

# THE CUSTOMER IN COMMAND

## THE SMART ENERGY SYSTEM OF THE FUTURE



# INTRODUCTION

Spurred by a wave of innovation and underpinned by ambitious energy and climate policy targets, the past decade has seen transformative change that has left no part of the European power sector untouched.

A low-carbon electricity system is emerging and it is becoming increasingly clear that electrification of the heating and transport sectors will form a central element of a low carbon economy.

Customers are increasingly opting for distributed energy resources. Smart electric appliances combined with smarter grid technologies such as smart meters, bring a powerful capability for smart homes. This new technology gives customers unprecedented control of their energy use at the touch of a button – or, increasingly, the swipe of a screen.

Six main customer-centred services have the potential to unlock heightened value and bring benefit to energy customers back on the bill:

## DISTRIBUTED GENERATION



They can generate and consume their own energy, or participate in community schemes

## DEMAND-SIDE RESPONSE



They can choose smart services that allow appliances and electric heating to interact with the smart grid, lowering carbon on the system while maintaining comfort

## CHARGING ELECTRIC VEHICLE INFRASTRUCTURE



They can access a network of public and private charging points

## DISTRIBUTED STORAGE



They can store excess generation from their own generation or use energy smarter with time of use rates

## ACCESS TO CONSUMPTION DATA



They can receive clear summaries of their use and actionable suggestions based on detailed energy consumption information

## ENERGY EFFICIENCY



They can rely on timely information and suggestions tuned to their individual needs, and choose energy efficient, electric and smart solutions enabling more energy-savvy behaviours

Once niche, these services are now going mainstream. Innovation is accelerating dramatically as smaller scale, nimbler investments result in steeper learning curves and falling prices, favouring mass adoption and fuelling a virtuous circle of innovation.

Customer choice is central to this revolution. It is critical that the customer experience of engaging with these services is made as simple and cheap as possible. Equally important, the overall system must be kept fair to all customers, especially those who cannot or wish not to avail of these services.

# CUSTOMER CHOICE IN THE NEW ENERGY FUTURE

Let us take a look into how the customer of the future will be able to choose these services. Two main interaction models are expected to further customer empowerment and unleash innovation. On the one hand (figure 1), utilities and other service providers, such as independent energy advisers, might initiate contact with John, a customer who has recently bought an electric vehicle but seeks a hassle-free interaction with the energy system. On the other (figure 2), more active customers like Jane might not need an intermediary and initiate contact with the energy system as she looks for a new, more interesting deal by a competitor with a different value proposition.

