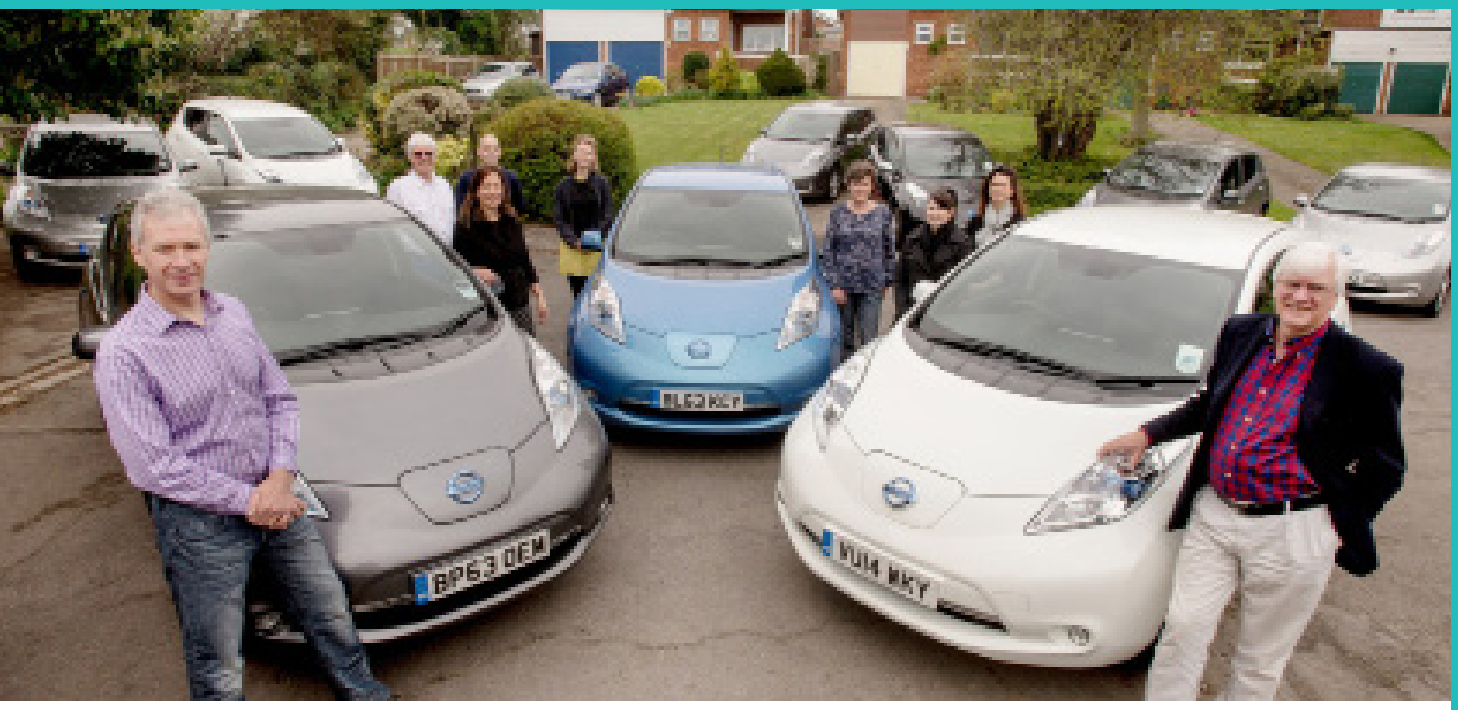
My Electric Avenue



Customer	Scottish and Southern Electricity Networks (SSE)
Size of project	AUD 9m
Start date	January 2013
End date	December 2015

My Electric Avenue was a pioneering Ofgem Low Carbon Networks-funded project that undertook trials with over 200 customers to determine the impact clusters of charging electric vehicles (EVs) might have on local electricity networks, at peak times. This was the first project to ever focus purely on the impact that EV's will have on the local electricity network.

EA Technology was responsible for leading project including bringing on board all project partners, which was a first for a non-DNSPs (Distribution Network Service Providers). Within this, EA Technology was responsible for the overall project management comprising of managing the project finances as well as partner/ supplier contract management and liaison.

