



Powering the rEVolution

Ensuring the electricity system can meet EV demand

Nicholas Brooks – Head of Energy, OLEV





Overview

- **What is OLEV?**
- **Our key policy drivers**
- **OLEV's mission and funding**
- **Progress so far**
- **The energy system challenge**
- **The year ahead**
- **Questions**



The Office for Low Emission Vehicles – Ministers



Greg Clark
BEIS



Chris Grayling
DfT



Richard
Harrington
BEIS

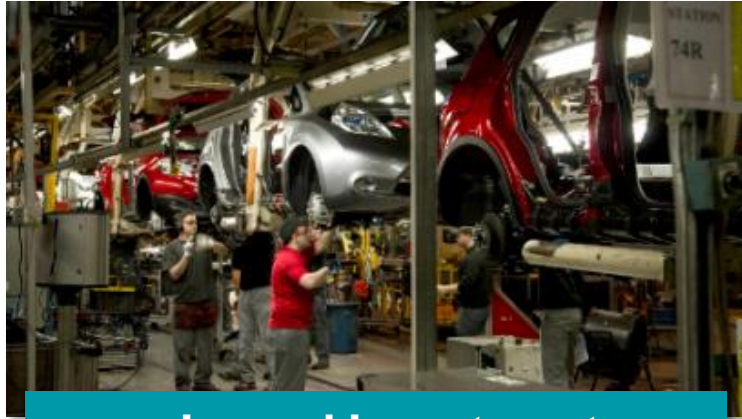


Jesse Norman
DfT

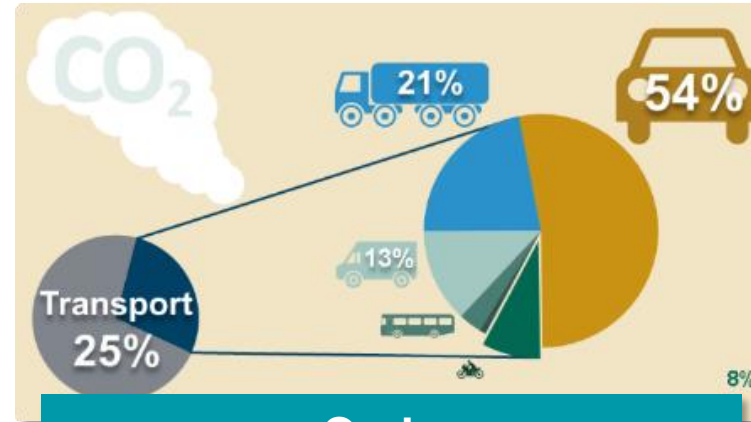




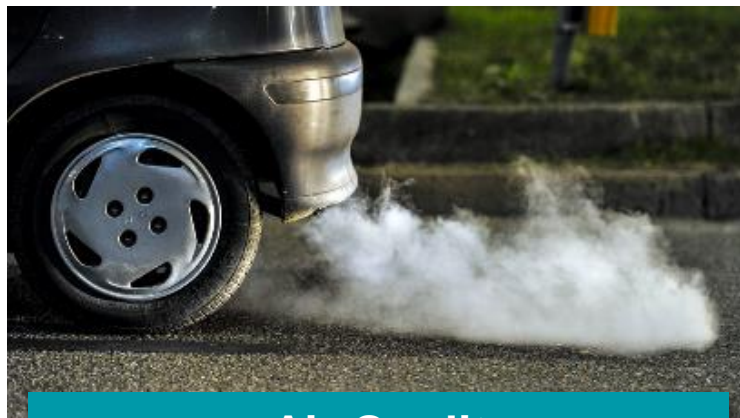
Policy drivers are numerous



Inward Investment



Carbon



Air Quality



Energy Security



Are we at the tipping point?

The Telegraph

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Volvo becomes the first major car manufacturer to go all electric



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Environment

France will 'ban all petrol and diesel vehicles by 2040'

Environment minister unveils five-year-plan to fulfil country's commitments under Paris Agreement

Chloe Farand | Thursday 6 July 2017 12:30 BST | 259 comments



THE TIMES

Swimwear! Sequins! The new summer fashion rules

Devon Mabon - the day I crushed South Africa

Milk can be branded inhumane, advertising chiefs tell farmers

Advertising chiefs have warned that brands such as 'Milk' could be branded inhumane, as they call for a ban on the use of animal names in advertising.

