



# Electricity metering and consumption data interoperability

Guidance for the reporting of national practices  
in accordance with  
Commission Implementing Regulation (EU) 2023/1162

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## Table of Contents

<b>Foreword</b> .....	<b>6</b>
<b>1. Introduction</b> .....	<b>7</b>
<b>2. Purpose and scope of this document</b> .....	<b>7</b>
<b>3. Data management models</b> .....	<b>9</b>
3.1. Common national settings for data management models.....	9
3.1.1. Member State A – De-centralised environment .....	10
3.1.2. Member State B – A centralised / national data hub environment.....	10
3.1.3. Member State C – A hybrid environment.....	11
3.1.4. Final remarks on data management models.....	11
<b>4. General clarifications</b> .....	<b>12</b>
4.1. Keeping reporting updated .....	13
4.2. Other issues.....	14
<b>5. Example of reporting of national practices</b> .....	<b>14</b>

## Foreword

This document has been developed to assist Member States in fulfilling their reporting obligations under Commission Implementing Regulation (EU) 2023/1162 which addresses interoperability requirements and establishes non-discriminatory and transparent procedures for accessing electricity metering and consumption data. This Implementing Regulation was adopted in June 2023 as the first in a series of implementing acts under the Electricity Directive and marks a significant milestone in the Digitalisation of Energy Action Plan. These new technical rules aim to lower barriers for new market entrants, optimise operations for retailers and system operators, and foster innovation in energy services, notably in energy efficiency and renewable energy.

The new rules set out in Commission Implementing Regulation (EU) 2023/1162 will apply from 5 January 2025, and Member States must then report, by 5 July 2025, their respective national practices to the Commission for inclusion in an EU wide repository. This repository will be a key tool in allowing market players from across the EU to develop products and services more easily and quickly for different parts of the internal market. This will enhance transparency, trust, efficiency, and predictability in data exchanges while supporting a wider choice and opportunities for consumers.

This Guidance is a result of extensive collaboration and consultation with the Joint Working Group (JWG) of European network operators ENTSO for Electricity (ENTSO-E) and the EU DSO entity. It facilitates the accurate implementation and reporting of national practices in line with these new technical rules. In doing so, this Guidance, and as part of the underlying legislation, contributes to advancing the objectives of the European Green Deal and REPowerEU. This Guidance also underscores our commitment to providing clear, practical, and impactful support to Member States as we jointly navigate the transformative path toward a more consumer-centric, decarbonised, decentralised and digitalised energy landscape.

## 1. Introduction

In June 2023, the Commission adopted the Implementing Regulation (EU) 2023/1162 on interoperability requirements and non-discriminatory and transparent procedures for access to electricity metering and consumption data<sup>1</sup>, marking the beginning of a broader initiative to safeguard and help engage consumers in the energy transition through digitalisation.

This piece of legislation, thereafter the 'Implementing Regulation', is the first in a series of data implementing acts mandated in the Electricity Directive (EU) 2019/944<sup>2</sup>, introducing important technical rules for handling metering data. It also holds particular significance as it aligns with the Digitalisation of Energy Action Plan<sup>3</sup> and represents its first deliverable.

The Implementing Regulation aims to ensure safe, smooth, and easy access to metering and consumption data, which is essential for final customers' active involvement in the energy market. It also enables network operators and eligible market participants to optimise their operations and encourages the development and uptake of data-driven smart energy services.

To achieve this, the Implementing Regulation establishes a common reference model and vocabulary, facilitating a shared understanding of the respective information exchange requirements and procedures.

This reference model is composed of (i) a 'role model' with a set of roles/responsibilities and their interactions; (ii) an 'information model' that contains information objects, their attributes, and the relationship between these objects; and (iii) a 'process model' detailing the procedural steps. To meet the respective interoperability requirements of the Implementing Regulation, Member States' electricity undertakings in the retail market are expected to apply the reference model defined therein (Article 3) by 5 January 2025 (Article 14).

Pursuant to Article 10 of the Implementing Regulation, and to ensure transparency and non-discrimination of national procedures for access to metering and consumption data, Member States should carry out and keep up to date a mapping of their respective practices at national level. This includes a detailed description and explanation of how the reference model and the procedural steps defined in the Implementing Regulation are performed within their territory and must be reported to the European Commission by 5 July 2025 (Article 10).

## 2. Purpose and scope of this document

To help Member States fulfil their responsibility with regards to the mapping of their national practices expressed in Article 10 of the Implementing Regulation, and complying with the requirements set in Article 13 of the Implementing Regulation, the Commission has produced the present Guidance. The

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<sup>1</sup> Commission Implementing Regulation (EU) 2023/1162 (OJ L 154, 15.6.2023, p. 10).

<sup>2</sup> Electricity Directive (EU) 2019/944 (OJ L 158, 14.6.2019, p. 125).

