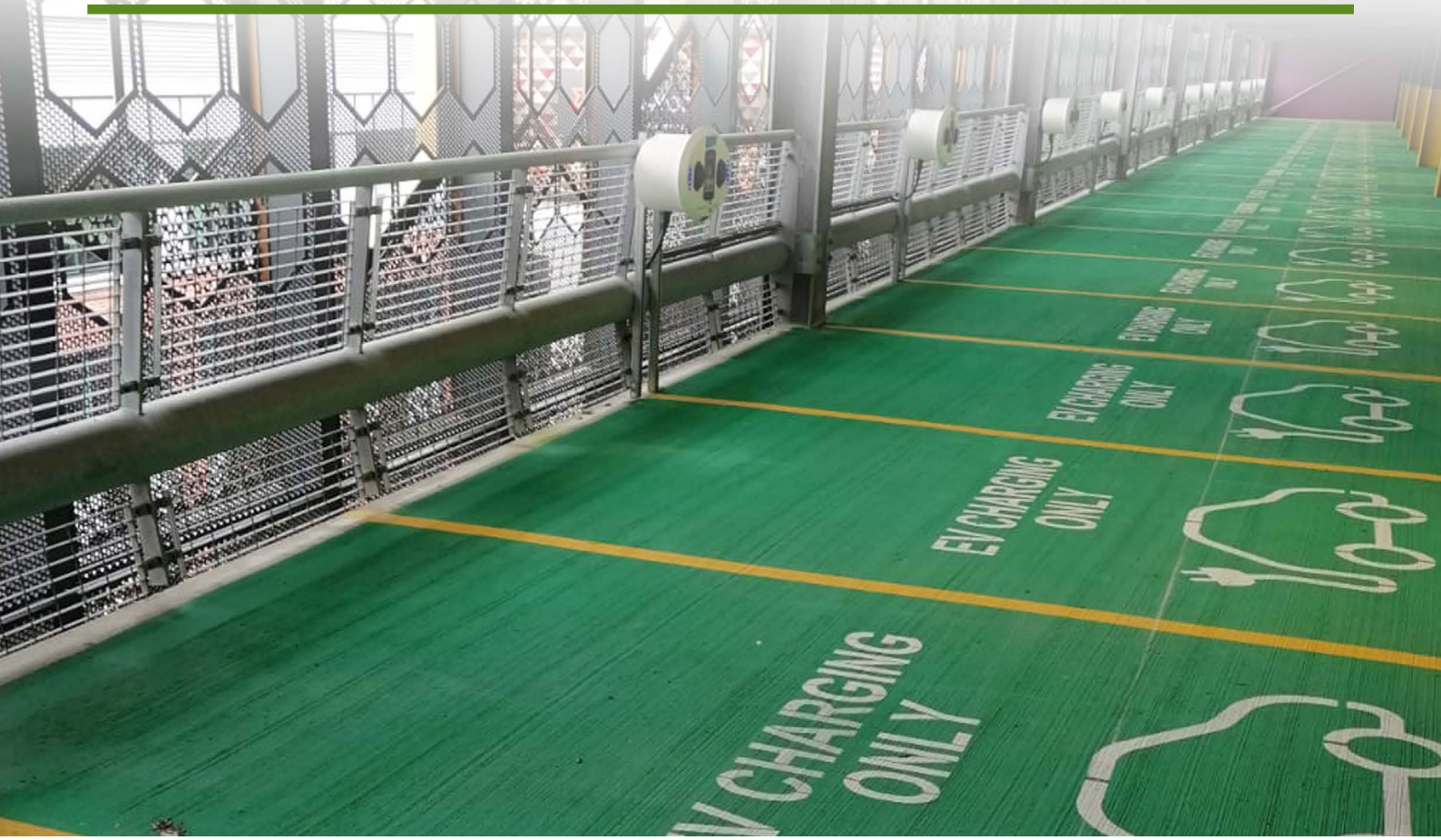
SP Energy Networks

Drive to Decarbonisation Newsletter December 2020



Electric Vehicles (EV)

In early December SP Energy Networks took part in a major online event to broaden awareness of the innovation projects we are leading on the journey to EV uptake, which include project Charge, EV-UP and PACE.

