electricity north west

Bringing energy to your door

# Electric Vehicle & Heat Pump Connections

Peter Twomey

December 2019

Stay connected...

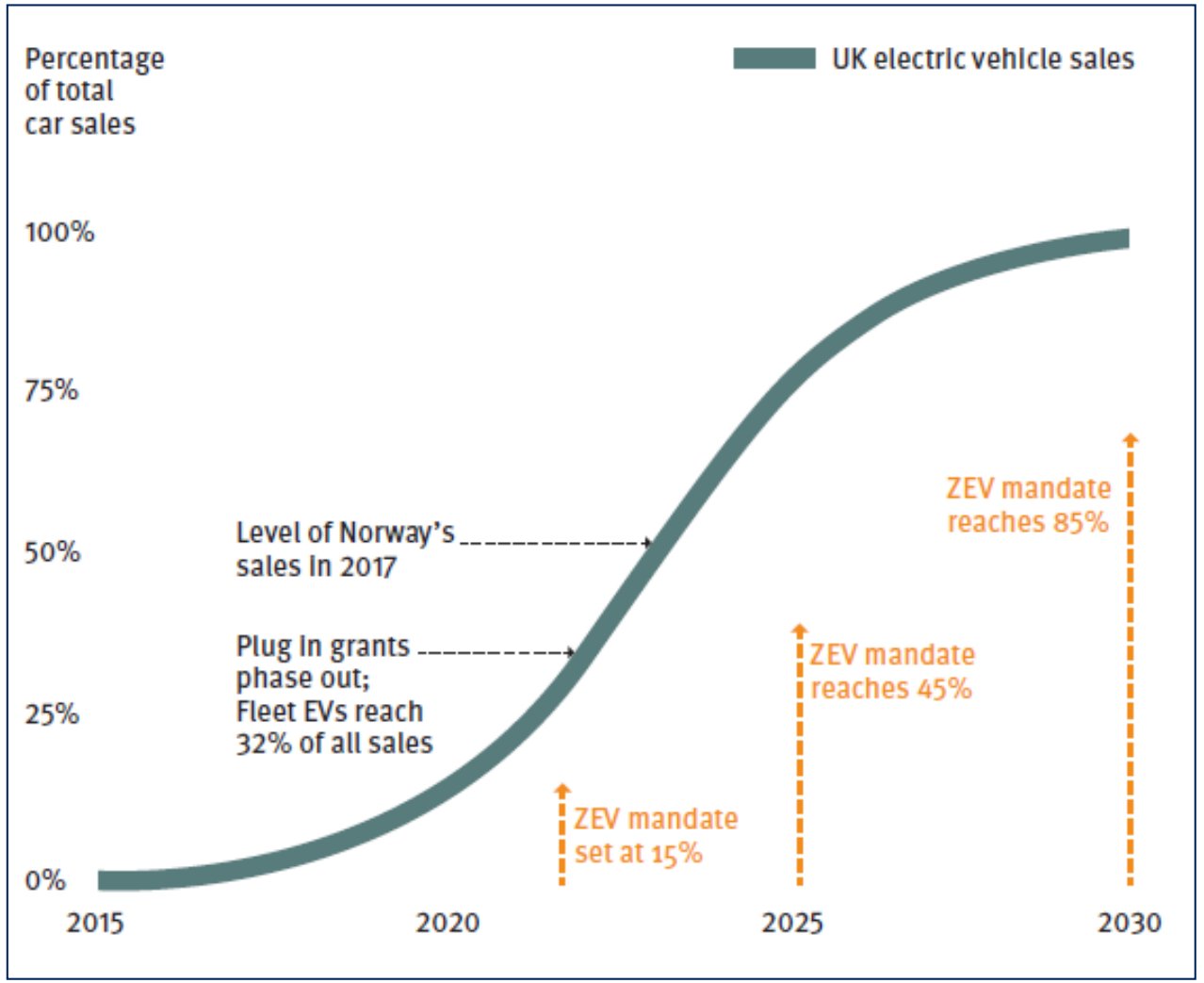
www.enwl.co.uk

# Contents

1) Background
2) Domestic EV & HP
3) Q&A – domestic connections
4) Public EV with aggregate load >75A
5) Electricity North West policy
6) Q&A - all

# Background

- UK Government law - zero carbon by 2050
- Petrol & diesel vehicles banned 2030
- Electric Vehicles are critical to achieving this
- As a DNO, Electricity North West has a key role
  - Enable economic connections
- Electric Vehicle uptake will increase
- Similar uptake paths for electrification of heat

