

## The role of local flexibility

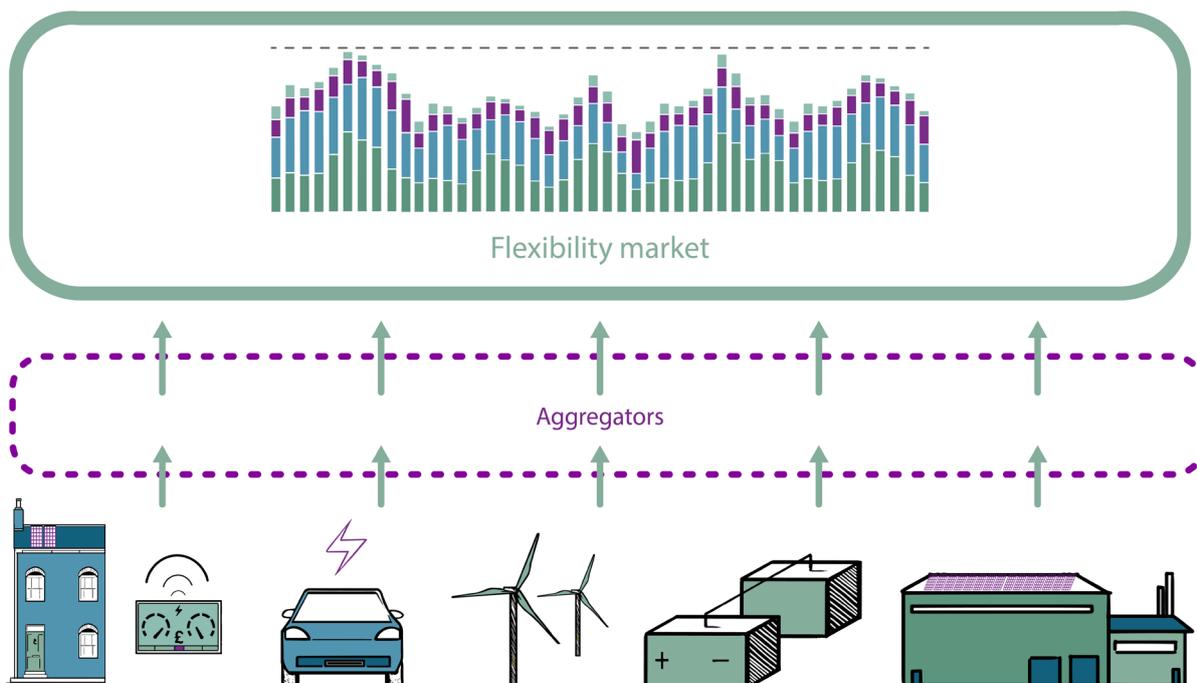
**New ways of using existing network capacity more efficiently are required to continue to connect distributed renewable energy generation and meet the extra demand from electric vehicles and new technologies. A local flexibility market enables customers to shift when and how much electricity they use or generate for money, helping to better manage the network capacity. Local flexibility markets could help by increasing the efficiency and resilience of the local electricity network. In the future these new markets could provide opportunities for communities, businesses and homes to benefit.**

The electricity network is changing as more low carbon technologies continue to connect, providing a more decarbonised energy system, as well as new challenges for the electricity network. However, these challenges could be turned into opportunities.

To enable more generators and customers to be connected to the electricity network, time intensive and costly network upgrades could be needed. These costs would be passed on to customers through their electricity bills. However, these costs could be greatly reduced, or avoided, if changes were made to the way that electricity is used and generated locally.

Therefore, in the future, customers could be financially incentivised to better match their electricity usage or generation to the available network capacity. Changing how much and when you use or generate electricity is what is defined as flexibility.

Already, smart technologies are enabling communities, businesses and homes to be flexible with their electricity usage. Electricity could be stored in batteries during periods when there is more electricity generation than demand and then sold back to the electricity network when needed.



**Figure 1:** Some examples of technologies that could potentially provide flexibility and take advantage of future local flexibility markets.

*As larger power stations continue to close and electricity generation becomes distributed, much more flexibility will be needed across the whole system.*

### **Western Power Distribution, Distribution System Operator Strategy**

Small changes in how much and when customers use their energy in local communities could help balance the demand on the network so there is enough electricity for everyone at a lower cost. For example, as more people switch to electric vehicles, they could use smart technology to control when and how much they charge, to avoid times of peak demand on the electricity network. Western Power Distribution (WPD) aims to facilitate neutral local flexibility markets, where customers can earn income from changing when they use and export electricity to help balance the electricity network at a local level (see case study and Figure 1).

Smaller sources of flexibility could be combined together by a third-party, known as an aggregator, to coordinate a response and provide services to a local flexibility market.

The value customers gain will depend on their location, how much, how quickly, and for how long they can shift their electricity use. Customers that can deliver services when required will have the greatest opportunity.

By using local flexibility markets, customers can take an active part in the way the electricity network is operated, earn income and also help make the most of the existing network.

## **CASE STUDY**

### **Visibility Plugs and Socket**

The Visibility Plugs and Socket project is a Network Innovation Allowance project carried out by WPD. It is a complementary partner project of the Cornwall Local Energy Market project – an EU-funded initiative to create a local energy market and test the use of flexible demand, generation and storage across both domestic and business sectors.

The aim of Visibility Plugs and Socket is to investigate how trading platforms for flexibility services can be used to connect buyers and sellers. It is hoped that this will encourage new sellers to participate as well as reducing procurement costs. It's also investigating whether sharing planned flexibility service information can avoid potential conflicts between buyers who might want to use the same resources.

WPD has helped design and is testing the market platform across different seasons and market models and will investigate the impact of purchasing over different timescales or volumes on prices. Find out more at [www.westernpower.co.uk/Innovation](http://www.westernpower.co.uk/Innovation)

**More information is available on our website:**

[www.westernpower.co.uk/Community-Energy](http://www.westernpower.co.uk/Community-Energy)