FIGURE 1: WHEN JOHN MEETS THE NEW ENERGY WORLD

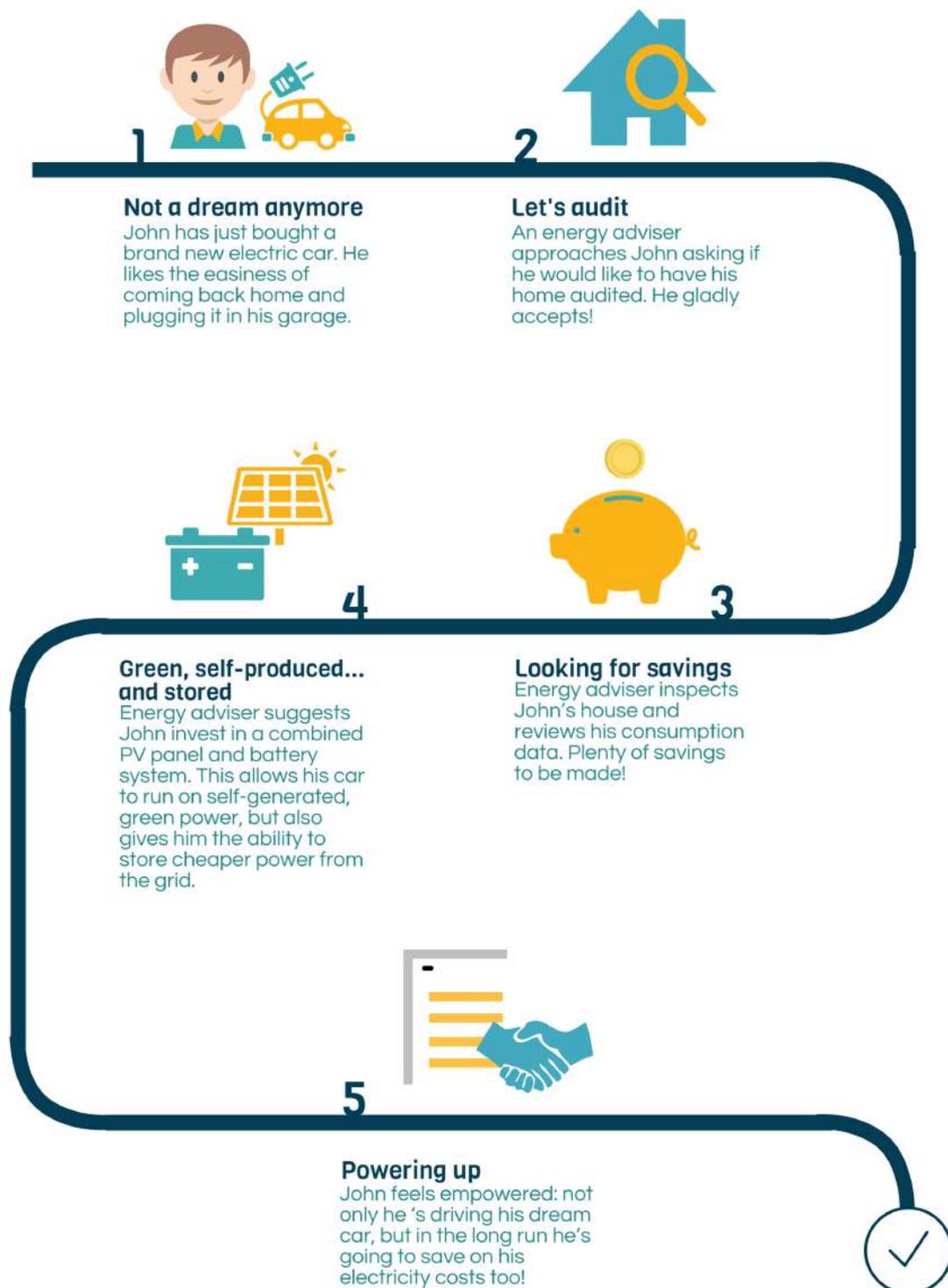
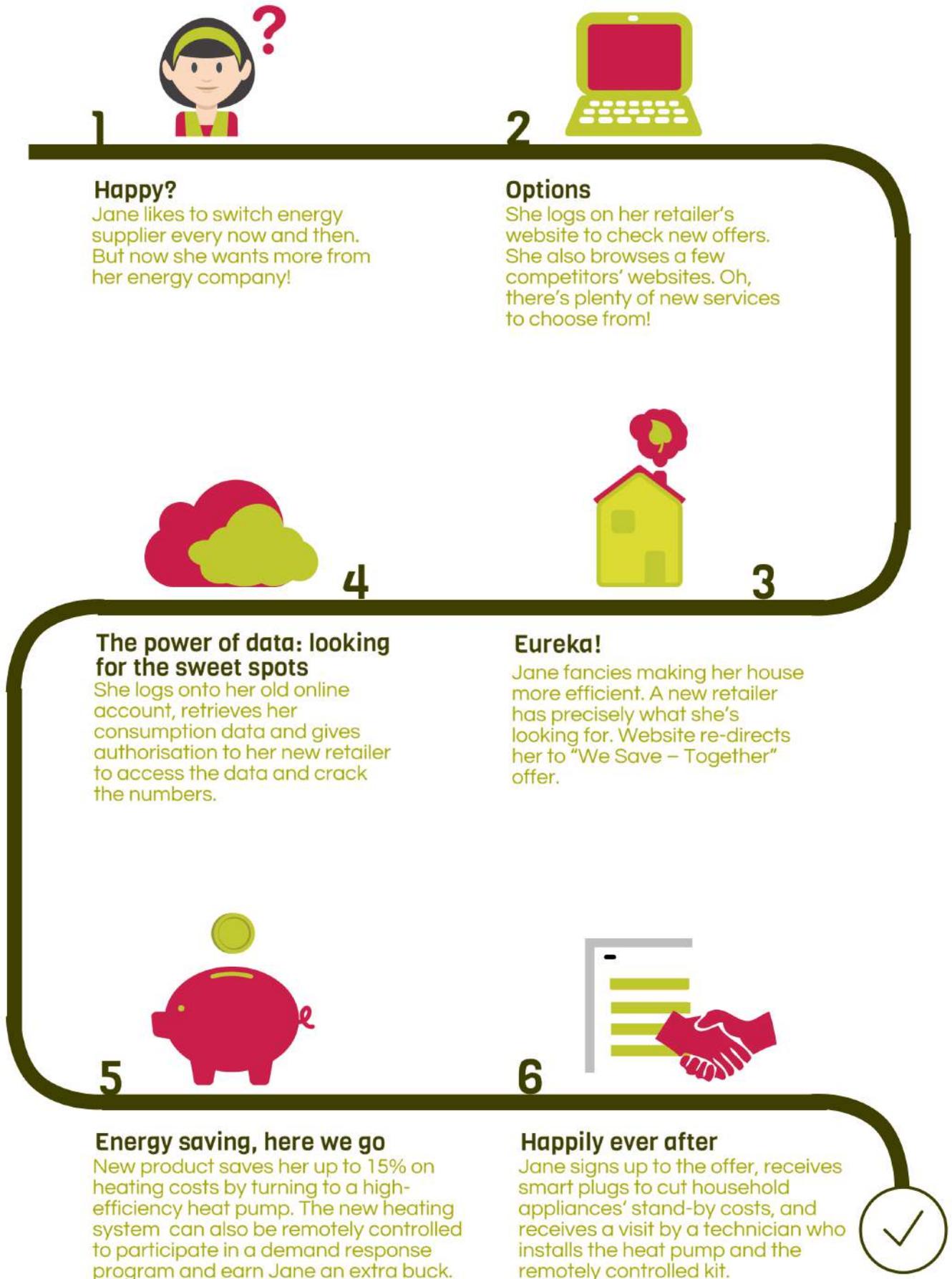