End of the diesel and petrol car

All new vehicles must be fully electric by 2040

Britain's car industry is set to be transformed as it moves towards a future where all new cars are electric by 2040, according to a report from the Society of Motor Manufacturers and Traders (SMMT).



Charlie Gard set to spend final days in care hospice

Charlie Gard, the baby who became the focus of a legal battle over his treatment, is set to spend his final days in a care hospice.

The Economist

Fire and fury over North Korea
The Fed's runners and riders
Was Google right to sack him?
Competitive punning: game of groans

Roadkill



Internal Combustion Engine

'Clean air' zones for English cities by 2020

17 December 2015 | England



Clean air zones will introduce charges for some older vehicles, but not for private cars

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Sadiq Khan to more than double size of London's clean air zone

New mayor of London calls air pollution 'our biggest environmental challenge' and plans to bring the increased ultra low emission zone into force early



#JaguarElectrifies





We have moved past the point of 'if'



End of sales of conventional vehicles by 2040 and almost every vehicle to be zero emission by 2050

Air Quality Plan, July 2017



Department
for Transport

£400M

OLEV support
2010-2015



Department
for Transport

£600M

OLEV support
2015-2020



Department for
Business, Energy
& Industrial Strategy

£500M

Advanced
Propulsion Centre



HM Treasury

£100M

Fiscal incentives
to 2020



Infrastructure
and Projects
Authority

£400M

Chargepoint
Infrastructure
Investment
Fund



A few key elements to OLEV's offer

Go Ultra Low campaign
Joint funded with industry - £2m in 2017/18



Electric Vehicle Homecharge Scheme (EVHS)

£500 towards a
home
chargepoint



Workplace Charging Scheme (WCS)

£300 per
workplace
socket



On-Street Residential Scheme (ORS)

£7,500 per
chargepoint for
LAs



Plug in Car Grant (PiCG)

- £4,500 BEV
- £2,500 PHEV
- £8,000 Van
- £1,500
Motorcycle



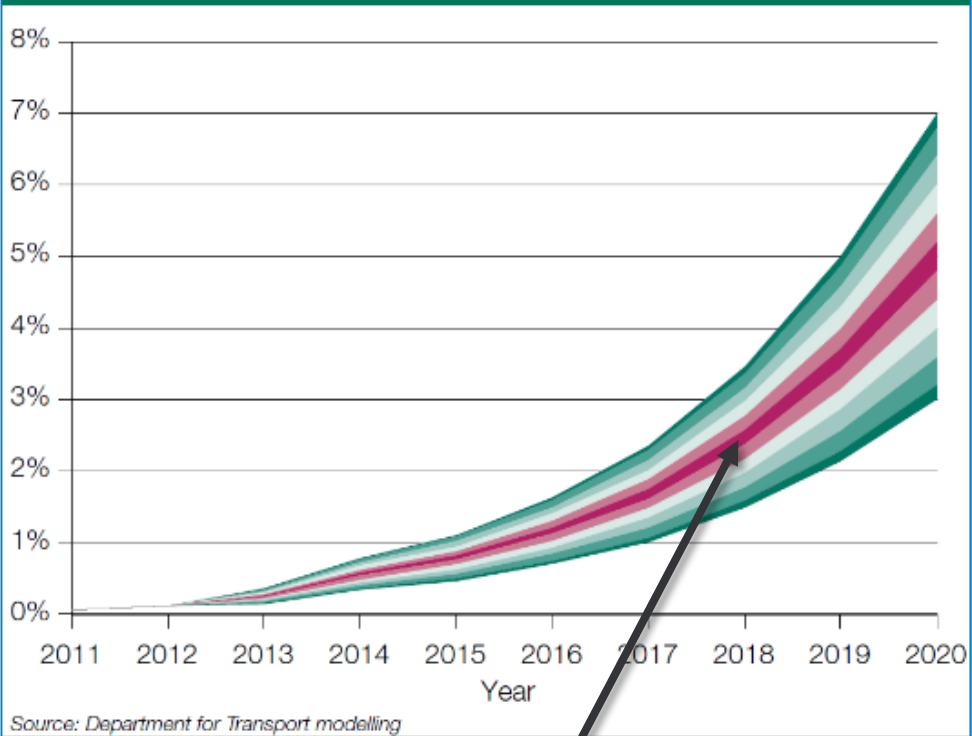
Go Ultra Low Cities (£40m)

- Milton Keynes
- Bristol
- London
- Nottingham
- Derby
- Dundee,
Oxford, York,
North East