<sup>3</sup> Digitalising the energy system - EU action plan (COM/2022/552).

development of this document has been accompanied by a series of five workshops on this topic with Member States, co-organised by the Commission and the ENTSO for Electricity (ENTSO-E) and the EU DSO entity. The present document considers the feedback received in these sessions and the draft guidance proposal by the Joint Working Group (JWG) on Data Interoperability of the European bodies of network operators prepared in line with Article 12(a) of the Implementing Regulation. According to Article 10(3) of the Implementing Regulation, Member States' reporting which is due by 5 July 2025 should take into account this guidance developed by the Commission.

Regarding the operationalisation of the technical rules introduced in the Implementing Regulation, it is important to note that Article 23 of Directive (EU) 2019/944 clarifies that the energy data management organisation falls under national jurisdiction and is subject to national decisions. Accordingly, the activities addressed in the Implementing Regulation adhere to these provisions, allowing for the allocation of responsibilities based on what best fits each national context.

Hence, the explanations in this document shall assist Member States in deciding:

- which private or public entity should best be nominated to act as the national competent authority to structure the mapping and report to the European Commission;
- which national processes to map and how to fulfil the requirement to report at least one data access procedure for each national accounting point<sup>4</sup>;
- how a national setting should be expressed, and which information is necessary;
- what to do if a requested information item is not applicable or relevant in the case of a national scenario; and
- what to do if a requested information item cannot be mapped due to a potential implementation gap.

Equally important to consider in these decisions is Article 10(5) of the Implementing Regulation. It states that if a Member State transitions to a new national data management system before 5 January 2025, the reporting may be limited to the new arrangements, provided that this system covers over 90% of final customers by 5 July 2026.

To achieve these objectives, this guidance provides comments for each requested information item stated in the reference model published in the annex of Implementing Regulation (EU) 2023/1162. Furthermore, three typical national settings for data management models are also considered for each one of these items.

It should also be noted that the mappings Member States must submit to comply with the requirements of the Implementing Regulation (EU) 2023/1162 will be published in a single repository jointly maintained by ENTSO-E and EU DSO entity. The primary objective of this repository is to embody the transparency and non-discrimination principles promoted by the Implementing Regulation. It will also

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<sup>4</sup> According to the ENTSO-E / EU DSO entity [proposal](#) to ACER for a Demand Response Network Code (May 2024), 'accounting point' refers to a metering point or virtual metering point under balance responsibility of an entity where the energy supply is provided by an energy supplier, the settlement is performed and where energy supplier change can take place.



address the necessity to enhance awareness and clarity regarding applicable rules by offering in practice a comprehensive overview of implementation details across the European Union for utilities, energy service providers, as well as policy makers.

To fulfil this objective effectively, it is important to receive the national mappings in a common, aligned, and comparable format. Member States are therefore expected to use, as also agreed during the workshops with the national representatives, the Excel-based forms ('template')<sup>5</sup> published alongside this guidance for this purpose. In addition, Member States can provide additional information using supportive documents in either .docx or .pdf formats, if they so wish.

Lastly, if needed, the Joint Working Group on Data Interoperability is open to support the appointed national authorities in completing their submissions by collecting and publishing Frequently Asked Questions. They can be reached for assistance at [jwgdatainteroperability@eudsoentity.eu](mailto:jwgdatainteroperability@eudsoentity.eu).

At the same time, the Commission service in charge of this initiative, remains available for further information.

## 3. Data management models

### 3.1. Common national settings for data management models

As mentioned earlier, three potential national settings are herein presented aimed at enhancing understanding of the expectations outlined in the explanations' sections of this document.

Data management models are typically classified based on the architecture of data storage and exchange. The most widely known models are: the de-centralised model, the centralised model, and the hybrid model<sup>6</sup>.

Based on this, and the insights gathered from the workshops with the Member States, the following three conceptual scenarios were developed, and they are referred to thereafter in this document. Namely,

- Member State A or MS A - using a de-centralised data exchange model;
- Member State B or MS B - using a centralised/national data hub data exchange model; and
- Member State C or MS C - using a hybrid data exchange model.

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<sup>5</sup> The template accompanying this report can be accessed here: [Guidance report – access to metering and consumption data](#).

<sup>6</sup> GEODE Data Management Factsheet 2020: <https://www.geode-eu.org/wp-content/uploads/2020/05/202005-Fact-sheet-GEODE-Data-Management-FINAL.pdf>.

### 3.1.1. Member State A – De-centralised environment



Figure 1: Schematic representation of data model in a decentralised environment<sup>6,7</sup>

According to this scenario, Member State A – MS A – has established an architecture in which data is stored at the source (for example metering information at Distribution System Operator (DSO) or Transmission System Operator (TSO), contract information at supplier, capability data at Distributed Energy Resources (DER), etc.), and systems are communicating directly with each other. Market actors are working together to develop standardised market communication. An example is the Energy Data Exchange in Austria<sup>8</sup>. Data exchange is done explicitly and consciously between different actors and most steps in the procedures of the Implementing Regulation will be applicable.

