Active provision of EV chargers for new homes
 - Nationally important infrastructure etc.
 - Local Enterprise Zones
- Investing in renewables through GRIDSERVE
 - Profit/surplus generating for frontline services
 - Greening electricity supply
- Education
- Facilitating
 - Funding
 - Round Table discussions
 - Groups (EV events/meet ups etc.)
- Transitioning Fleets
- Open up Council land for private entities to install and operate infrastructure
 - GRIDSERVE can build Electric Forecourts and Hybrid solar on Council land or through Council relationships



Thank you for
your attention
GRIDSERVE

