

PAS 1879:2021

Energy smart appliances – Demand side response operation – Code of practice



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Foreword

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Relationship with other publications

It is intended that this PAS is read in conjunction with PAS 1878:2021, which addresses the operation of energy smart appliances (ESAs). Demand side response operation of ESAs defined within this PAS does not require the use of a smart metering system but is nevertheless compatible with smart metering systems.

Assessed capability. Users of this PAS are advised to consider the desirability of quality system assessment and registration against the appropriate standard in the BS EN ISO 9000 series by an accredited third-party certification body.

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Users may substitute any of the recommendations in this PAS with practices of equivalent or better outcome. Any user claiming compliance with this PAS is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this PAS are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

The word "should" is used to express recommendations of this PAS. The word "may" is used in the text to express permissibility, e.g. as an alternative to the primary recommendation of the clause. The word "can" is used to express possibility, e.g. a consequence of an action or an event.

Notes and commentaries are provided throughout the text of this PAS. Notes give references and additional information that are important but do not form part of the recommendations. Commentaries give background information.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. "organization" rather than "organisation").

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0 Introduction

0.1 Purpose

The purpose of this PAS is to enable standardized control, subject to an explicit consumer consent, of energy smart appliances (ESAs) on an electricity network in order to:

- match the short-term availability of intermittent renewable energy generation sources such as wind and solar;
- decrease the peak load on the electrical transmission and distribution networks to alleviate the need for network upgrades to handle new domestic appliance types, such as electric vehicle (EV) chargepoints and electric heating, ventilation and air conditioning (HVAC) systems;
- allow control of electricity network characteristics such as line frequency, system inertia and network voltage, and help prevent network and generation outages; and
- allow the offset of short-term market imbalances by controlling flexible load on the network.

These aims are achieved by shifting (in time) and/or modulating (increasing or decreasing) the collective electricity consumption or production of domestic appliances, in line with consumer preferences and agreement, in response to signals from grid-side actors.

At longer timescales and with sufficient notice, consumer behaviour change can be achieved through electricity suppliers altering the tariff that electricity consumers pay, which encourages the use of appliances at times outside of peak demand or at times when excess generation capacity is expected to be available. This is called the “routine” method and is delivered through electricity suppliers setting time of use (ToU) tariffs. For rapid load responses and for control by other grid-side actors, direct control of load is required, and consumers are rewarded for allowing their appliances to be controlled for the overall benefit to the network. This is known as the “response” method. These methods are collectively called demand side response (DSR).

These methods aim to provide benefits to all electricity consumers. Such benefits might be indirect, as domestic appliances providing DSR services support network operation, which benefits all consumers connected to the network. Such benefits might also be direct, as additional benefits might accrue to consumers willing to invest in and adopt appliances containing the ESA functionality and communication capabilities. Consumers with ESAs can reduce their electricity costs by operating domestic appliances using the routine method, and can earn revenues by allowing domestic appliances to be controlled flexibly using the response method. Actors providing these revenue opportunities to consumers are encouraged to make these benefits clear, to encourage the uptake of domestic appliances able to support network operation.

It is also expected that other energy related services might be offered in addition to the minimum services set out in this PAS and PAS 1878:2021, such as optimization of rooftop solar self consumption with appliances or battery storage, that can provide additional benefits for consumers. The IEC 60364 series of standards provides guidance on the information exchange within prosuming electrical installations, e.g. IEC TS 60364-8-3:2020, Table 1.

This PAS provides recommendations for the provision of DSR services by service providers and it is intended to be read in conjunction with PAS 1878:2021, which provides a technical specification that allows domestic appliances to operate in such a DSR system.

0.2 Demand side response (DSR)

Response mode DSR requires communication between domestic appliances and a controlling entity, which itself communicates with the appropriate regulated electricity market participants. This controlling entity is termed the “DSR service provider” (DSRSP) in this PAS. More than one DSRSP might be associated with a single premises at any one time but an appliance is associated with only one DSRSP at any one time.

To provide DSR services, a domestic appliance can shift in time and/or modulate in magnitude its electricity consumption or production, in response to external signals. Domestic and light commercial electrical appliances are termed ESAs when they meet the requirements specified in PAS 1878:2021. In the concept of operation recommended in this PAS, the ESA provides information to the DSRSP with options regarding how it is able to modulate its power requirements over time – its power “flexibility” – over a communications interface.