FIGURE 2: WHEN JANE MEETS THE NEW ENERGY WORLD



# BRINGING IT ALL TOGETHER

Figure 3 below shows how all the different pieces of the jigsaw interact to enable this new smart energy world.

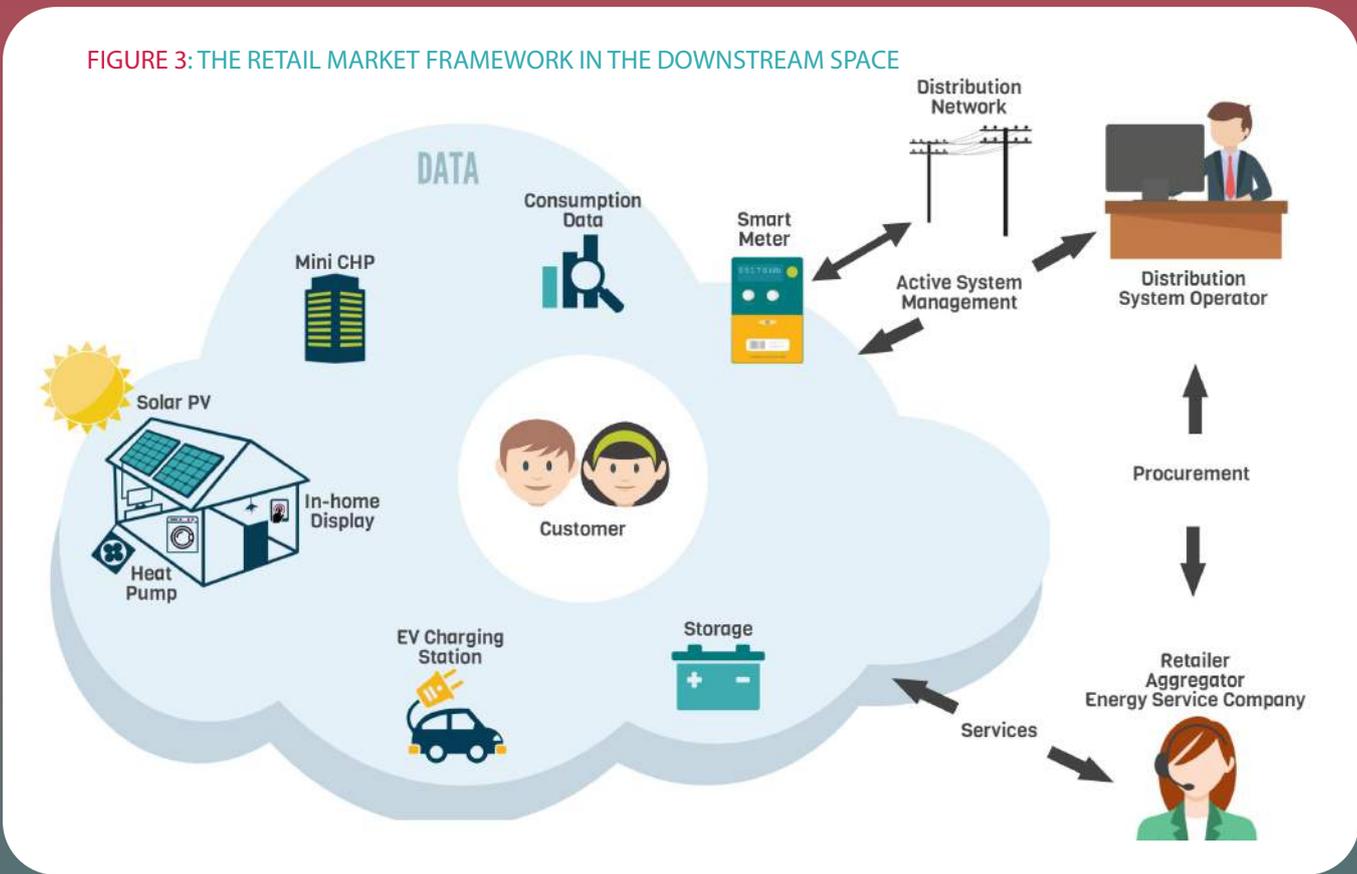
The retailer provides energy and services to the customer site, and is the 'face' of the industry.<sup>1</sup> The smart meter is the customer interface and physical link to the electricity distribution network.