The project recruited over 200 people in different clusters around Britain where each person would drive an EV for 18 months to trial a new technology, 'Esprit' which was developed by EA Technology. Esprit will monitor and control the electricity consumed when charging an EV, to curtail the charging at peak times. This allowed the strain on the network to be measured whilst assessing potential routes of mitigation to avoid network reinforcements.

Forecasts suggest that Esprit could save around AUD 4.1 billion in reinforcement costs up to 2050. EA Technology's role included the provision of the technology for the trials, which will assist DNSPs to make networks more efficient by shifting demand at peak times to help maintain voltages.

Throughout the trials, participants' charging habits were also monitored and the data has been analysed by EA Technology. Key learning from the project suggests that during weekdays, charging is more likely to be before and after work (creating a morning and night peak) whereas at weekends charging is more likely to be between 10am and 6pm. In addition, approximately 70% of the EVs were only charged once a day and more than 65% of vehicles were charged until the battery was full. These findings have led to further research within the 'Smart EV' and 'Electric Nation' projects.

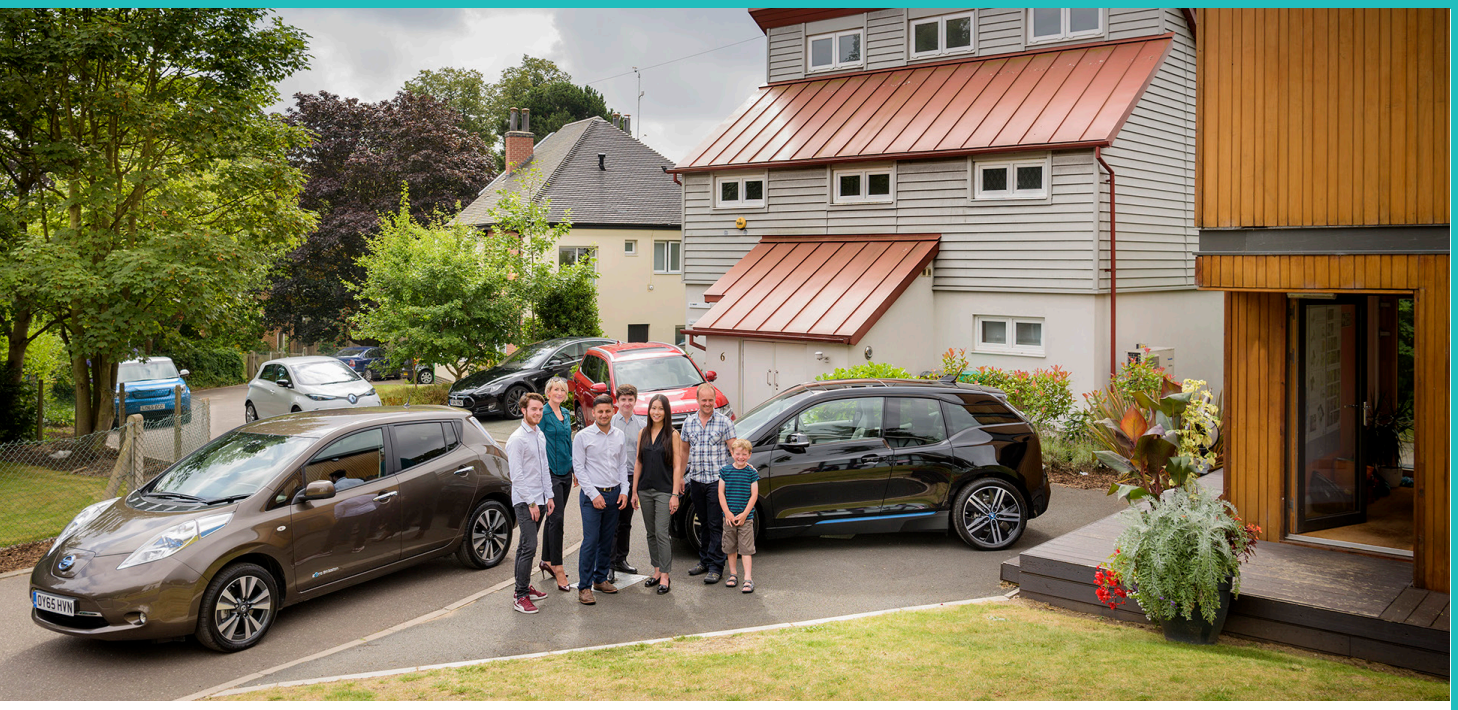
My Electric Avenue was the first step in demonstrating the effect of rising EV uptake on local electricity networks. As a result of the project, EA Technology has founded the EV Network Group, combining the automotive and utilities sectors to support the increased uptake in EVs, benefiting both the customer and the industry.