In order to be able to control demand and supply on electricity transmission and distribution networks for the purposes shown in 0.1, a number of DSR products are procured by electricity network stakeholders. These include both products that are grid frequency sensitive (e.g. frequency response products) and those that turn up/down demand or supply to affect the power balance (e.g. energy arbitrage and reserve products) and products requiring different response times. DSR might be required in different geographical areas and at different times of day in order to operate the system where or when there are network constraints. The minimum volume thresholds of services needed to have an effect often require many domestic ESAs to be aggregated together on a statistical basis. A description of typical requirements for DSR products by grid-side actors is provided in PAS 1878:2021, Annex C.

This PAS provides minimum recommendations for functionality, information flow, communications capability and cyber security for the implementation of a DSR service. These minimum recommendations ensure a sufficient level of interoperability, security and optionality whilst not limiting the opportunity for product and service innovation. An overview of DSR service provision is set out in 4.3.

0.3 Energy smart appliances and the DSR functional architecture

ESAs currently covered in this PAS include domestic smart EV chargepoints, electrically powered HVAC, battery storage, wet appliances and cold appliances, but the ESA classification is not limited to these appliances; if an appliance not listed meets the specification in PAS 1878:2021 it can be considered an ESA. The technical requirements an ESA will need to meet in order to provide DSR services are specified in PAS 1878:2021.

In order to support a minimum level of DSRSP and ESA interoperability for every ESA type, PAS 1878:2021 requires that each ESA is supplied with a customer energy manager (CEM). These are logical entities and can be provided with the ESA in a number of ways. For example, they can be built into the ESA, supplied as separate physical units, provided as software operating in the cloud or another device, such as a mobile broadband station, or provided as part of the smart metering system. One CEM could connect to multiple ESAs.

Functionality in addition to that offered by these ESAs, such as communications gateway functionality, depicted as an “Energy Gateway”, is also required in an end-to-end DSR system and is treated in this PAS as a necessary component of the entire system. This PAS addresses the principles set out in 0.5 in terms of two functional architectures as illustrated in Figure 1 and Figure 2, which represent instances of in-home and cloud-based combined CEM respectively. The functionality of the CEM is described further in PAS 1878:2021, Annex E.

The Energy Gateway represents the physical communications device that provides the logical connectivity between the in-premises elements of the DSR architecture and those elements located outside the premises, as illustrated in Figure 1 and Figure 2. The connectivity between the Energy Gateway at a premises and a DSRSP may be wired (e.g. broadband) or wireless (e.g. 4G, 5G, LPWAN, etc.).

NOTE 1 *If the connection to the premises is provided via the internet, the Energy Gateway is represented by the broadband modem/router. In this scenario, a key feature of the Energy Gateway is its firewall, which limits access to in-premises network to traffic that is in accordance with the firewall rules. Given the presence of a firewall, the initiation of communications between an ESA and the DSRSP occurs from inside the premises, as attempts by an external IP address to initiate a connection to a device in the premises would normally be blocked by the firewall. In scenarios where alternative wireless communications channels are employed, the Energy Gateway might, for example, be a GSM modem.*

[illegible]

The diagram illustrates the Smart metering system architecture, divided into two main sections by a vertical red dashed line: **Grid side premises** (left) and **DSRSP side premises** (right).

Grid side premises (Left of red dashed line):

- Regulated electricity market participant** (grey box) connects to the **DSR service provider** (orange box) via a dashed line.
- Supplier/meter controlling organization** (grey box) connects to the **Smart metering system** (yellow box) via a dashed line.
- Electricity grid** (grey box) connects to the **Smart metering system** via a solid orange line (Mains low voltage electricity).
- DSR service provider** connects to the **Customer energy manager** (orange box) via a solid line (Mandatory connection).
- Customer energy manager** connects to the **Smart metering system** via a solid line.
- Customer energy manager** connects to the **ESA manufacturer** (blue box) via a solid line.
- Customer energy manager** connects to the **Energy Gateway** (green box) via a solid line.
- Customer energy manager** connects to the **Energy smart appliance** (blue box) via a solid line.
- Customer energy manager** connects to the **User interface** (black box) via a solid line.
- Customer energy manager** connects to the **External system** (black box) via a solid line.
- Customer energy manager** connects to the **CEM manufacturer/service provider** (orange box) via a solid line.
- Customer energy manager** connects to the **Third party (optional)** (yellow hatched box) via a dashed line.

