<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>11:00</td>
<td>Welcome – Shirin Shah, Innovation Lead, EDF</td>
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<tr>
<td>11:05</td>
<td>Expert Overview – William van der Byl, EV Specialist, Delta-EE</td>
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<td>11:10</td>
<td>Presentations</td>
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<td></td>
<td>• EDF – Vincent de Rul, EV Solutions Director</td>
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<td></td>
<td>• Pod Point – Erik Fairbairn, CEO</td>
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<td>• Ubitricity – Dan Bentham, Managing Director</td>
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<td>• Pivot Power – Matt Allen, CEO</td>
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<td>• Dreev – Claire Weiller, Business &amp; Product Manager</td>
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<tr>
<td>11:35</td>
<td>Panel Discussion and Q&amp;A led by Robin Melvin, Head of Innovation, EDF</td>
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<td>11:55</td>
<td>Closing Messages – Shirin Shah, Innovation Lead, EDF Energy</td>
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IDEALONDON FUTURE MOBILITY
THE ROAD TO ZERO EMISSIONS

CONTACT:
William van der Byl – William.vanderbyl@delta-ee.com
Presentation overview

1. Overview of Delta-EE
2. What problem are we trying to solve and the role of EVs
3. EVs – how far we have come and what is still needed
Delta-EE helps companies navigate the energy transition

We do this by enabling organisations to develop the best strategies, business models and customer propositions for the energy transition

‘New Energy’ Business Models
Identify and understand the alternative and new business models for the energy transition

EVs & Electricity
Understand the opportunities and challenges from sector coupling between electricity and transport

Flexibility & Energy Storage
Take advantage of the opportunities emerging from an active demand side

Heat
How channel disruption, sector coupling and new technologies are changing the heat sector

Distributed Power
Global market insight & expertise into the growing role of decentralised generation

Digital Energy
Opportunities in the connected home market and how digitalisation is changing the energy customer relationship

Delta-EE provides:
- Subscription Research Services
- Consultancy

Delta-EE Clients

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The UK has reduced their CO\textsubscript{2} emissions by 38% since 1990. This is faster than any other major developed country.

However, progress reducing CO\textsubscript{2} emissions has been imbalanced in the UK.

Annual emissions, million tonnes of CO\textsubscript{2} equivalent

Source: Climate Change Committee/BEIS (2019)

Source: BEIS (2018)
Transport is the largest emitting sector of GHG emissions

UK GHG emissions by sector

UK transport GHG emissions by mode

Source: DIT (2020)
EVs are only one of the solutions to reducing carbon emissions from transport

1. Shift to alternative mobility modes

2. Enhance efficiency

3. Electric vehicles

Source: Project Drawdown
The UK EV market has grown c. 800x over the past 10 years

Source: EAFO (2020)
We expect this exponential growth to continue over the next 10 years.

Historic and predicted number of EVs on UK roads

Source: EAFO (2020), Delta-EE (2020)
We expect the number of public CP installations to increase by more than an order of magnitude over the next 10 years.

Historic and predicted number of public chargepoints

Source: EAFO (2020), Delta-EE (2020)
There is still a long way to go until the EV transition is complete.

- Total passenger vehicle parc = 32.5M vehicles
- EV parc = 281k vehicles (< 1%)

- Total passenger vehicle parc = 32.5M vehicles
- EV parc = 6.1M vehicles (c. 20%)

Circle area:
1 cm² = c. 850k vehicles
Five key enablers to make the EV transition a success

1. Vehicle supply
2. Public charging infrastructure
3. Innovative business models and financing
4. Cross-sector collaboration and effective Government policy
5. The customer

Dependency  
Dependency  
Dependency
THANK YOU
IDEALondon Future Mobitily
The Road to Zero Emissions

Vincent de RUL – EV Solutions Director
April, 22nd 2020
A quick look at EDF UK, the UK’s largest producer of low-carbon electricity
GENERATION IS

6,500 PEOPLE PRODUCING 20% OF THE UK’S ELECTRICITY FROM
SUPPLY IS

7,500 PEOPLE HELPING
5M RESIDENTIAL CUSTOMER ACCOUNTS
200k SMALL BUSINESSES
13k MEDIUM AND LARGE BUSINESSES

Largest supplier to British business
...Transition to Net Zero
Main blockers to EV adoption

Cost
Upfront costs appear more

Choice
Hearts vs Minds

Charging Infrastructure
Not having off street parking

Time to charge
Adding time on to long journeys

Driving range
Range anxiety

Performance
Worries performance won't match up to diesel
EDF Group’s EV ambition across Europe

To be the leading e-mobility company in Europe by 2022

Focussing on its 4 main markets: France, UK, Italy, Belgium

**TARGET 2020**
4,000 smart charging points deployed

**TARGET 2022**
75,000 charging points installed. Providing access to 250,000 interoperable charging points

**TARGET 2022**
Supplying power for 600K EVs 30% of the market

21
EDF can help with your transition to EV

An end-to-end EV solution
– advice and services all under one roof

Making your transition to electric vehicles

EASY + SIMPLE
And it is already happening!

