

A day in the Life of a commercial operator

New processes are required to accommodate the increase in demand for timely and cost effective network connections for DER along with easy access to markets for their flexibility.

Renewable generation is essential to the low carbon future. In order to facilitate the projected increase in distributed renewable generation, which is already creating challenges, innovative solutions must be employed. We therefore explore a day in the life of a commercial DER operator.



9:00am



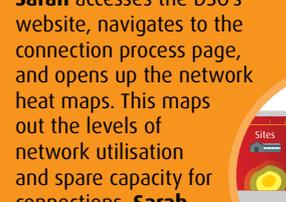
At 9am **Sarah**, a solar PV plant developer/operator, arrives at her offices. These are interesting times for solar PV developers as the installed capacity of solar PV has increased rapidly over the past decade driven by falling technology costs, reduced distribution network connection costs and easy access to flexibility service markets. **Sarah's** portfolio consists of several operational plants as well as three under development.

9:15am



Sarah is currently going through the process to gain connection agreements from the local DSO for the three plants under development. She thinks to herself how much easier the connection process has become in the past few years. Today the DSO takes a more proactive approach to the process with a number of connection options offered.

Site 1
10:00am



Sarah accesses the DSO's website, navigates to the connection process page, and opens up the network heat maps. This maps out the levels of network utilisation and spare capacity for connections. **Sarah** searches for the areas which relate to the three under-development sites. She finds that the network around the **first site** is currently underutilised. Great, she should be able to apply for a fixed connection agreement without any costly reinforcement costs.

Site 2
11:30am



Flexibility Indices Indicate how well placed a DER is for providing various constraint management services.

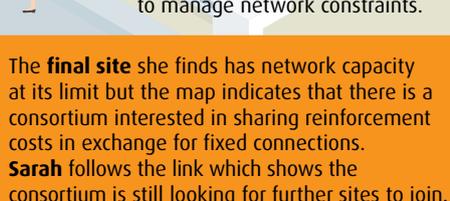
Site 3
1:00pm



Flexible Connection A flexible connection allows the DNO to temporarily reduce the plant export to manage network constraints.

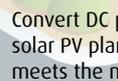


The **second site** she finds shows that the network is currently over-utilised but there are existing DER sites which have flexible connections. Great, she looks at the networks heat map that includes information on the estimated curtailment level range for the network area to see if she should apply for a flexible connection agreement. She assesses the impact on the business case that in exchange for reduced connection costs, to have the solar PV plant curtailed in times of network constraints.



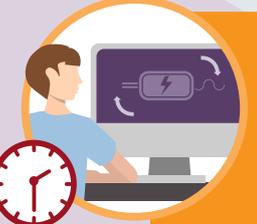
The **final site** she finds has network capacity at its limit but the map indicates that there is a consortium interested in sharing reinforcement costs in exchange for fixed connections. **Sarah** follows the link which shows the consortium is still looking for further sites to join. Great, she considers joining the consortium to share the reinforcement costs to receive a fixed connection at a reasonable connection cost.

Inverters



Convert DC power, produced by solar PV plant, to AC power which meets the network specifications.

2:30pm



Sarah opens a further network map, this one displaying "flexibility indices". The map shows that the three sites all have high indices for voltage support services. **Sarah** decides that with the money saved through reduced connection costs, that they should consider upgrading their plant inverters. These upgraded inverters allow for dynamic reactive power control, essential for providing voltage support services. Being able to provide an effective service will allow **Sarah** to command a higher price. She'll be able to easily offer this service through the DSO's local balancing market.

4:00pm



This reminds her to check on her operational sites. It's forecasted to be a sunny day and the DSO Active Network Management System (ANM) is warning that a network export constraint is highly likely. One of the sites has a flexible connection agreement and will therefore face curtailment. Through the local balancing market **Sarah** sees an offer from a DER to increase their demand which will reduce the solar plant's curtailment obligation. **Sarah** accepts the DER's offer down the road, a battery in a community energy scheme begins to charge.

The demand to connect increasing volumes of renewable generation on the distribution network, as seen in the commercial operator's story, is already here. We are able to offer generators a range of connection options, allowing these network customers to connect faster and more cheaply in exchange to be flexible. Furthermore, guiding them with network analysis which identifies spare network capacity, and potentially helping them to form consortia, can help us utilise the network in a more efficient and cost effective manner.