DSRSP side premises (Right of red dashed line):

- Energy Gateway** connects to the **Energy smart appliance** via a solid line.
- Energy smart appliance** connects to the **Consumer** (purple box) via a solid line.
- Energy smart appliance** connects to the **User interface** via a solid line.
- Energy smart appliance** connects to the **External system** via a solid line.
- Consumer** connects to the **User interface** via a solid line.
- User interface** connects to the **External system** via a solid line.
- Consumer** connects to the **Third party (optional)** via a dashed line.
- User interface** connects to the **Third party (optional)** via a dashed line.
- External system** connects to the **Third party (optional)** via a dashed line.

Smart metering system (Yellow box):

- The **Smart metering system** is a central component that receives data from the **Electricity grid** and the **Supplier/meter controlling organization**.
- It provides data to the **DSR service provider**, **Customer energy manager**, **ESA manufacturer**, **Energy Gateway**, **Energy smart appliance**, **User interface**, **External system**, and **CEM manufacturer/service provider**.

KEY:

- Mains low voltage electricity:** Solid orange line.
- Mandatory connections:** Solid black line.
- Optional connections:** Dashed black line.
- Out of scope:** Grey box.

NOTE 2 In Figure 1 and Figure 2 the user interfaces are shown as optional to accommodate the variety of ways in which a consumer can connect to the ESA and set their preferences in the CEM. The specific requirements for user interface provision are described in PAS 1878:2021. Consumer preferences and consent are necessary features of DSR but the specific means by which a user interface is provided is a design issue for ESA manufacturers and DSRSPs.

NOTE 3 The functional architectures illustrated in Figure 1 and Figure 2 are based on the CENELEC and IEC architectures illustrated in PAS 1878:2021, Annex E. The figures are intentionally more detailed than those in PAS 1878:2021 as they are intended to show the relationships between different elements of an overall DSR architecture. They are non-exhaustive illustrations of DSR functional implementations employing in-home and cloud-based CEMs respectively. Other approaches can equally deliver the four principles in 0.5.

NOTE 4 Delivery of DSR services through a smart meter system will depend on national implementation of smart metering. PAS 1878:2021, Annex D, illustrates this for the GB smart metering system through the use of auxiliary proportional controllers (APCs) and standalone auxiliary proportional controllers (SAPCs).

NOTE 5 In Figure 1 and Figure 2, the optional third party shown between the consumer and the DSRSP is intended to cover business scenarios where the DSRSP does not deal directly with consumers; for example, where the third party provides consumer recruitment and consumer relationship management services.

NOTE 6 Where a DSRSP contracts or works with third parties to operate part of the DSR service on its behalf, the DSRSP retains full and final responsibility for appropriate delivery of all services whether sub-contracted or not. This includes the optional third party referred to in Note 5. In the architectures illustrated in Figure 1 and Figure 2, where a third party provides the CEM, the DSRSP retains responsibility for the end-to-end security of the DSR service.

0.4 Operational model

COMMENTARY ON 0.4

A DSRSP may sub-contract the provision of aggregated DSR services to a third party. In this case, the sub-contracted third party maintains an up-to-date list of flexibility options for each ESA and provides an up-to-date summary of the technical capability to the DSRSP as requested. The DSRSP remains responsible for all the recommendations in this PAS being met by the sub-contracted third party providing the DSR service, as described in 4.3.10.

Following the subscription to, and set up of, a DSR service for an individual ESA, the DSR system operates in the following manner (see also PAS 1878:2021, Figure 2).

- a) The ESA determines its flexibility options (taking into account consumer preferences and optionally electricity tariffs) and provides them to the DSRSP, using the CEM/ESAG as an intermediary. The CEM communicates with the DSRSP using a common interface specified in PAS 1878:2021.

NOTE 1 A flexibility option represents the ability of the ESA to vary its demand or supply of electricity over a defined period. Where the ESA is working through a planned/programmed cycle of energy use, a flexibility option can be to delay or increase demand over the next phase of the programmed cycle.

NOTE 2 Where a CEM is connected to more than one ESA it can present flexibility options as a composition of the options jointly and individually available from the ESAs.

