

Target Operating Model scenarios

Work-in-progress version December 2017 – update to follow in January

Scenarios
<p>Customer A has the following energy services:</p> <ol style="list-style-type: none">1) An app which looks to switch suppliers frequently – up to multiple times per day - based on the customer's settings (e.g. dynamic tariff price, green/low-carbon energy source). Customer A has a CAD which allows for sub half-hourly information to be recorded. The customer switches suppliers on average every 15 minutes and is rarely with one supplier for more than an hour.2) As part of purchasing an electric vehicle, customer A signs onto an exclusive supply arrangement with a supplier to receive a discount on the electric vehicle. The electric vehicle:<ul style="list-style-type: none">• has a meter installed which records import/export of the car and is linked to a GPS device which records where the customer charges. Under the supply arrangement for the EV, different dynamic prices are offered based on time of day and the area where the charging occurs. As part of this arrangement, the customer also gets notified of opportunities when they can get paid for connecting their car to the grid at certain times in certain areas (which the supplier uses to offer demand response and ancillary services to National Grid)• customer A uses the electric vehicle to visit their parents. The parents do not believe in smart metering due to articles they have read highlighting concerns about data privacy and stay on a traditional meter. However, as customer A sometimes stays overnight at the parents place, they decide to install an EV charger (which is not metered separately) at their parents' premises to use to charge the EV (assume that there is no set pattern to when the customer A decides to charge and hence this behaviour cannot be profiled)
<p>A new market entrant launches a P2P trading platform (based on blockchain-type technology) to allow customers within the same regulated distribution network to trade energy services. The P2P network allows customers to buy and sell microgeneration. The P2P network also allows both suppliers and networks (distribution and transmission) to buy a range of energy services (real-time, ancillary, demand response etc). Energy services can be offered/purchased in advance or via automated devices can be acquired/offered in real time. Customers signed up to this P2P trading platform include:</p> <ol style="list-style-type: none">1) Customer B, who owns several properties (both domestic and non-domestic) and has invested heavily in micro-generation and battery storage at each of the properties. Customer B usually generates a surplus of energy. As they are a firm supporter of decentralised energy, Customer B refuses to buy energy from the wholesale market. Instead, Customer B either purchases microgeneration via the P2P network if the properties are not self-sufficient, sells surplus energy via the P2P trading platform or to a demand aggregator that they have registered with that offers demand response services at the wholesale level.2) A company that operates a fleet of electric vehicles, which customers can hire for short term uses (e.g. shopping, running errands). Local councils provide the company with reserved street side spots where customers must park them after they are finished. Charging points with smart meters are installed next to these street side spots and can only be accessed by the company EV's. The company uses the P2P trading platform to buy and sell energy services but also has a backup supply arrangement with a supplier as they often have to charge at periods of low micro-generation.

- 3) A non for profit organisation operates a program in which they look after the energy supply arrangements of registered vulnerable customers. The organisation creates an app which switches supply arrangements (either purchased via the P2P trading platform or more traditional supply arrangements) and offers ancillary/demand response services to secure the lowest possible price.
- 4) A company looking to take advantage of the P2P trading platform and the decreasing costs of microgeneration offers to pay customers a monthly amount in exchange for allowing them to install microgeneration with battery storage at their premises. The microgeneration supplies the premises but is primarily sold on the P2P network. However, the exported microgeneration is recorded by the smart meter at the premises.

A company introduces a ‘lifestyle energy management’ service to better manage the energy consumption of its customers to fit their lifestyle. Under this arrangement, customers pay an agreed monthly fee to the company (covering supply costs) in return for the company managing their energy consumption at home. Customers must allow a CAD and a range of monitoring and appliance controlling devices to be installed to their home as part of the service. The company manages the energy consumption of its customers by:

- 1) managing the electric heating of the home using temperature sensors to maintain the temperature ranges selected by the customer (which can be adjusted manually or via logging onto their online account). The company also supplies these heating requirements either:
 - batteries which it has installed on properties located near the customer which are charged during off-peak periods or
 - purchasing energy from the wholesale market by entering into a dynamic tariff contract (with prices largely reflecting changes in wholesale market prices) with a supplier, covering all electric heating sites which it is responsible for and its portfolio of batteries.

The company also helps with the DNO to manage network congestion by managing their customer heating requirements in accordance with distribution network requirements.

- 2) monitoring and controlling the turning on and off of appliances in the home to minimise electricity costs (in accordance with settings/information provided by the customer). For each customer site, the company enters into dynamic supply arrangements (minus heat) on behalf of the customer which best meet the needs of the premises (for example, one customer site with solar and battery will buy and purchase energy on a P2P network while another customer may be supplied via traditional supply arrangements). Assume in this scenario that:
 - the inclusion of an EV into this service is optional and so while some customers may choose to bundle their EV into this service. If the EV is kept separate, it will be supplied under a separate arrangement.
 - some customers with microgeneration may end up with an energy surplus which is traded by the company (via p2p networks, demand aggregators, etc). Under this scenario, the customer would pay the company a energy management fee and a portion of the export revenues generated would be provided to the company.