

# Electric Vehicle Charging

Customer Information





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# EV BACKGROUND





# EV NUMBERS ON ROADS

The number of electric vehicles on roads is rapidly increasing.

- ▶ The government forecast there will be c3 million EVs on roads in the UK by 2025
- ▶ 20 to 25 million EV passenger cars on the roads envisaged by 2050 across the UK
- ▶ Around 3 million charge points by 2025
- ▶ A 3.5 kW Nissan Leaf energy consumption is equivalent to that of a kettle operating at a continuous rate for several hours
- ▶ EV uptake could double the domestic peak demand observed without EV deployment

**146,000**

**Plug-in Cars**

Reg. UK April 2018  
(Approx)

**5,200**

**Plug-in Vans**

Reg. UK April 2018  
(Approx)

**62**

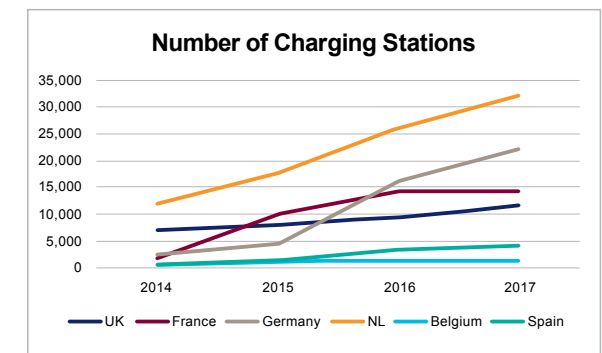
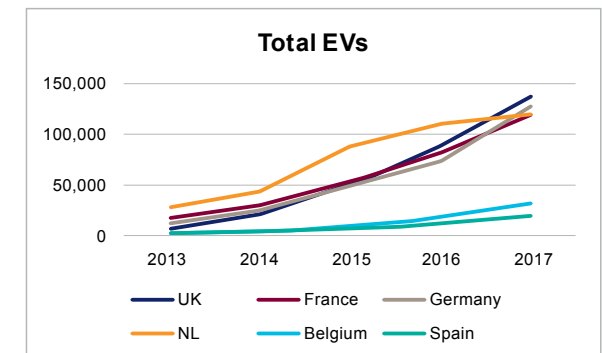
**Plug-in Models**

Available April 2018  
(Plus variants)

**15,847**

**UK Charge Pts**

April 2018  
(Zap-Map)



**Approximately 40% of charging will occur away from the home, with 30% in the workplace**



# EVS ARE IN THE NEWS



05 SEPTEMBER 2018 #CARS #REGISTRATIONS #SMMT NEWS

## UK new car market rises in August as one in 12 buyers goes electric

- ▶ New car market rises 23.1% in second smallest month of the year, with 94,094 units registered.
- ▶ Demand for hybrid and plug-in cars surges 88.7% with record one in 12 buyers going electric.