Royal Mail Group signed a Framework contract for EDF Energy to become a provider of EV charging solutions for RMG. This includes a catalogue of electric vehicle charging solutions to support the electrification of the first 1,000 vehicles in their 50,000 vehicle fleet (the largest fleet in the UK). First 200 sockets have already been installed.

The framework contract also includes option for V2G chargers.

On EDF Sites: more than 300 Pod Point charging points to be installed in 32 sites, including all generation sites, as part of EV100
Thank you
Travel shouldn’t damage the Earth.

We’re enabling the mass adoption of electric vehicles via:

- **Electric Vehicles**: Others deliver these.
- **Infrastructure**: We’re building a smart, easy to use network of charge points which are available everywhere you park.
- **Sustainable Energy**: We’ll use our network to manage the grid and enable sustainable energy.
The Charging Ecosystem

- Home Charge: 60%
- Workplace Charge: 30%
- Destination Charge: 7%
- En-Route Charge: 3%
To solve EV charging, we tackle all 4 main routes to market:

- **Home (60%)**
  - No 1 in market
  - 13 OEM partnerships
  - c65,000 sockets installed
  - c2,500 per month

- **Work (30%)**
  - Joint 1st in market
  - Multiple long term accounts
  - c5,000 sockets installed

- **Destination (7%)**
  - No 2 in market
  - Multiple long term accounts
  - c3,500 public sockets across UK

- **En-Route (3%)**
  - 150 DC rapids
  - Tesco
  - Lidl
We believe travel shouldn’t damage the earth.
CREATING A
CONVENIENT, LOW COST, RELIABLE
EV PUBLIC CHARGING NETWORK
FOR THE UK

Daniel Bentham
Managing Director
we are
BACKED BY
SIEMENS
HONDA
eDF
TO DELIVER
a smart, flexible, low carbon energy system
BECAUSE WE BELIEVE IN
Electricity for Everyone Everywhere
by
PROVIDING TURN KEY EV CHARGING SYSTEMS
EXTRA VALUE SERVICES
Data Management and Insights
Smart Charging
Vehicle-to-grid (V2G)
Smart Grids / Cities
for
EVERYONE WHO CHARGES WHEN PARKED FOR A WHILE
Company drivers
Commuters
Casual drivers
Taxis
Working vans ...
AND CHARGE POINT HOSTS
Local Authorities
Businesses
Fleet depots
Homes ...
anywhere
Your charge points

5.8\text{kw} \quad 5.5\text{kw}

RATING \quad RELIABILITY

3 \quad 10

WARRANTY \quad MINIMUM LIFESPAN
Smart Grids
Smart Cities
Smart Systems everywhere (one day)

+45% +11%

100%

RENEWABLE ENERGY

*Source: zapmap – proportion of total installed connectors across all types (slow, fast and rapid)


CREATING A CONVENIENT, LOW COST, RELIABLE EV PUBLIC CHARGING NETWORK
IDEALondon Future Mobility webinar
– The Road to Zero Emissions

22 April, 2020

POWER DRIVING CHANGE
Addressing Two Critical Infrastructure Challenges

1. Bringing valuable flexibility to the electricity network to support an energy system that is clean, affordable and secure

2. Working with industry partners to develop mass-scale, rapid charging infrastructure to accelerate the uptake of EVs in the UK
The Why (Grid Perspective)

A Changing Grid Mix

The Balancing Challenge
The Why (EV Perspective)

- Availability of chargers: 45%
- Distance travelled on charge: 39%
- Cost: 28%
- Lack of knowledge: 13%
- Technology not proven: 11%
- Performance, practicality, looks: 10%
- Limited choice: 9%
- Don't know: 6%
- Safety: 5%
- Resale / residual value: 4%
- None: 3%

Source: UK Department for Transport (2016) N=649 licence holders
Pivot Power’s Strategic Proposition

40
Connections at National Grid (NG) substations

Up to 50 MW
Capacity of each battery storage asset

2 GW
Size of Pivot Power battery storage portfolio

57 MW
Capacity connection size being secured on each NG substation site

10+ MW
Capacity available for rapid EV charging or other power offtake (up to 57 MW)
Business Model with Two Distinct but Synergistic Segments

Upstream

- Wholesale Energy Trading
- Capacity Market
- Ancillary Services

BatteryCo

Downstream

- Public EV Charging
- Fleet Charging
- C&I Offtake

WireCo
WireCo: Significant Upside from Private-Wire Network Services

Network charges:
- Connection charges
- Standing charges
- Network charges

EV Superhub
BusCo
Large Offtakers

NG Substation

Meter (settled via Elexon)

57.0 MW
49.9 MW

49.9 MW
WireCo (contd.): Unlocking a World of Optionality and Upside
Accelerating the Transition to a Clean Electric Future

**Today**
- **Power Generation**: Increasing volatility
- **Transmission Grid**: Increasing need for system balancing
- **Transmission Substation**: Limited capacity
- **End Consumers**: Increasing demand from EV uptake

**Tomorrow**
- **Power Generation**
- **Transmission Grid**
- **Transmission Substation**
- **End Consumers**

Accelerate the UK Energy Transition

**Power System Flexibility and Services**

**Private Wire Infrastructure**
Creating a Virtuous Circle

The battery funds the cost of connecting to the substation.