Project Partners:

- EA Technology
- Scottish & Southern Electricity Networks
- Nissan
- DriveElectric
- Zero Carbon Futures
- Northern Powergrid

Case Study

Electric Nation



Customer	Western Power Distribution (WPD)
Size of project	AUD 10.8m
Start date	April 2016
End date	October 2019

In this project, EA Technology worked with WPD to understand the impact that domestic charging of electric vehicles will have on the electricity network, and trial smart charging as a solution to manage the additional demand. The growth of Electric Vehicles (EV) presents a new challenge for the UK's electricity transmission and distribution network service providers (DNSPs). As groups of neighbours acquire EVs, localised clustering is likely to have a great impact on electricity networks.

Electric Nation was an Ofgem NIA-funded project that built on from the findings of the My Electric Avenue and Smart EV projects. The Electric Nation project will assess the impact of EV growth on the network whilst reviewing smart charging capabilities and customer acceptance of managed EV charging systems. The project provides local electricity network operators with the tools to ensure that their networks can cope with the challenge of expedited EV uptake, whilst avoiding network reinforcements.

EA Technology built the Network Assessment Tool (NAT) which provides WPD with a software tool that will predict which parts of their network are likely to be affected by Plug in Vehicles (PIV) or Vehicle to Grid (V2G) uptake. The tool identifies the level of penetration that would cause issues on the Low Voltage network, triggering reinforcements.

Mitigating the need for network reinforcements through smart charging opportunities will reduce costs and accelerate EV uptake.

EA Technology played a pivotal role in the successes of Electric Nation through managing the project and trials, including testing smart charging algorithms and maintaining participant engagement. This is through active communication and dissemination activities such as website management and supporting participant recruitment.

Electric Nation recruited 673 plug-in hybrid and full electric vehicle drivers into the trial, each equipped with a smart charger at their home. This enables the project to draw observations and conclusions relating to driver attributes, charging behaviours, acceptance of smart charging and reaction to time of use tariffs. Charging behaviour examined in the project includes the time when charging begins, charging frequency, energy consumption (both per annum, and for each charge session) and use of timers. The data shows considerable flexibility in the charging load, particularly in the evening peak, indicating that smart charging is unlikely to inconvenience the majority of drivers.

Case Study

Charge

Customer	SP Energy Networks (SPEN)
Size of project	AUD 15.9m
Start date	January 2019
End date	December 2022

In this current project, EA Technology are working with SP Energy Networks and project partners, aiming to accelerate the connection of Electric Vehicle (EV) charging infrastructure by combining transport planning and electricity network planning. The solution will be achieved through trialling innovations and developing interactive tools to allow customers to identify the most cost-effective location and method of connection.

Charge is an innovative project that will give greater connection choices to customers, lower connection costs and ultimately expedite EV uptake.

Charge will assist Distribution Network Service Providers (DNSPs), such as SPEN, in preparations for the expected dramatic increase in EV uptake by supporting the expansion of EV charging infrastructure. The project will take place in the SP MANWEB area, a subsidiary of SPEN and will develop plans to install EV charge points where capacity exists on the network, while monitoring stakeholder requirements.

Charge will be conducted through three interrelated initiatives:

- Initiative 1: Strategic Transport and network planning. Using state of the art transport planning software to map out future electric transport needs for the SPEN MANWEB license areas up to 2050. This initiative is being led by PTV Group.
- Initiative 2: Tactical solutions to support EV connections. Carrying out targeted trials to review charging solutions for residential properties without driveways and at leisure or on-route destinations such as shopping centres and petrol stations. This initiative is being led by Smarter Grid Solutions.
- Initiative 3: The development of the 'ConnectMore' software tool. This initiative is being led by EA Technology.