05 SEPTEMBER 2018 #LCVS #REGISTRATIONS #SMMT NEWS

## Light commercial vehicle market grows 5.0% in August

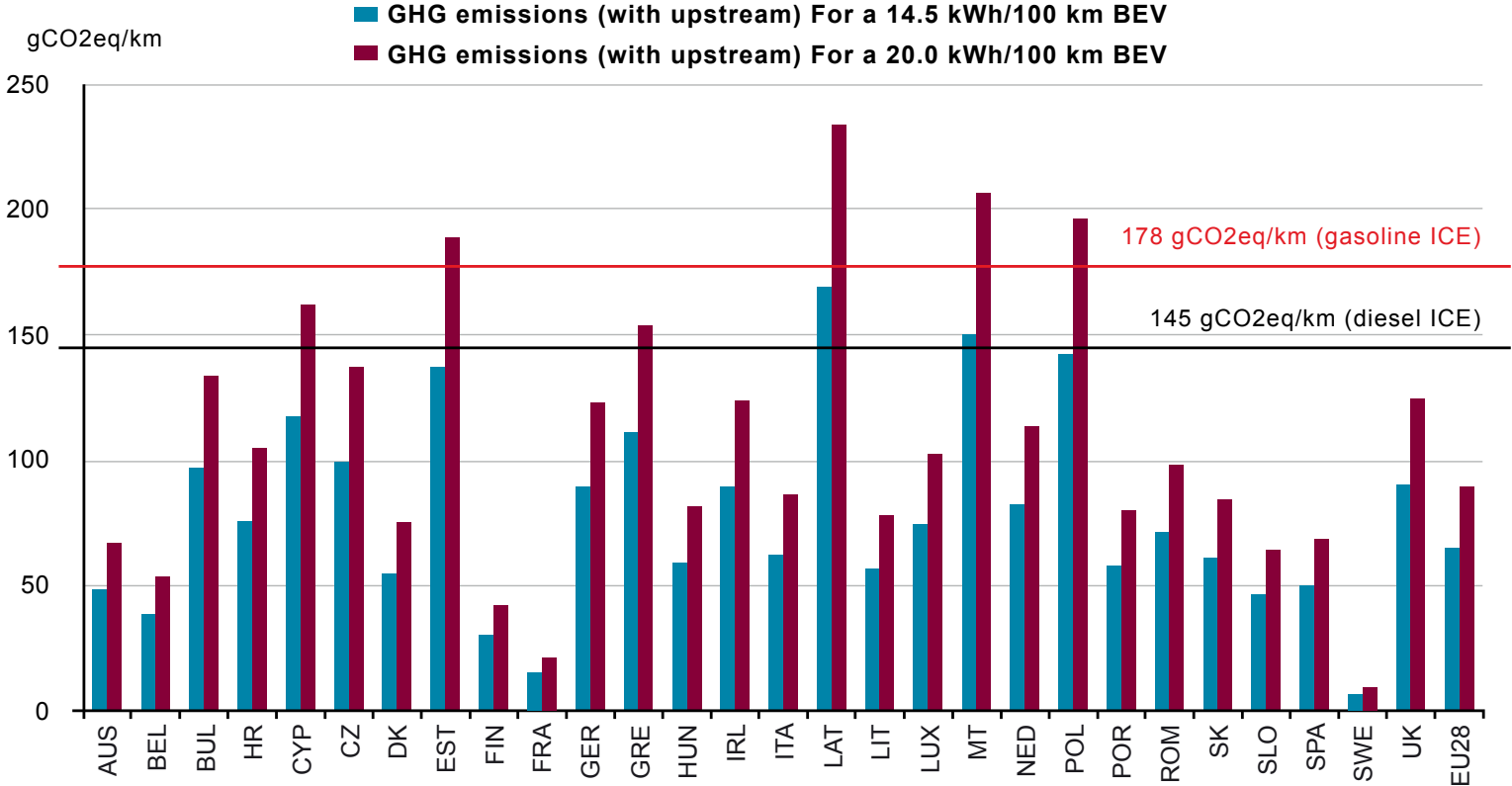
- ▶ New light commercial vehicle registrations increase 5.0% in August, as 16,394 vans and pick-ups join British roads.
- ▶ Uplift in demand for popular large vans (14.6%) and pickups (21.4%) offsets declines for medium (-29.7%) and smaller (-9.3%) models.



# EVS REDUCING EMISSIONS

Electric vehicles will significantly reduce climate change causing emissions in Europe.

50-60% average CO2 emissions savings in Europe up to 100% if charging on renewable electricity



Source: Moro, A., Transportation Research Part D (2017)

# OUR APPROACH





# A ONE STOP SHOP

*Consultus Group* have partnered with ChargePoint to provide a one stop shop for our customers

- ▶ Market leader in US, with 75% market share for public charging. (10 years' experience) & deliver 1m charges per month worldwide

- ▶ One stop shop for hardware, software and insurance
- ▶ Lead investors include BMW, Daimler and Siemens
- ▶ In 2017 secured \$120m to enter the European marketplace. 50 staff now in place
- ▶ EV Installation through experienced partner "TSG"











# END TO END SERVICE

ChargePoint differs to most competitors in that it offers end to end service.

Competitor	AC	DC	CPMS	Driver App	Install/Service
BP ChargeMaster	✓	✓	✓	✓	✓
PODPoint	✓	ABB	✓	✓	✓
Rolec	✓	✓	Lite		✓
APT/Swarco/Circontrol/EVolt	✓	✓			✓
Shell New Motion	✓		✓	✓	
EV Box EVTronic	✓	EVTronic	✓	✓	
Alfen	✓		✓		
ABB	✓	✓	Part		
Ensto	✓	✓			
EO	✓				
Schneider	✓				✓
DBT		✓			
Siemens/Efacec	✓	Efacec	Part		✓
-chargepoint+	✓	Tritium/own	✓	✓	✓



# HARDWARE SOLUTIONS

	CPF32	CP4100	CP4300	Express 250 (CPE250)
				