- b) This information is updated whenever the flexibility status of the ESA changes (e.g. the consumer turns the ESA on or off) or a flexibility option is no longer valid (e.g. it has expired or has been cancelled by the consumer).
- c) The DSRSP maintains an up-to-date list of the possible flexibility offers provided by the CEM on behalf of the ESAs that it manages.
- d) Whenever the DSRSP is requested to perform a DSR operation, the DSRSP is able to select its chosen flexibility and time parameters from its portfolio of flexibility offers.

- e) The DSRSP then sends a message to a selected number of ESAs, via their CEMs, requesting that they implement one of their provided flexibility options. The ESA implements this flexibility option and enters response mode.
- f) During the DSR event period:
 - 1) each ESA continues to provide the DSRSP with updated flexibility offers whenever its flexibility status changes. The DSRSP may respond by sending an updated flexibility option request;
 - 2) if the DSRSP decides to cancel the participation of a particular ESA in the current DSR event or if the DSR event is cancelled, the DSRSP informs the ESA, via the CEM. The ESA acknowledges this cancellation, enters routine mode and sends an updated set of flexibility offers to the DSRSP;
 - 3) depending upon the requirements of the DSRSP and subject to prior agreement, the ESA might periodically send power consumption information to the DSRSP; and
 - 4) the consumer might change their preferences, which can in turn override the ESA flexibility offer and require the ESA to return to its routine mode.
- g) Once the DSR event period is completed, the ESA provides the DSRSP with information concerning its power consumption throughout the period. This step may be omitted if the ESA has been providing periodic power consumption information.
- h) The DSRSP is then able to provide aggregated flexibility verification information to the grid-side actor that requested the DSR service (including real-time power consumption values).

NOTE 3 *The above interactions are covered in more detail in PAS 1878:2021, which also describes how interoperability between DSRSPs and ESAs is supported by the use of a common format describing energy flexibility options and standardized interface communication protocols.*

0.5 Alignment with DSR and ESA principles

Four principles are seen as critical for effective DSR through ESAs. This PAS aligns with these principles as listed below and explained in Clause 5.

- **Interoperability**
The ability of an ESA to work seamlessly across any appropriate DSR service operated by any DSRSP.
- **Data privacy**
The secure transmission and storing of data on the device or with any controlling party.
- **Grid stability**
The prevention of outages on the grid caused by unexpected or inappropriate operation of ESAs.
- **Cyber security**
The appropriate protection of ESAs from unauthorized access and the correct use of ESAs by authorized parties only in order to achieve valid DSR events.

0.6 Integration with smart metering systems

DSR operation of ESAs defined within this PAS does not require the use of a smart metering system but is fully compatible with smart metering systems.

NOTE 1 *The options for combining the DSR system architecture with the GB smart metering system specifically are described in PAS 1878:2021, Annex D. The DSR architecture does not exclude combination with other smart metering architectures.*

NOTE 2 *In the UK there is currently no regulatory or legal requirement specifically on metering DSR provision. There are regulatory and legal requirements on metering electricity supply. Attention is drawn to Schedule 7 of the Electricity Act 1989 [1] and the Measuring Instruments Regulations 2016 [2]. In the UK, the Balancing and settlement code [3] defines codes of practice which provide further details on settlement metering requirements for consumer electricity supply.*

NOTE 3 *A regulated electricity market participant requesting DSR services might require the DSRSP to evidence delivery of DSR services. This might require an ESA to provide information regarding its power consumption to the DSRSP.*

0.7 Alignment with standards

Standardization of domestic DSR is currently at an immature stage in some areas and work is ongoing within European and International level standards development organizations. The architecture presented in this PAS is aligned with work carried out in several CEN/CENELEC and ISO/IEC Technical Committees, including IEC TC 57, *Power systems management and associated information exchange*; CLC TC 205, *Home and building electronic systems*; and CENELEC TC59X, *Performance of household and similar electrical appliances*.

Details of specific standards to be applied to the structure, format and contents of messages between the DSRSP and consumers' premises are outlined in PAS 1878:2021.

1 Scope

1.1 In scope

This PAS sets out a common definition of demand side response (DSR) services for actors operating within the consumer energy supply chain and provides recommendations to support the operation of energy smart appliances (ESAs). The consumer-focused approach outlined in this PAS can coexist with other forms of balancing or DSR.