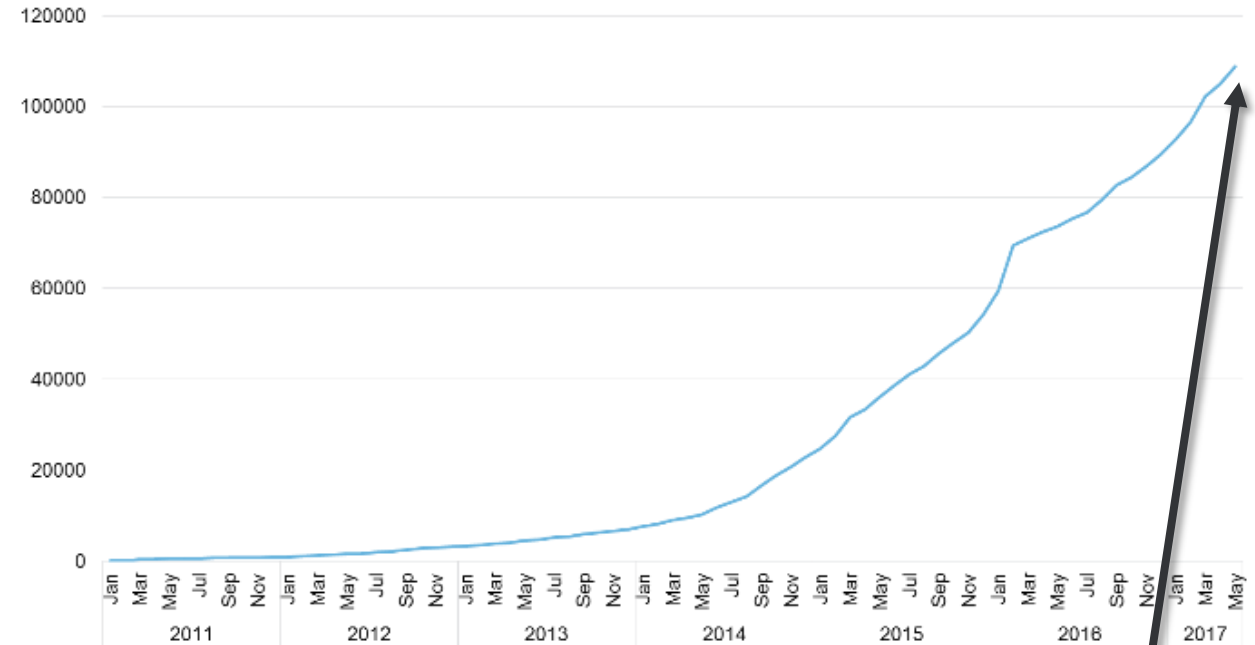
Current EV deployment is showing strong uptake

Figure 6.3 – Projected ULEV car sales as proportion of all car sales (2011-20)