Power rating (AC or DC)	<ul style="list-style-type: none"> <li>Max of 7.4kW per port (AC)</li> </ul>	<ul style="list-style-type: none"> <li>Up to 22kW per port (AC)</li> </ul>	<ul style="list-style-type: none"> <li>Up to 22kW per port (AC)</li> </ul>	<ul style="list-style-type: none"> <li>Up to 62.5kW (DC Fast)</li> </ul>
Speed of charge (Range added)	<ul style="list-style-type: none"> <li>Adds up to 25 miles of range per hour added</li> </ul>	<ul style="list-style-type: none"> <li>Adds up to 87 miles of range per hour added</li> </ul>	<ul style="list-style-type: none"> <li>Adds up to 87 miles of range per hour added</li> </ul>	<ul style="list-style-type: none"> <li>Adds up to 250 miles of range per hour added</li> </ul>
Application	<ul style="list-style-type: none"> <li>For select return to base fleets (e.g. bread deliveries) and assigned parking spots where kWh used are not billed</li> </ul>	<ul style="list-style-type: none"> <li>For businesses, fleets and other organisations offering billable EV charging for employees and/or customers</li> </ul>	<ul style="list-style-type: none"> <li>For businesses, fleets and other organisations offering billable EV charging for employees and/or customers</li> </ul>	<ul style="list-style-type: none"> <li>Fast charging for short dwell time parking, motorway corridor locations where drivers need to quickly recharge, and light duty fleets</li> </ul>
Cable Attached or Socket		<ul style="list-style-type: none"> <li>Socket to accept EV driver cable. Type 1 or Type 2</li> </ul>	<ul style="list-style-type: none"> <li>Type 2 ONLY cable attached, cord mgmt</li> </ul>	<ul style="list-style-type: none"> <li>CHadeMO and CCS2 connectors</li> </ul>
Cloud Services	<ul style="list-style-type: none"> <li>Manage &amp; configure stations, view detailed station reports, real-time station status &amp; more</li> </ul>			
Pricing	<ul style="list-style-type: none"> <li>Set your own pricing including charging by kWh, per session, and session duration (with the exception of CPF32 models)</li> </ul>			
Driver Payment Options	<ul style="list-style-type: none"> <li>Drivers can access &amp; pay for charging with RFID card, mobile app, calling customer support and contactless debit &amp; credit cards (with the exception of CPF32 models)</li> </ul>			
Product Warranty	<ul style="list-style-type: none"> <li>Comprehensive station support including 24/7 monitoring &amp; diagnostics, 98% annual uptime guarantee, 1 business day response time to station failures</li> </ul>			

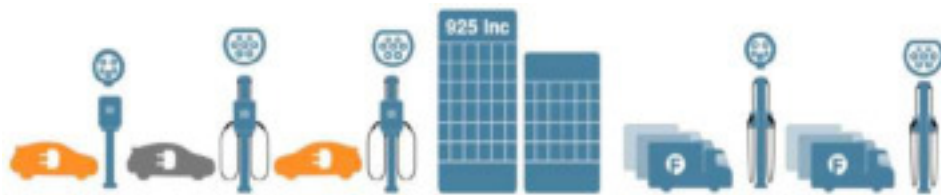


# TYPICAL SOLUTIONS

What are the typical solutions?

## Workplaces

- ▶ For employees, a majority of CP4000 series CMK cable-attached Type 2 stations with a few Type 1 for older cars
- ▶ To maximise utilisation, 22kW 3Ø installation is preferable
- ▶ For fleet vehicles installation of the commercial CPF32 series cable-attached Type 1 and Type 2 stations running at 7kW is optimal



## Hospitality & Retail

- ▶ Vast majority of opportunities require AC charging only. Although increasingly a single DC rapid charger is also installed
- ▶ 7kW 1Ø AC stations are best suited since these locations will often provide energy free of charge, using 7kW caps the energy cost to under £1 per hour





# NETWORK SERVICES

Network services offered are the broadest in the industry



## Dashboard & Analytics

Station owners see how stations are being used, and when it's time to add capacity



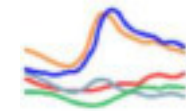
## Waitlist

Drivers can get in line and be notified when the station is available; improves utilisation



## Flexible Pricing

By hour, by kWh, by time of day, by customer type and any combination



## Power Management

Efficiently and automatically utilise power available for charging vehicles. Save money on costly upgrades and avoid demand charges



## Access Control

Limit who can use the charging stations and when. Station owners can disable charging during "closed" times



## Fleet Services

Fleet Manager can track vehicle charging and pay for fuel if the vehicles need to charge at other stations



## Driver Services

Automatically notify drivers when: fully charged, a station becomes available, power outage or decrease and more



