Future EV demand and the energy system

Electric Vehicle Energy Taskforce: Stakeholder Engagement Seminar

22nd October 2018

Rebecca Sweeney – Programme Manager
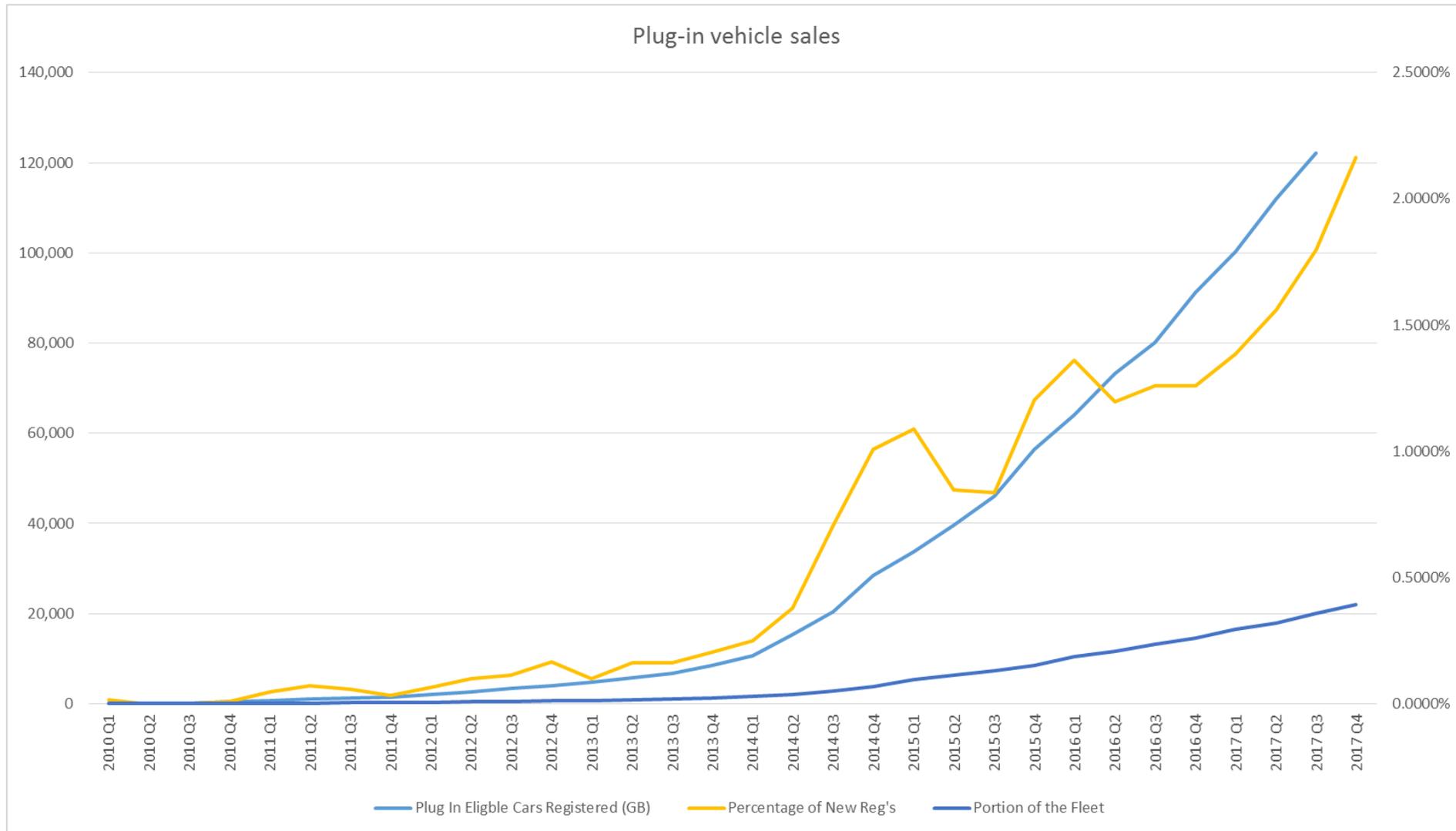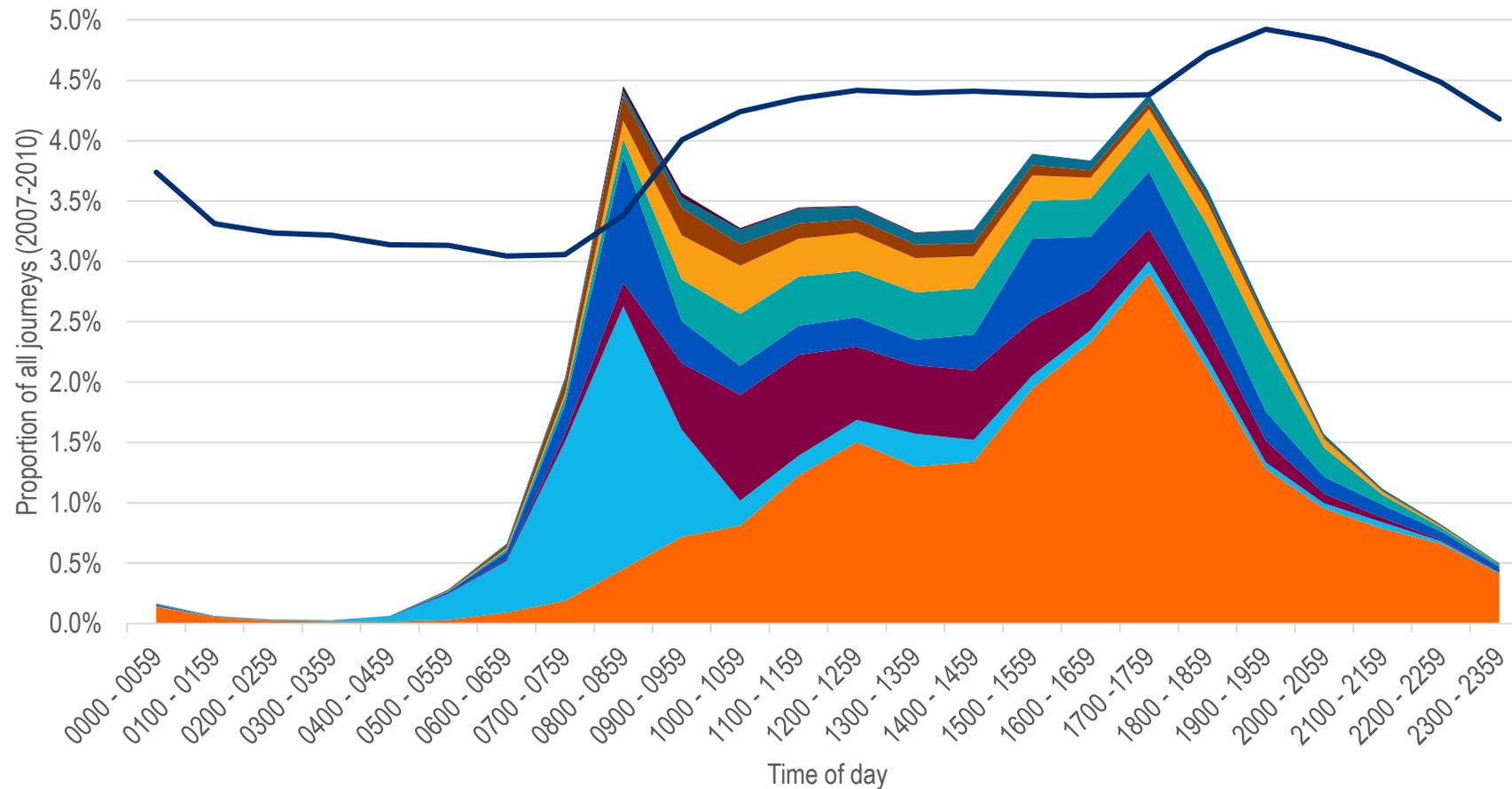
Plug-in vehicle sales