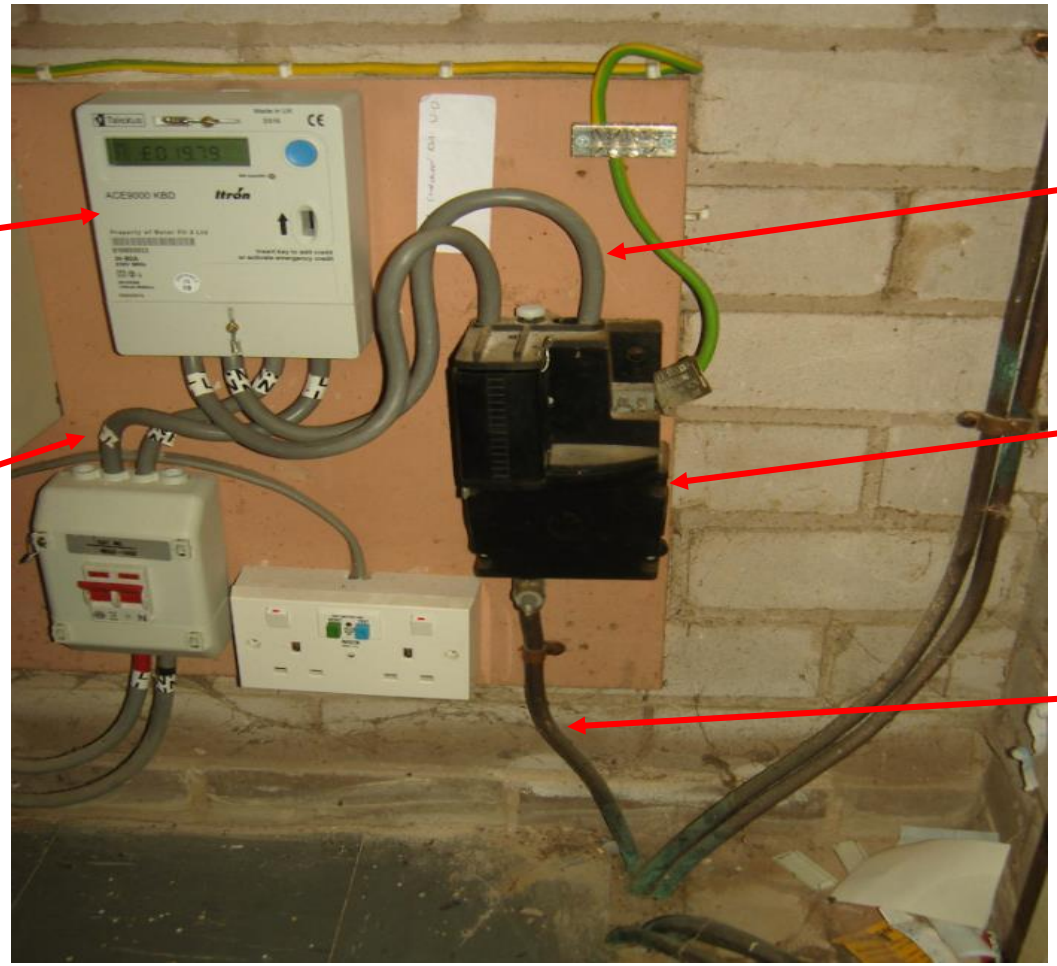


# Domestic EV & HP Connections

- Follow the ENA connection process for Electric Vehicles and Heat Pumps
- Installer assesses service capacity:
  - **Connect & notify** ENWL if  total domestic demand inc EV is less than 60A
  - **Apply to connect** if total demand is more than 60A or service rating inadequate
- Multiple applications – use diversity values in EREC P5
- ENA website http://www.energynetworks.org/electricity/futures/electric-vehicles-and-heat-pumps.html

# ENA Domestic Connection Process (1)

- Typical service termination



# ENA Domestic Connection Process (1)

- Installer makes initial assessment:

- Unknown cut out rating?
- Safety concerns?
- Other identified issues?
- Looped service?
- Maximum demand exceeds cut out rating?
- Maximum demand >60A per phase (whole current metering)?

Yes → Apply to connect

connectionapplications@enwl.co.uk

# ENA Domestic Connection Process (2)

- For EV only installation:

- DC Output?
- AC Input > 60A per phase (whole current)?
- AC Input >30% MIC (CT Metered)?

Yes → Apply to connect

connectionapplications@enwl.co.uk

No → Connect and notify ENWL

G98Notifications@enwl.co.uk

# ENA Domestic Connection Process (3)

- Heat Pump installation

- Heat Pump under a single controller?
- Total HP AC Input <32A?
- Is HP listed in ENA online register?
- Is HP classed as ‘connect & notify’?

Yes → Connect and notify ENWL

G98Notifications@enwl.co.uk

No → Apply to connect

connectionapplications@enwl.co.uk

# Q&A : Domestic connections

electricity north west
Bringing energy to your door

# Public EV with aggregate demand >75A

- High capacity EV Charge points for public & customer use
- Known to be potentially disturbing load – power quality assessment (G5/4)
- Emissions data required
  - Harmonic current emissions for 2nd to 50th harmonic
- Stage 1 assessment is a desktop with PASS / FAIL outcome
- Failures may progress to Stage 2 – site measurements required
- ENWL can undertake measurements and study for a fee
- Alternatively the connectee may request an alternative PoC that passes Stage 1
- Diversities described in ES230 Connection of Low Carbon Technologies

# Electricity North West policy for EV connections

- A new policy document covering the connection of Low Carbon Technologies:
  - ES230 – Connection of LCTs (Click here)
- Other relevant documents:
  - EPD283 LV Network Design – ENWL website (Click here)
  - EREC G5/4 Harmonic Voltage distortion – Distribution Code Website (Click here)
  - ENA LCT Connection process – ENA Website (Click here)

# Some early lessons learnt

- Ensure Heat Pump electrical input is used (not thermal output)
- ENWL Policy is to remove any looped services – advise customer
- Rural areas are more likely to require reinforcement to connect high capacity devices

# Questions?

electricity north west
Bringing energy to your door

*Thank you*

Stay connected...

www.enwl.co.uk