Formerly known as the Low Carbon Networks & Innovation Conference (LCNI), but this year rebranded, the Energy Networks Innovation Conference (ENIC), is the go-to conference for network innovation and the UK's flagship knowledge dissemination event for electricity and gas energy network operators.

The ENIC is a great chance for SP Energy Networks to present our innovation projects to the wider industry, and to see where other DNOs are with their projects, such as Electricity North West, Western Power Distribution and Scottish and Southern Electricity Networks. The conference allowed us to show where we are leading the electric vehicle industry, and where the work of other DNOs is going next.

SP Energy Networks Charge project team presented an overview of our work in supporting the delivery of EV charging infrastructure while also looking ahead to how we can best anticipate and enable regional uptake across our license areas in the future. We provided insight into the technology and demographics we are using for EV-UP in the Manweb area, and PACE which focuses on the public charging infrastructure for electric vehicles across the North and South Lanarkshire area. Each of our innovation projects received positive feedback from the audience and provided stakeholders insight into the steps we are taking to achieve a Net Zero future.

SP Energy Networks

Drive to Decarbonisation Newsletter December 2020

Heat

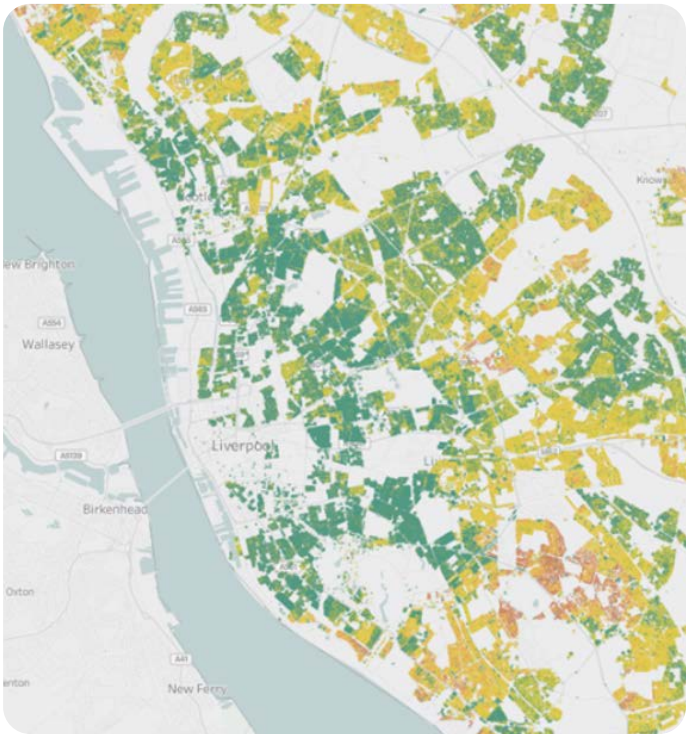
Following the success of EV Up, SP Energy Networks is now working on the launch of Heat Up. This new project builds upon the same technology as EV Up to help us predict the uptake of electrified and decarbonised heat.

It uses customer demographics (wealth, lifestyle, age, employment status, sustainability drivers etc.) combined with an evolving legislative environment to predict which customers in the SP Energy Networks area will make the switch from gas to decarbonised heat.

It does this by utilising Field Dynamic's complex data analytics techniques and modelling to help us understand the strains that heat pumps, district heating and electric radiators will put on our network. This allows SP Energy Networks to forecast where network reinforcement will be required ahead of need. Hugely increasing our visibility of the network requirements and providing a much more efficient service for the customer that is proactive over reactive.

Heat Up is an important tool for SP Energy Networks, to ensure that no one is left behind as we accelerate towards a green future and our journey towards Net Zero, and this project will help ensure we are prepared for this transition.