Based on DfT vehicle statistics (2018)

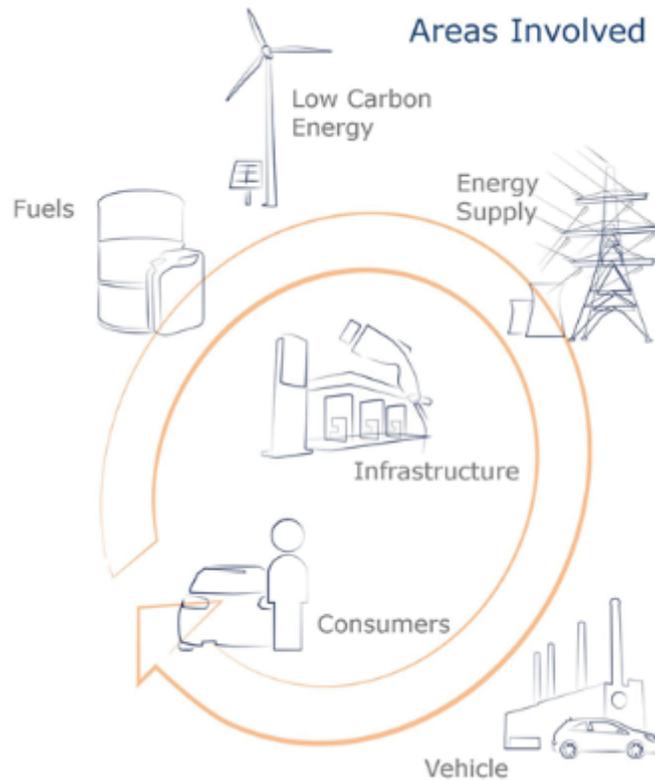# Meeting vehicle charging requirements

Journey arrival times (2007-2010) and Electricity demand profile (7th December 2010)

Compiled using NTS and UKERC data

Consumers, Vehicles and Energy Integration (CVEI) project

Areas Involved

- Low Carbon Energy
- Fuels
- Energy Supply
- Infrastructure
- Consumers
- Vehicle

- **£5m, 3 year project** to address the challenges involved in transitioning to a secure and sustainable low carbon vehicle fleet

- Aims to understand changes to market structures and energy supply systems to support high deployment of plug-in vehicles, the technical implications of any changes and how people might respond to them

- It will examine how tighter *integration* of vehicles with the energy supply system can benefit:
  - vehicle users
  - vehicle manufacturers
  - organisations throughout the energy supply chain

- The outputs are being made available to:
  - help inform UK and European government policy
  - help shape energy and automotive industry products

Charging Behaviour Trial

- Assess response to different tariff propositions – user-managed (ToU tariff) versus supplier-managed charging

- 240 consumers, 2 months with a vehicle, (parallel) BEV and PHEV trials

- Data on use and charging with additional questionnaires and choice experiments
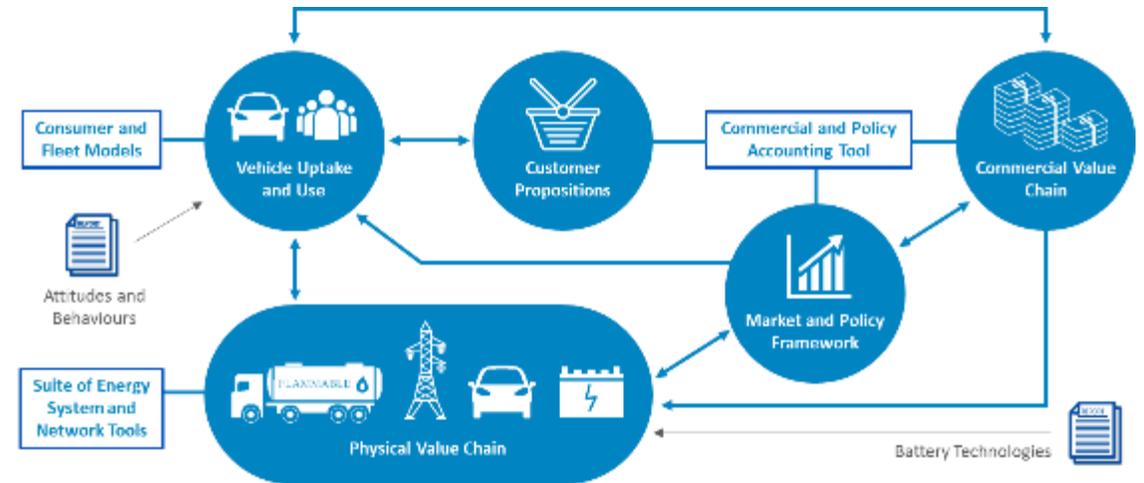
Vehicle Uptake Trial