2.5% of new sales

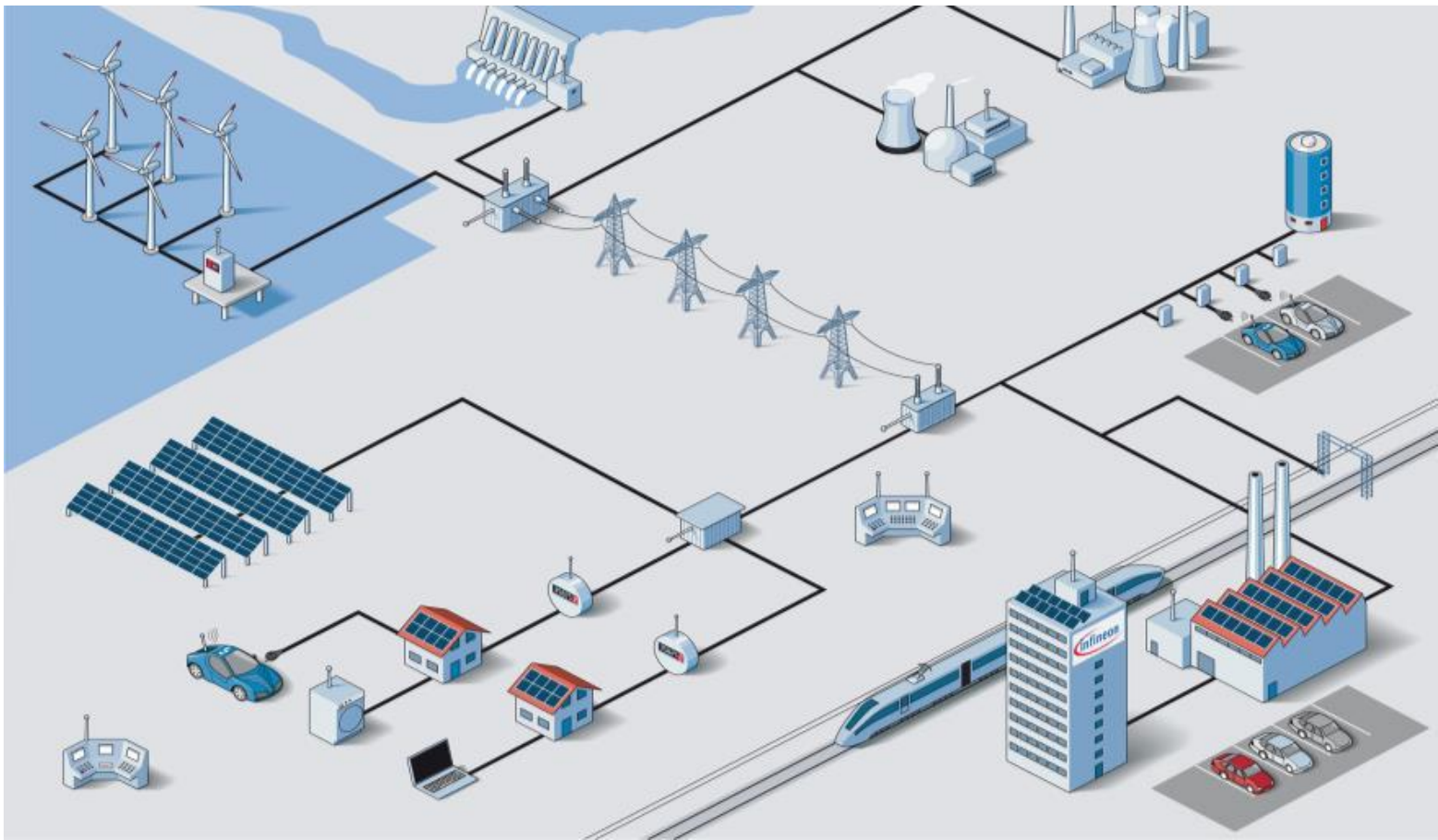
Cumulative plug-in car grant orders, 2011 to May 2017



Over 100,000 cumulative orders



Our electricity system is changing



20th Century

- Fossil fuel based
- 'Top down'
- Predictable
- Inflexible

21st Century

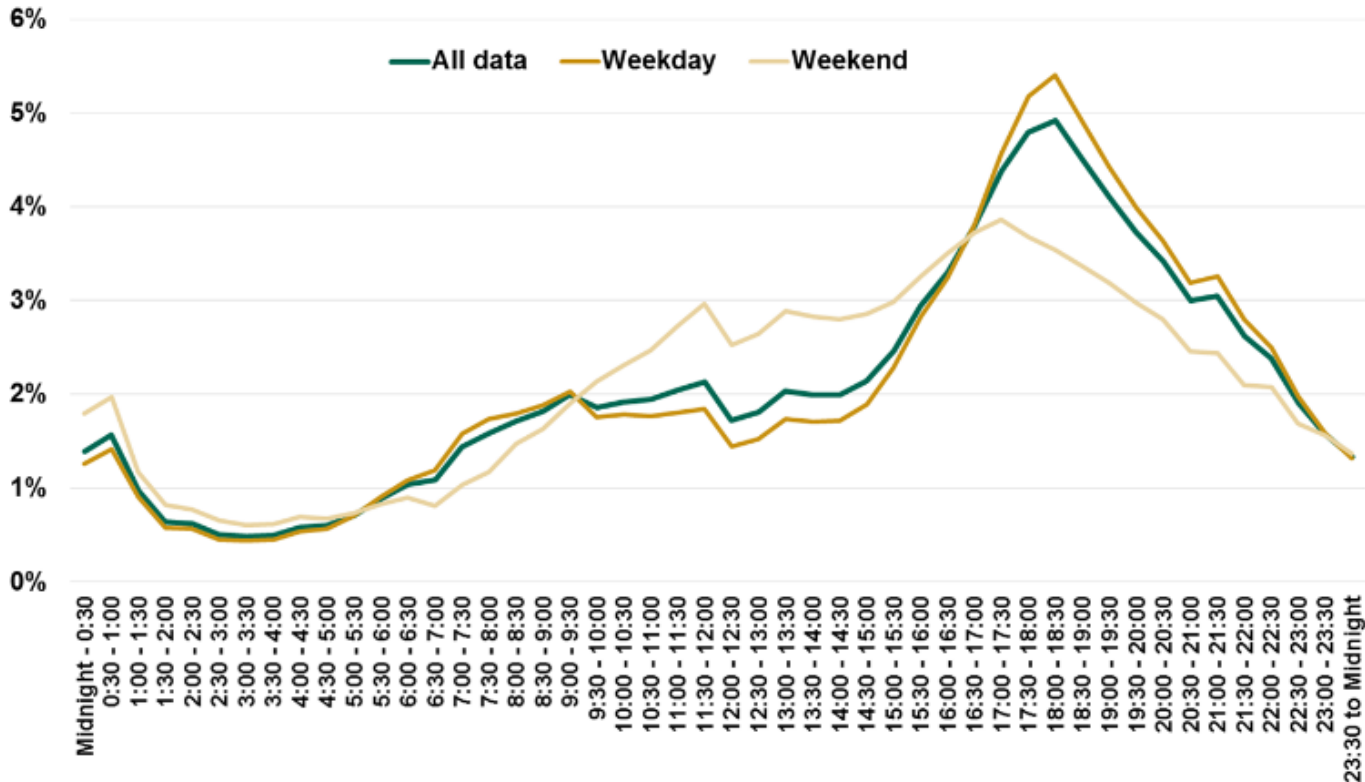
- Renewables
- Interconnected
- Unpredictable
- Flexible