EA Technology will be delivering the ConnectMore interactive software tool, as an outcome of Charge. Initiative 3 will draw upon knowledge and learning from the previous initiatives, bringing together expertise in transport planning and electrical connections. Fundamentally, giving indication to the most cost-effective location and method of EV chargepoint to install, but keeping the EV motorist's needs in mind. The ConnectMore tool will display network headroom down to Low Voltage (LV), allowing stakeholders of a non-engineering background, to assess the chargepoint options available to them through an easy-to-use interactive tool.

EA technology is at the forefront in providing innovative solutions and cutting-edge software whilst collaborating with partner organisations to achieve our goals in Charge. Find out more at www.chargeproject.co.uk.

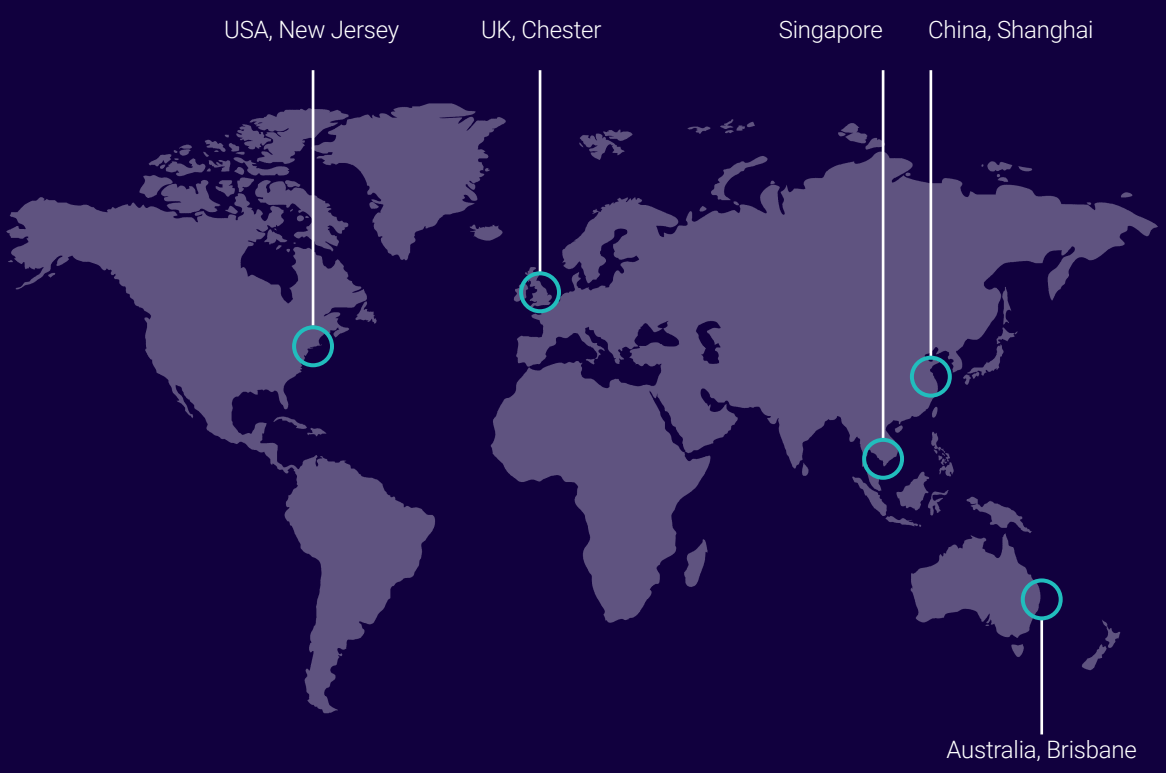
Project Partners:

- SP Energy Networks
- EA Technology
- PTV Group
- Smarter Grid Solutions

Case Study

Global Footprint

At EA Technology we specialise in asset management solutions for owners and operators of power network assets.



Founded in 1966 we have over 50 years' experience in the industry and 6 regional offices around the world to support our global customer base.

We work with a lot of our clients on a long-term basis to help them safeguard their power networks.

We advise our clients on strategy and implementation of a range of technology solutions to manage power assets, delivering maximum life and minimise cost.

ea technology

Safer, Stronger, Smarter Networks

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