- To enhance understanding of adoption of EVs

- 200 consumers, given 4 days with each of 3 vehicles in turn (BEV, PHEV, ICE)

- Additional questionnaires and choice experiments (with reduced psychological distance)

BEV   **PHEV**   **ICE**

- An **integrated modelling toolset** has been developed that is able to examine the implications for energy supply, infrastructure, vehicles, users, policy and commercial models – and with it, it is possible to test a wide range of scenarios

- Findings from several areas are already available and have been incorporated into scenarios for delivering efficient vehicle decarbonisation

- Data from our trials will deliver further evidence on how consumers respond to different charging propositions and attitudes to ULEV adoption
    - ULEV uptake is sensitive to a number of drivers
    - We are seeing evidence that mass market consumers behave differently to early adopters
   - Charging management does impact on the behaviours of these mass market consumers

Summary

- There will be a huge impact on the electricity network with the introduction of larger numbers of electric vehicles – followed by a greater challenge as we also look to decarbonise heating in homes

- Managed charging could be used to avoid network upgrade costs, we need to understand better how mass market consumers may respond to this approach

- The **Consumers, Vehicles and Energy Integration** project is seeking to address the challenges involved in transitioning to a secure and sustainable low carbon vehicle fleet

- Our trials will deliver further **evidence** on how consumers respond to different charging propositions and attitudes to ULEV adoption

- An **integrated modelling toolset** has been developed that is able to examine the implications for energy supply, infrastructure, vehicles, users, policy and commercial models – and with it, it is possible to test a wide range of scenarios

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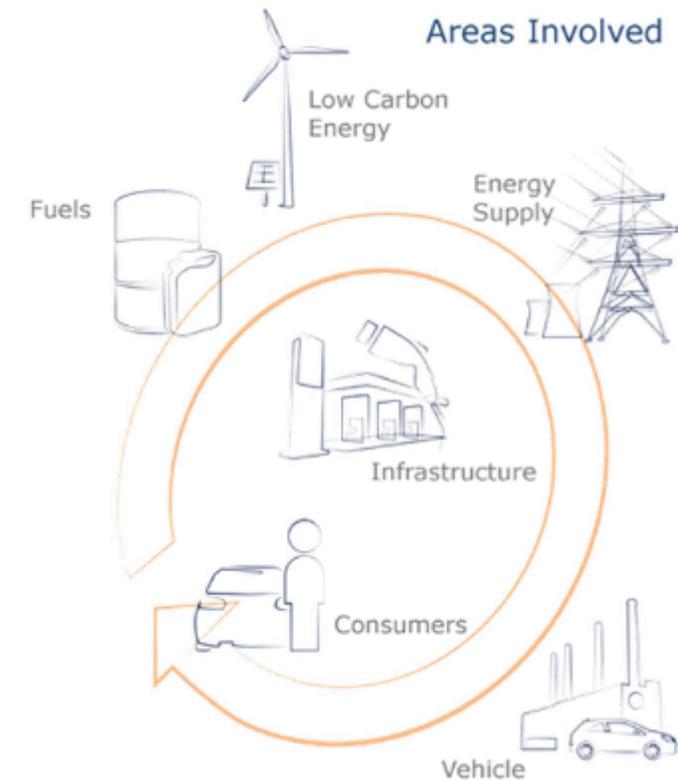
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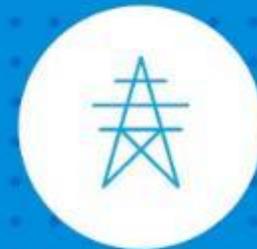
A large scale **mass-market** trial...

To **identify** and **understand** the opportunities of greater adoption of **plug-in vehicles** and their integration into the energy system

The ETI | Accelerating the development of low carbon technologies

www.eti.co.uk

Registered Office
Energy Technologies Institute
Charnwood Building
Holywell Park
Loughborough
LE11 3AQ

For all general enquiries telephone the ETI on 01509 202020.

For more information about the ETI visit www.eti.co.uk

For the latest ETI news and announcements email info@eti.co.uk

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