### 3.1.2. Member State B – A centralised / national data hub environment



Figure 2: Schematic representation of data model in a centralised environment<sup>6,7</sup>

<sup>7</sup> Where 'DSO' stands for Distribution System Operator, 'TSO' for Transmission System Operator, 'ESCO' for Energy Service Company, and 'NRA' for National Regulatory Authority.

<sup>8</sup> See Energy Data Exchange Austria website: [Startseite - EbUtilities](#).

In this case, Member State B, or MS B, has established a data hub to which data is sent and stored. All business processes run on that hub and results are sent back to its client actors. It is operated and developed by a specific party or service provider. Market participants use its functionalities. An example is the data hub established in Finland<sup>9</sup>, Denmark or Poland<sup>10</sup>. In this scenario, much data exchange is done internally within the national data hub. Hence, many of the procedural steps defined in the Annex of the Implementing Regulation (EU) 2023/1162 may be considered internal within one actor, i.e., the data hub operator, and are therefore not applicable for the mapping required in the Implementing Regulation.

### 3.1.3. Member State C – A hybrid environment



Figure 3: Schematic representation of data model in a hybrid environment<sup>6,7</sup>

Under this scenario, the electricity sector in the Member State C, or MS C, has agreed on a combination of the two previous models, the decentralised and the centralised. All market participants can communicate in a de-centralised manner, but in some use cases, there are task-specific central structures. Data is copied sparingly and only within a specific use case context. Also, there might be a centralised permission administrator and multiple de-centralised metered data administrators, like in Spain, where data stays with the DSOs and – alongside accessing and sharing data directly from the DSO - an additional national platform manages data access<sup>11</sup>.

### 3.1.4. Final remarks on data management models

In many Member States, we encounter a diverse array of blends and variations of the archetypical data management classification mentioned earlier. Therefore,

<sup>9</sup> See for example the Fingrid Data Hub website: <https://www.fingrid.fi/en/electricity-market/datahub/>.

<sup>10</sup> The Polish metering data hub is currently under development; for more info see: <https://www.pse.pl/oire>.

<sup>11</sup> See Spanish Datadis service website: <https://datadis.es>.

readers should avoid the temptation to strictly categorise their national setting into these groups when elaborating their mappings. However, experience shows that the conceptual model serves as a valuable means for orientation. For the conceptual models illustrated earlier, there can be two variants of the decentralised and hybrid environments: one featuring a central "front door" for final customers, even if the data are kept at the source, and another lacking any central "front door".

## 4. General clarifications

It should be noted that the Implementing Regulation (EU) 2023/1162 covers both data coming from conventional meters, and from smart metering systems as defined in the Electricity Directive (EU) 2019/944. This should be borne in mind when completing the template<sup>5</sup> (Excel workbook accompanying this report) for reporting the national practices.

In general, those preparing the mappings concerning metering and consumption data are asked to adopt the perspective of final customers and eligible parties when compiling the reporting of their national practices. Their focus should be on thoroughly mapping all information required by these parties when seeking access to the data under consideration. Information that is not used by these parties does not need to be provided, even if its inclusion could potentially enhance the quality of the submission.

Furthermore, during the workshops and the overall engagement process with Member States in the development of this guidance, several general questions were identified. While these questions may not pertain to any specific tables in the Annex of the Implementing Regulation, they do influence the overall approach to completing the reporting of national practices.

The first of these questions refers to situations where multiple national procedures could potentially apply to the reference model. All procedures outlined in the reference model have been designed in a manner that requires Member States to provide mappings covering at least one specified procedure for each accounting point<sup>4</sup>. This means that, for example, for a permission administrator that allows for residential customers to access their data through the DSO while commercial/industrial customers access their data through another service (for example through the supplier), both procedures must be mapped.

Concerning roles, it is important to acknowledge that the Implementing Regulation is notably inclusive. It allows market participants to take on roles and responsibilities as outlined by the reference model either individually or jointly, and to fulfil more than one role. This flexibility is intended to mirror existing data management arrangements across the EU.

Similarly, the Implementing Regulation permits the procedural steps given in the Tables of its Annex to be combined or executed in a different sequence at the national level. In such instances, it is required that the mapping at national level includes a detailed description and explanation of how these procedural steps are carried out, indicating any steps that have been combined and the order in which they are performed.

When preparing the national reporting, if Member States find that certain requested information might not be relevant due to the specific national implementation of the procedure, or its publication could reveal commercially sensitive data, then they should clearly indicate that this specific information cannot be included for those reasons. This was raised during the workshops when discussing the involvement of metering companies in certain market setups, or on details regarding metering devices and their coverage per company. As a general guideline, if any information is omitted from the reporting due to irrelevance in the national context, or for any other reason, this should be clearly stated, and a thorough explanation and justification should be provided.