Source: Cornwall Insight



Smart charging challenge

Frequency of charging start times: Oct 14 to Sept 15



Source: OLEV chargepoint usage data

Transmission and Supply

- Electric Vehicles will need more electricity
- National Grid estimate 6-18 GW of additional peak demand would be required by 2050
- Electrification of heat and transport could add additional 45TWh by 2050, 11% of total demand

Distribution

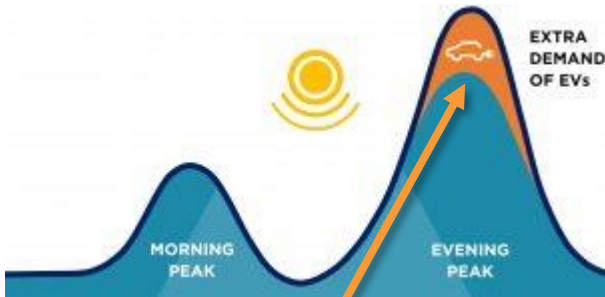
- My Electric Avenue predicted that without smart charging, by 2030 when EV penetration hits 50%, 30% of low voltage networks would need to be reinforced
- But also found 84% of participants were happy to have their charging managed



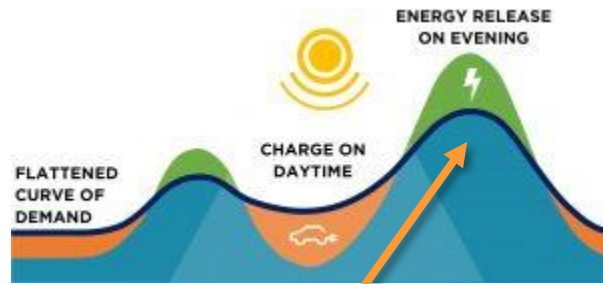
Electric vehicle opportunities are growing

Local and system peaks can be avoided with V2G technology:

WITHOUT V2G:



WITH V2G:

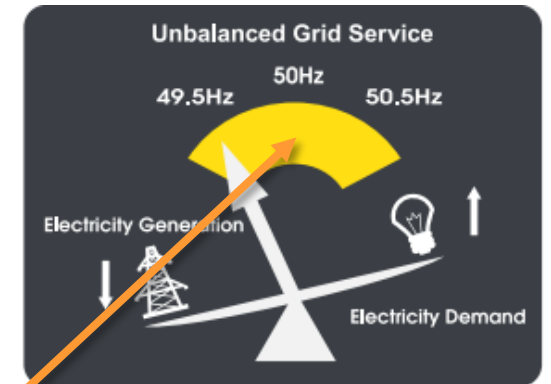
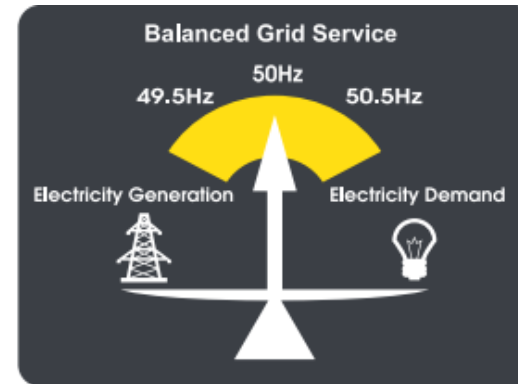


Source: www.amsterdamvehicle2grid.nl

Few actually **need** to be charging here

Smart charging + V2H / V2G opportunity?