NOTE 1 *Regulated market participants currently use a range of balancing services. This PAS is not intended to limit or replace the operation of other forms of balancing or demand management, which fall outside the scope of this PAS and PAS 1878:2021; for example, DSR regarding larger industrial and commercial electricity users.*

This PAS is aimed at those organizations responsible for providing and delivering energy services to domestic (e.g. individual households) or small business (i.e. SME) premises, which are collectively referred to as consumers. The cyber security principles in this PAS apply to organizations performing any form of DSR, or sending remote signals to appliances to shift or modulate their energy consumption or supply.

With regards to compatibility with all forms of DSR-based activity, the two types of consumer DSR covered by this PAS are those employing ESAs, compliant with the specification in PAS 1878:2021, that implement:

- a) routine DSR implemented through supplier set electricity tariffs or other electricity-related incentives; and/or
- b) response DSR initiated at the request, often made in near real time, of regulated electricity market participants.

This PAS provides only the minimum recommendations to perform DSR-based activities involving electrical appliances used in domestic or small business settings. The specific appliance categories in scope for domestic DSR service are:

- 1) heating, ventilation and air conditioning appliances (HVAC);
- 2) cold appliances;
- 3) wet appliances;

- 4) battery storage; and
- 5) smart EV chargepoints.

NOTE 2 *Any other type of appliance which meets specifications set out in PAS 1878:2021 can be considered an ESA.*

1.2 Out of scope

Aspects out of scope for this PAS are the:

- a) functional and non-functional requirements of an ESA;
- NOTE 1** *Product safety of ESAs in respect of their energy smart functionality is addressed in PAS 1878:2021.*
- b) commercial models of DSR;
- c) ethics and social rules of DSR operation;
- d) contracting, payment services or general consumer protections; and

NOTE 2 *Whilst these aspects of service delivery are out of scope of this PAS, adoption and implementation of good industry practices by DSRSPs regarding interaction with and treatment of consumers is a reasonable consumer expectation.*

- e) curtailment of supply.

1.3 Intended audience for this PAS

This PAS is intended for use by all actors operating within the domestic energy supply chain, including transmission system operators (TSOs), distribution network/system operators (DNOs) and electricity suppliers and aggregators. It might also be of interest to manufacturers of ESAs and customer energy managers (CEMs). Other parties who might have an interest in this PAS are maintainers of ESAs, manufacturers and maintainers of interfacing products, software developers and other service providers.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this PAS. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies¹⁾.

Standards publications

ETSI EN 303 645, *Cyber security for consumer internet of things: Baseline requirements*

IEC 62443-2-1, *Industrial communication networks – Network and system security – Part 2-1: Establishing an industrial automation and control system security program*²⁾

IEC TS 62443-1-1, *Industrial communication networks – Network and system security – Part 1-1: Terminology, concepts and models*

PAS 1878:2021, *Energy smart appliances – System functionality and architecture – Specification*

¹⁾ Documents that are referred to solely in an informative manner are listed in the Bibliography.

²⁾ At the time of publication, BS EN IEC 62443-2-1 is in preparation and is expected to be published in due course.

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this PAS the following terms and definitions apply.

3.1.1 aggregator

service provider that manages electrical energy demand (consumption) or export (production) on behalf of a group of consumers

3.1.2 appliance

product or system that consumes, stores, exports and/or generates electrical energy during its functional use

NOTE Some appliances might have hybrid functionality; for example, an EV can both store electrical energy and use it to provide mobility services.

3.1.3 asset

item, thing or entity that has potential or actual value to an individual, an organization or a government

NOTE An asset can be fixed, mobile or movable. It can be an individual item, plant, a system of connected equipment, a space within a structure, a piece of land, an entire piece of infrastructure, an entire building, or a portfolio of assets. An asset might also comprise data or information in digital or in printed form, as well as an organization's internal processes.

Digital information can be localized (i.e. based on a single data source) or distributed (i.e. derived from multiple data sources and/or locations).

The value of an asset might vary throughout its life and an asset might still have value at the end of its life. Value can be tangible, intangible, financial and non-financial.

3.1.4 certificate organization

entity that certifies the ownership of a public key by the named subject of a digital certificate

3.1.5 consumer

domestic (i.e. individual households) or small business user (i.e. SME) who:

- a) has the authority and capacity to enter into a service contract with a DSRSP; and
- b) has one or more ESAs that can be subscribed to a DSR service.

