

# EUROPE'S ENERGY SYSTEM NEEDS HOUSEHOLD FLEXIBILITY TO GO CARBON NEUTRAL

## SIX THINGS YOU NEED TO KNOW TO GET CONSUMERS ONBOARD

The EU aims to be climate-neutral by 2050. This means that the EU energy system has to shift from fossil fuels to renewable sources. At the same time, it means that electricity consumption needs to become more flexible to reduce peaks to match variable supply.

While large electricity consumers have already started to provide demand response services to the electricity system, Europe will not reach climate neutrality by 2050 without household flexibility. How can consumers be encouraged to move from traditional contracts to more flexible ones and what protections do they need? How best to protect people's privacy and make sure they are always in control?

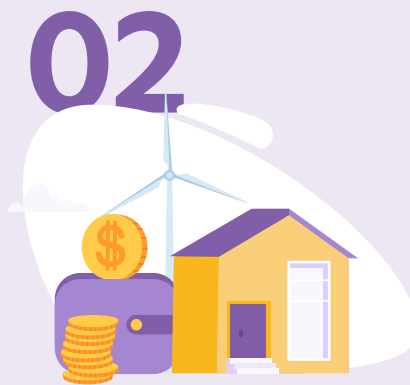


### 01 The potential in the residential sector is significant

The residential sector today represents around 1/3 of EU electricity demand<sup>1</sup>. To reach the EU's climate goals, electricity in residential heating should grow to 50-70% by 2050 and vehicles should be 50-75% electric by 2050.

Products allowing flexible electricity consumption, such as smart hot water tanks and heat pumps, are already entering people's homes. They could help households to shift up to 90% of their heating, without compromising their thermal comfort.<sup>2</sup> Electric vehicles can also provide flexibility, by charging at times of low demand and returning electricity to the grid at times of high demand.

However, households may not be able to adapt their consumption every time the system needs it. This is where aggregated demand response, uniting several smaller individual units, can play a role.<sup>3</sup>



### 02 Households can shift their consumption with the right financial incentives

A study by UK consumer organisation Citizens Advice shows that consumers understand the need to use electricity flexibly and are willing to do their part. The study shows that consumers will only engage if they have appropriate financial rewards and sufficient levels of financial protection through mechanisms such as price caps.<sup>4</sup>

Financial rewards should allow consumers to quickly recover the initial investment for products facilitating flexible consumption and achieve savings afterwards.



### 03 Households are willing to delegate control if they have guarantees that their needs will be satisfied

Automated products and services such as smart electric vehicle charging and aggregation can help consumers save money. They automatically shift electricity use to times of low demand, hence low prices, contributing to the stability of the system.

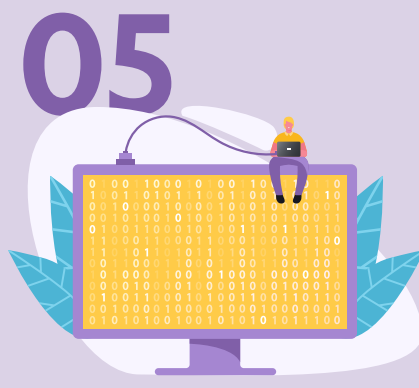
Consumers will widely accept these products and services if they have guarantees that this does not compromise the fulfilment of their needs and if it brings convenience and comfort. For example, they will embrace smart electric vehicle charging if they have a guarantee of a minimum charge and if they are able to specify a time in which a full charge must be reached.<sup>5</sup>



### Delegating control should not be mandatory and consumers should be able to override automated decisions

One of the main barriers to consumer acceptance of automated decisions made by smart products and new energy services is a concern of a potential loss of control.

Consumers are more willing to rely on automated decisions if this is not mandatory. The key to their acceptance is having the option to easily override the automated decisions if they have an emergency or a special need. For example, consumers may need to warm their home more than usual if they have health issues.<sup>6</sup>



### Strict cybersecurity standards for connected products should be in place

Consumer organisations and BEUC members Test-Achats,<sup>7</sup> from Belgium, and Which?,<sup>8</sup> from the UK, exposed vulnerabilities in several smart home devices. Their investigations have shown that hackers could easily access and take control of connected appliances in as little as four days.

This is not only detrimental for consumers, it may also result in increased risks for the electricity system, as combined attacks against several products may lead to blackouts.

Smart products should be built following the security by design and by default principles.



### Consumers' fundamental rights to privacy and data protection should be protected

Data from smart meters, smart appliances and electric cars enables the delivery of new energy services that can bring benefits to consumers. However, a report by Which? also showed that many people are concerned about how companies use their data.<sup>9</sup>

A recent survey has shown consumers will only embrace new energy services, such as smart electric vehicle charging, if they have assurances that company practices are both transparent and lawful.<sup>10</sup>



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<sup>6</sup>Eurostat, Complete energy balances [nrg\_bal\_c] / <sup>7</sup>International Energy Agency, Examples of Energy Flexibility in Buildings, Energy in Buildings and Communities Programme, Annex 67 Energy Flexible Buildings, 2019 / <sup>8</sup>SmartEn, Demand Response: Clarification of the standard processes required between BRPs and independent aggregators, 2015 / <sup>9</sup>TRL, Smart electric vehicle charging: what do drivers and businesses find acceptable?, 2019 / <sup>10</sup>TRL, 2019 / <sup>11</sup>Delta-EE, How accessible are future energy supply models? A report for Citizens Advice, 2019 / <sup>12</sup>Test Aankoop, Je slimme woning is niet veilig voor hackers, 2018 / <sup>13</sup>Which?, The hackable home: investigation exposes vulnerability of smart-home devices, 2017 / <sup>14</sup>Which?, Control, Alt or Delete? The future of consumer data, 2018 / <sup>15</sup>International Energy Agency, Stakeholders' perspectives on Energy Flexible Buildings, Energy in Buildings and Communities Programme, Annex 67 Energy Flexible Buildings, 2019