Electric vehicles can provide valuable grid balancing services:



Source: Open Energi

A potential new solution for maintaining grid stability



£30m V2G competition

Putting in the right regulation to give confidence

Purpose: to ensure a world-class infrastructure supports the rapid adoption and use of EVs by consumers, as more mass market models become available



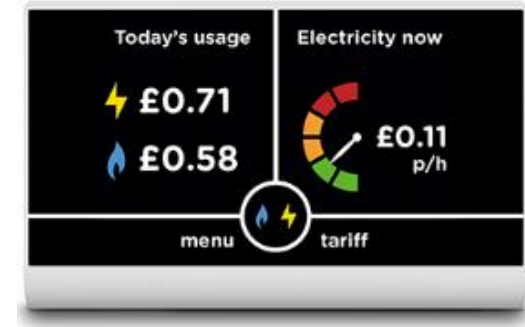
Access & Connection



Information



Fuel retailers/MSAs



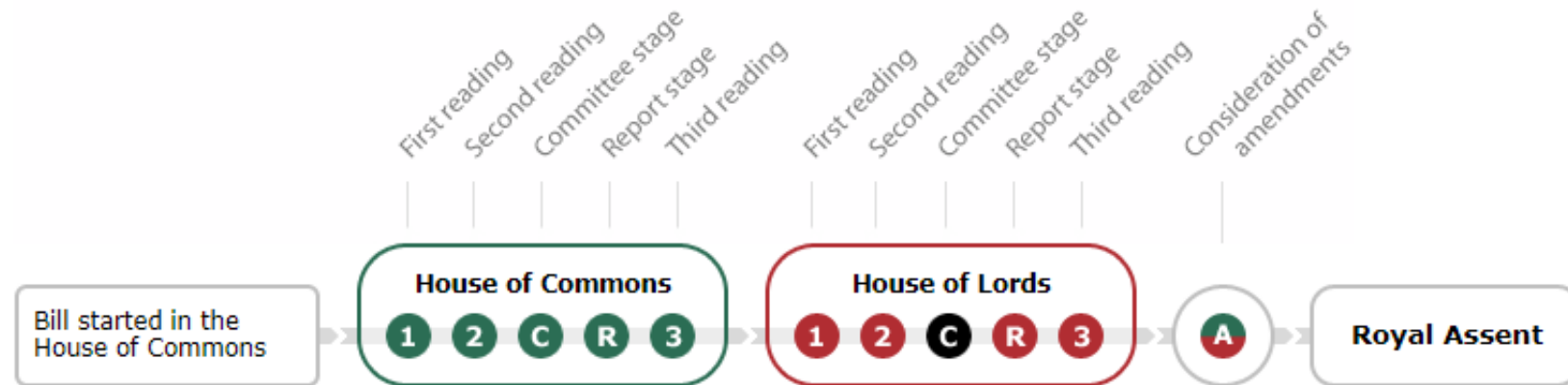
Smart capability

The Automated and Electric Vehicles Bill is progressing through Parliament

Automated and Electric Vehicles Bill 2017-19

Type of Bill: Government Bill
Sponsors: Chris Grayling
Transport
Baroness Sugg
Transport

Progress of the Bill



The Bill has already completed its passage in the Commons and is now making its way through the Lords. Next stage will be Grand Committee.



A busy year...

Automated and Electric Vehicles Bill

Government will take new powers to help improve electric vehicle infrastructure



Department for Transport

The Prime Minister announced UK will host an international ZEV summit in the autumn

In conclusion:

- The electricity system will need to adapt to meet the rollout of EVs
- Smart charging will play a big role in ensuring EVs are an integrated part of our flexible energy system
- Consumer behaviour – how people use and charge their cars will be important
- Assessing appropriate level of charging infrastructure
- Road to Zero Strategy coming soon...





Questions?



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