3.1.6 consumer's authorized representative

individual who has been appointed, formally or informally, to act on behalf of a consumer in a vulnerable situation

NOTE 1 The representative might be a partner, family member, carer, social worker or health professional.

NOTE 2 Attention is drawn to applicable national or regional laws that relate to the formal appointment of a representative, the representative's mandate, and how matters relating to privacy and data protection are managed by those acting on instructions from the representative.

3.1.7 customer energy manager (CEM)

logical entity providing functionality used to manage one or more ESAs, specific to a supply point, in order to provide DSR service

NOTE 1 PAS 1878:2021 specifies that an ESA manufacturer will supply a CEM with every ESA. Where an ESA manufacturer contracts a third party to deliver the CEM functionality the requirements of PAS 1878:2021 still apply.

NOTE 2 A CEM could either be in an interface box located in the premises or in the cloud with connectivity to the ESA.

NOTE 3 In this PAS, the term "CEM" indicates a CEM/ESAG combination or an individual CEM, as appropriate, unless otherwise stated.

3.1.8 cyber hygiene

practices that users of computers and digital systems can take to maintain system health, improve online security and reduce the risk of data loss or corruption

3.1.9 data and information sharing agreement (DISA)

documented and agreed policy, process, procedures and remedies in respect of data shared between a data owner and another party or parties

3.1.10 demand side response (DSR)

shifting (in time) and/or modulation (increase or decrease) of electricity consumption and/or production through the controlled operation of ESAs, in line with consumer preferences, in response to signals from, and acting in agreement with, regulated electricity market participants

3.1.11 demand side response service provider (DSRSP)

organization using ESAs to provide demand-side related energy management services to regulated electricity market participants

3.1.12 Energy Gateway

communications bridge between DSR-related devices located inside and outside the consumer's premises

NOTE Where a DSR service uses the internet as the communications channel between the DSRSP and an ESA, the consumer's broadband router would be the Energy Gateway.

3.1.13 energy smart appliance (ESA)

appliance which is communications-enabled and able to respond automatically to price and/or other signals by shifting or modulating its electricity consumption and/or production

NOTE ESAs referenced in this PAS are those compliant with the requirements in PAS 1878:2021, and unless explicitly referred to in the text the term ESA is taken to include the associated CEM functionality irrespective of how this is delivered.

3.1.14 heating, ventilation and air conditioning (HVAC) appliances

electrical goods used in domestic or small business environments for heating, ventilation or air conditioning

3.1.15 interoperability

ability of an ESA, and its associated CEM, to work seamlessly across any appropriate DSR service operated by any DSRSP, including allowing a consumer to switch an ESA to a different DSRSP at any time and maintain DSR functionality

3.1.16 national regulatory authority

entity appointed as a national authority to oversee the operation of the electricity market and responsible for establishing and maintaining the regulatory framework for electricity generation, transmission, distribution and supply

NOTE A national regulatory authority has the ability to delegate responsibilities to other entities it regulates.

3.1.17 personal data

information relating to an identified or identifiable living individual

[SOURCE: Data Protection Act 2018, Section 1(2)] [4]

NOTE 1 This term is also defined in the General Data Protection Regulation (GDPR) [5].

NOTE 2 In a DSR context, in addition to the categories covered in the Data Protection Act 2018 [4], personal data will include any unique identifiers assigned to a consumer's account, premises, metering point, CEM, ESAG and ESA(s).

3.1.18 premises

geospatial extent owned or occupied by a consumer and containing one or more appliances that consume, generate, store and/or export electrical energy

NOTE 1 A premises might have a mixture of energy smart and non-energy smart appliances.

NOTE 2 The appliances might be located within the buildings of the premises (for example, domestic white goods) or outside the buildings of the premises (e.g. a smart EV chargepoint).

3.1.19 premises area network

network within a premises to which a consumer's communications-enabled devices and appliances are connected

NOTE A premises area network can be a combination of wired and/or wireless connections that connect to the public network(s) via an Energy Gateway.

3.1.20 registration organization

entity responsible for assessing whether a potential DSRSP meets any criteria set by the national regulatory authority for approval of service delivery within the regulator's jurisdiction

NOTE The need for DSRSP approval and any criteria a potential DSRSP meets is determined by the relevant national regulatory authority. The entity may be the national regulatory authority or another entity appointed by the national regulatory authority to provide the approval service.