## APIs

Most functions are also available through SOAP/XML & REST APIs that follow the same data access rules as the UI

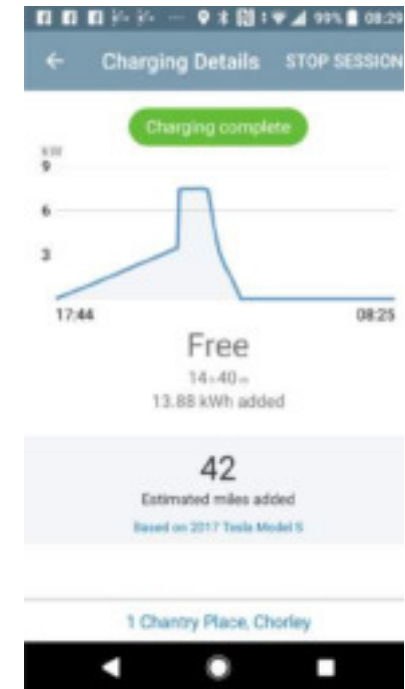
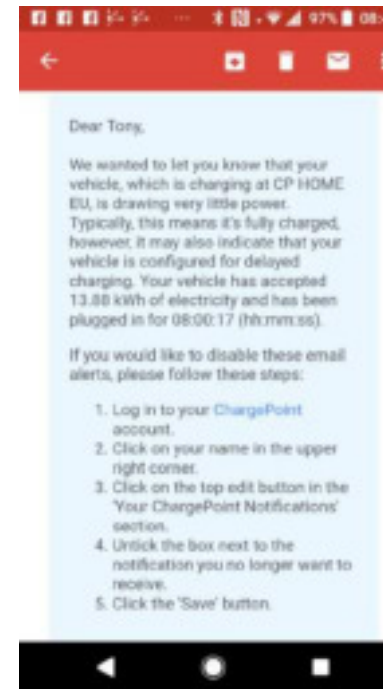
▶ Network managed through easy to use web portal

▶ Network provides opportunities to link to future demand management services



# END USER EXPERIENCE

Advanced free app for an optimal end user experience





# PEACE OF MIND

## Peace of mind with Assure packages

- ▶ Industry-leading warranty
- ▶ 98% annual uptime guarantee with non-performance penalty
- ▶ Detailed reports of station's performance metrics
- ▶ Proactive station monitoring
- ▶ Even covers issues typically not covered under warranty such as vandalism, abuse and accidents
- ▶ Covers repair or replacement of defective stations included at no extra cost

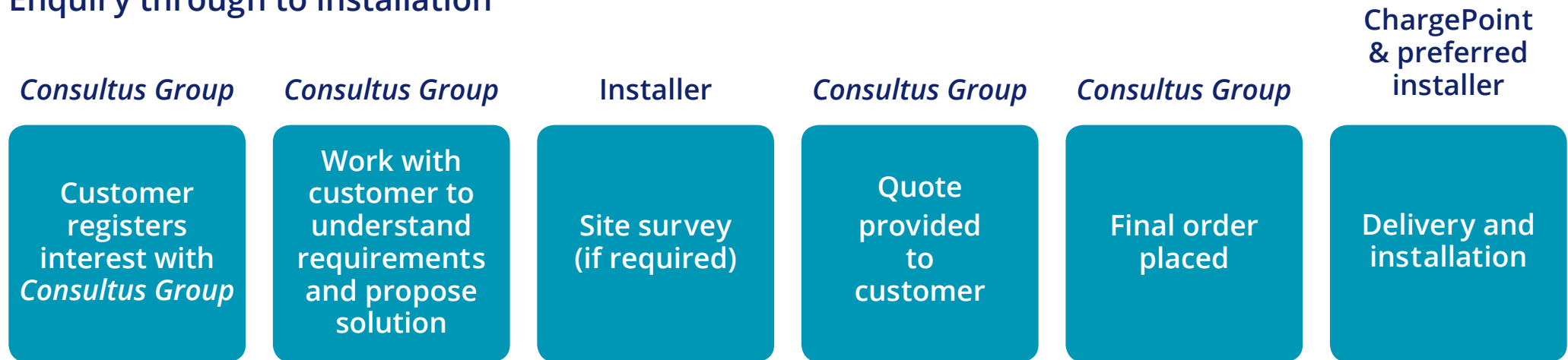
# OUR PROCESS





# END TO END PROCESS

## Enquiry through to installation



## Ongoing Services

- ▶ Access to ChargePoint network operator service to manage charging network
- ▶ Peace of mind through Assure packages
- ▶ App for end users and 24/7 support



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