The EV charging brings additional revenue to the battery.

The battery ensures low-cost supply to the EV chargers.
Thank you for your time
DREEV
IDEA London Panel
22 Apr 20
Dreev and its EDF partners are introducing Smart Charging (V1G) and V2G to deliver a simple, lowest-cost EV charging experience while contributing to the low carbon transition.

Support the grid and the integration of renewables with your electric vehicles.

EV charging offers a high potential for flexibility: Let us monetize it!

Monitor and control your fleet charging with our solutions.
Dreev is the specialist of V2G and smart-charging

- Dreev controls the charge and discharge (V2G) of Electric Vehicles

- By monetizing EV’s storage potential on the energy markets, **Dreev generates value and shares it with the owner**

- While making sure that EV drivers mobility needs are always met

- Dreev solutions relies on Nuvve’s patented technology, already deployed and validated on 5 continents

- **Dreev is a joint-venture by edf and Nuvve**
What is V2G?

The energy stored in EV batteries can power a building, a neighborhood and even support the entire electric system!

These grid-integrated vehicles become an active and essential part of the electric grid, they help integrate more renewables and enable to bridge the gap between energy and transportation.

With V2G technology, your EV makes a difference!
Why are V2G and Smart-Charging important?

V2G can save £ Billions/year on the energy markets in the UK and Europe…

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Energy system benefit (£bn/yr)</th>
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<tbody>
<tr>
<td>Burning platform</td>
<td>Smart Charger: 0.1  V2G: 0.15</td>
</tr>
<tr>
<td>Stepping stone</td>
<td>Smart Charger: 0.5  V2G: 1.4</td>
</tr>
<tr>
<td>Future survival</td>
<td>Smart Charger: 1.1  V2G: 3.5</td>
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… And is the most efficient tool to reduce CO2 emissions via e-mobility

Source: Imperial College and OVO 2018

Source: RTE report May 2019
Dreev’s agile platform

Leadership

Expertise

Optimisation services
- Customer tariff
- Triads & NEC avoidance (UK)
- Wholesale & imbalance markets

Demand response services
- Frequency regulation
- DSO markets (UK)
- NEBEF mechanism (FR)

Local management services
- Coordination with solar
- Capacity constraints
- Fleet dimensioning

Source: Navigant Research Leaderboard 2019
Interfaces with multiple partners

Some of our missions at Dreev:
- Guarantee mobility needs at all times
- Respect constraints (power limit, …)
- Get value from flexibility and manage the risks for the customer
- Manage battery health (V2G)

Customer facing entities

- Energy suppliers
  - EDF

- CPOs eMSP

Customers

OEMs

Aggregators
Market access
Making it easy for customers to operate

Drive, plug in, we do the rest!

1. Plug in your vehicle when parked
2. Schedule your next trip
3. Your vehicle is charged according to your preferences
4. Get a reward and reduce your TCO.
Drive for Free with V2G

→ Earn annual revenues equivalent to 8,000 EV costed miles a year

→ £2,000 for 10kW V2G fast charger + standard installation (similar cost to a normal fast charger)

→ Preferential leasing rates on V2G compatible Nissan models

→ 5-year contract duration including supply

→ Access to customer support

→ Smart back office system that includes fleet management and charge scheduling apps

→ Guaranteed charge for your vehicle’s daily needs

V2G Rewards:
✓ France up to €20/m
✓ UK up to £25/m
Our first references!
What if your EV could earn you money?

Get in touch:
contact@dreev.com
EVs compatible with V2G

- Mitsubishi Outlander PHEV
- Nissan eNV200
- Nissan Leaf
- Mitsubishi iMiev
- Peugeot iOn
- Citroen C0
Panel Discussion and Q&A

**Vincent de Rul**  
EV Solutions Director, EDF

**Erik Fairbairn**  
CEO, Pod Point

**Matt Allen**  
CEO, Pivot Power

**Robin Melvin**  
Head of Innovation, EDF

**Claire Weiller**  
Business & Product Manager, Dreev

**Dan Bentham**  
Managing Director, Ubitricity

**William van de Byl**  
EV Specialist, Delta-EE
Closing Messages

• Your programme – please provide us feedback

• ‘IDEALondon Future Mobility Programme’ LinkedIn group

• IDEALondon virtual membership for startups www.idealondon.co.uk/membership/

Contact: Shirin.Shah@edfenergy.com, Darren@capitalenterprise.org or Laurel@capitalenterprise.org