The project has very recently returned initial results for the Off Gas Grid section of our network and the team is continuing to expand the models to include the whole of the SPEN housing stock. The project is scheduled to be complete in March 2021.



Decarbonisation of heat

We are now looking to extend EV Up to consider the decarbonisation of heat

Volume uptake Likelihood

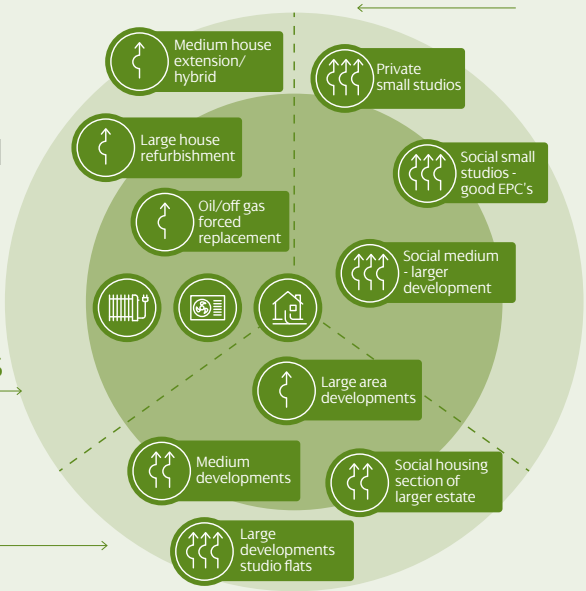
- High volume uptake
- Medium volume uptake
- Low volume uptake

Private Homeowners

Developers

Not currently in scope

Landlords



A SAUC – A Significant Adoption Use Case

SP Energy Networks

Drive to Decarbonisation Newsletter December 2020

Community Projects

Scotland's electricity network is to benefit from innovative new technology that can restore power within 24 hours if severe weather leads to a loss of electricity this winter.

The Emergency Restoration System (ERS) can be deployed at a moment's notice to support both overhead and underground lines. It provides a far more rapid response system for engineers to use in the field and allows them to replace aging technology that previously took more than a month to put in place.

Built from light weight and compact components, it can be constructed from ground level with a base that is adaptable to any terrain and the versatility to support overhead lines at any height anywhere on the SPEN network. Once erected, it establishes a seamless temporary power bypass from the damaged power lines, poles or towers while engineers get to work on, helping restore power supplies to homes and businesses quicker than ever before.

Our innovative engineering team have also adapted the technology to allow it to be used where faults are discovered underground, using it to bypass electricity flow away from damaged sections of the network while repairs are made, keeping the lights on to those living and working nearby.

Technology such as the ERS, along with our bespoke weather forecasting and pre-storm preparations, will ensure that the transmission network continues to deliver a secure and reliable service for millions of homes and businesses across central and southern Scotland this winter.

Guy Jefferson, Customer Service Director SP Energy Networks, said:

"The cutting-edge design of the Emergency Restoration System makes it possible for our engineers to make repairs faster than ever before, while keeping our customers connected to the power network.

While extreme power cuts occur very rarely, our teams are prepared for every eventuality. This system is lightweight and can be easily transported and assembled in several configurations to suit all types of terrain no matter the weather conditions.

We are acutely aware of how much more time people spend at home in the current environment, and how crucial those power supplies are to those who rely on still being able to work effectively and carry out other essential daily tasks. We use bespoke weather forecasting to prepare ahead of any bad weather, moving our teams and resources around to likely hot spots so we can react as quickly as possible to major outages in the unlikely event that they occur."

Alongside this major investment, we're reminding all of our customers ahead of the winter season to ensure they keep the national 105 emergency powercut number close to hand so they can call us if their power does go out unexpectedly – no matter who they pay their bill to. We are also promoting other essential safety advice to ensure customers are storm-ready, such as, storing a battery powered torch at home, being extremely careful to avoid fallen power lines and keeping their mobile phones charged to help them should a power cut occur.