The operator of the distribution system (DSO) maintains the integrity and safety of the electricity supply and, in many markets, provides meter data to enable the market.

They will increasingly facilitate the uptake of demand response, energy efficiency offerings, distributed generation and storage. This requires the DSO role to develop rapidly to one of active system management with procurement of the new services to ensure a seamless transition for the customer on a secure and safe network.

Meanwhile, new service providers (e-mobility providers; demand response aggregators; energy service companies; etc.) can compete with existing retailers in offering new services both to the customers and to the industry itself (DSOs, TSOs and energy markets).

FIGURE 3: THE RETAIL MARKET FRAMEWORK IN THE DOWNSTREAM SPACE



In the same way as John opted for a bundle of solutions for his mobility and home energy management needs and Jane chose an energy saving package with forays in demand response, customers can opt for any combination of these services with equal simplicity.

In all of these the retailer or service provider and the DSO work in a coordinated manner to ensure the customers choices are smoothly acted on and that the electricity system interacts as necessary while maintaining a secure supply. Jane and John do not need to be aware of any of this: it is the industry's role to make everything seamless and convenient for them.

<sup>1</sup> This is the case for those jurisdictions in which a supplier-led retail market model has been or is being implemented, with the notable exception of quality of supply issues (e.g. interruptions) for which customers need to know that in case of problems they should contact the DSO responsible for their area.

# KEY ACTIONS TO EMPOWER CUSTOMERS WHILE ENABLING UTILITY INNOVATION

## MAKE IT SIMPLE



Since retail markets are headed towards greater complexity owing to new opportunities and needs, the system should be kept simple for customers to engage.

1 Provide a simple customer interface

2 Have clear roles and responsibilities for all downstream players

3 Arrange all behind the scene processes between market parties and network operators in a seamless way

## MAKE IT CHEAP



Competing on a level playing field is the best way to ensure innovation and cost-effective delivery of downstream services.

1 Phase out regulated retail prices

2 Remunerate DSOs' system optimisation activities through effective, innovation-friendly incentive regulation

3 Ensure a market design for all downstream service providers that prevents any free-riding

## MAKE IT FAIR



New services might entail cost-shifting (cost socialisation) from one consumer group to another if regulation is not properly designed. Avoid hidden subsidies and a 'consumer divide'.

1 Allow for fixed costs recovery by apportioning costs imposed on the system where originally incurred

2 Ensure the efficient design of grid tariffs and remove any unrelated component from the end-user price

3 Guarantee specific protection for vulnerable customers using social policy measures

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