SP Energy Networks

Drive to Decarbonisation Newsletter December 2020

Innovation Projects

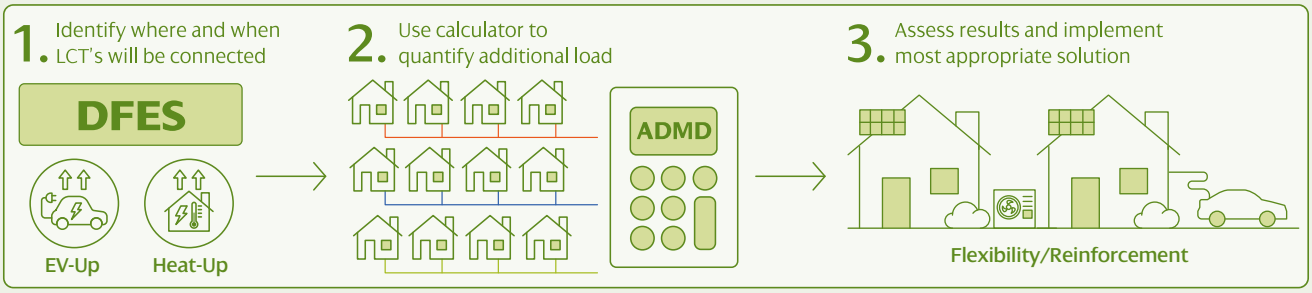
SP Energy Networks has been working on a new innovative tool called the After Diversity Maximum Demand (ADMD) calculator.

We designed this calculator to help us understand and prepare for the oncoming increase in low carbon technology, and the effect it will have on our network. It is currently in the trial phase and has been sent to customers to test.

The calculator is easy to use and designed based on the average street and can be used for both new and existing housing developments. It considers variables such as number of EV chargers and Smart charging, air, ground source and hybrid heat pumps and battery storage on a street. This helps SP Energy Networks work out the diversity of our network, which is the level of capacity we need to provide and design our network to. It also calculates the maximum demand, this is when for example, every house turns their kettle on at the same time. However, this is highly unlikely to happen which means our network operates at the diversified maximum load.

It is important that SP Energy Networks is prepared for the future changes in demand on our network. With the country moving towards a Net Zero future, we predict the average street and household will have more low carbon technologies such as an electric charger and air source heat pumps than it currently does. The ADMD calculator is a valuable tool to help us with this transition.

It is important to be prepared for every scenario our network could face, so we can plan and reinforce our network where needed. This is an ongoing project and furthers updates will be provided in 2021.



DSO / Flexibility

This December Project FUSION will be inviting tender responses for the provision of local flexibility services in East Fife.

The window for completing 'Expression of Interest' (EoI) response forms closed on 7th October. The figure below shows the timeline being employed for the remaining stages in the flexibility procurement process. Here a SP Energy Networks we are continuing to stick to our timeline and make good progress.

This project is trialling commoditised local demand-side flexibility through a structured and competitive market, based on the Universal Smart Energy Framework (USEF).

FUSION will enable Distribution Network Operators and all market actors to unlock the value of local network flexibility in a competitive and transparent manner.

Through trials in St Andrews and East Fife, SP Energy Networks' FUSION project seeks to demonstrate how the introduction of a local demand-side flexibility market can help the Distribution System Operator to better manage their network. The FUSION Project will trial the creation of an online interactive platform that allows DSO's to signpost local network requirements to the market, and then purchase customer flexibility to alleviate localized network congestion. This approach of utilising flexibility represents a new kind of interaction with our customer.

By unlocking the value of our customers' flexibility, Project FUSION seeks to defer or avoid the costs for network reinforcements due to low carbon uptake. This project demonstrates how local flexibility markets can provide a fast and cost-effective tool will help the DSO to actively manage its network, and deliver a better future, quicker for our customers.

Flexibility Procurement 'Process Map' - Timeline