Several Member States have also sought clarification during the workshops on whether a comprehensive list of entities within a country, such as of permission administrators, is required, and if all actors must be exhaustively listed. The clear answer to this query is yes – a complete list is necessary. From the perspective of eligible parties seeking to conduct business across the Member States, having easy and structured access to market information is important. Hence, if a country features a large number, whether it be 100, 200 or even more, of entities like DSOs or other permission administrators or metering data administrators, the complete roster of these parties must be provided.

#### 4.1. Keeping reporting updated

To ensure the list of roles and responsibilities remains current, Member States should include in their reporting a link to a national website where this information is regularly updated. This website should, at a minimum, include the information mandated by the Implementing Regulation (EU) 2023/1162 (see Article 10). This way, Member States will be able to fulfil in an easy and practical way the required compliance with their responsibility described under Article 10, and in particular paragraph 1 letter a and letter b, that state:

*“1. In order to ensure the transparency and non-discrimination of national procedures for access to data, in line with Article 23 of the Directive (EU) 2019/944, Member States shall (a) **carry out and keep up to date** a mapping of national practices at national level that also includes a detailed description and explanation of how the procedural steps of Tables III.1 to III.6 of the Annex of this Regulation are performed setting out which steps, if any, have been combined, and the order in which the steps are carried out; and (b) **report to the Commission the mapping of national practices referred to in paragraph (a)** which shall be published in a publicly accessible repository to be established pursuant Article 12.”*

If national websites contain and ensure the maintenance of the necessary information, Member States can make a one-time submission of their reports by July 2025. The Commission is ready to take a pragmatic approach to minimise administrative burden. Consequently, the responsible Commission service will retrieve the updated mapping of national practices from the respective websites (provided that the links are included in the initial reporting) where Member States keep their information current. This approach eliminates formal periodical submissions of national practices to the Commission service, thus alleviating additional administrative burdens for national authorities, and promotes practicality.

During the dedicated workshops, another concern emerged regarding accurate reporting when requirements may not be fully met at national level; for instance, if certain players (such as permission or metering data administrators) only partially support for some reason a given functionality. The mapping structure does allow for reporting progress updates. Transparent and accurate statements on implementation status, along with action plans to remedy issues, are essential for eligible parties and the Commission to understand the level of the practical adoption of the European technical rules and potential implementation hurdles.

## 4.2. Other issues

In some countries, digitalised/online application solutions and paper-based processes might coexist for certain energy services. For example, in Member State A, validated historical metering and consumption data can be requested through electronic energy market communication. At the same time – due to decisions of national bodies – it is also possible in a transitional phase to order and share paper printouts of consumption information. When reporting, priority should be given to the digital procedures, or both should be mapped. It is noted that, procedures 5 and 6, concerning smart metering, also follow this rationale.

Currently, access to non-validated near real-time data from smart meters in Member States is primarily enabled through one of three basic solution classes: (1) a local interface, (2) a de-centralised gateway, or (3) a remote access solution. The reference model was designed to allow all three of these scenarios to be mapped.

Lastly, when compiling the national reporting, Member States are reminded to keep in mind that the information provided will be published on a single European reference point – the repository, as per Article 12 of the Implementing Regulation. Hence, it should be ensured that no personal information, email addresses or phone numbers, are included. Instead, stable contact details that remain unaffected by changes in staff or responsibilities should be provided.

## 5. Example of reporting of national practices

There follows an example of reporting of national practices, aligned with the reference model for metering and consumption data, as delineated in Table I to Table IV from the Annex of the Implementing Regulation.

These tables<sup>12</sup> derived from the original ones found in the Annex of the implementing Regulation but supplemented with additional columns, are featuring examples of hypothetical entries, reflecting data management scenarios for fictitious Member States, such as MS A, MS B and MS C, as previously discussed.

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<sup>12</sup> Grey shaded cells in Tables I – IV presented in this document contain information that is available in the original tables (representing the reference model) included in the Annex of the Implementing Regulation (EU) 2023/1162.



This section helps those compiling the national reports by providing specific examples for each table cell, with additional comments for clarity.

Tables I through IV, extracted directly from the Annex of the Implementing Regulation, should be filled using the Excel template<sup>5</sup> accompanying this Guidance document. This template was agreed upon during the dedicated workshops with Member States on this subject, co-organised by the Commission and the JWG of ENTSO-E/EU DSO entity from July 2023 to April 2024.

Table I

*General information on Member State (MS) environments*

ID	Name	Description		Comments to assist MS in completing their national entries
I1	National competent authority	Name Website Official contact	Name of appointed national competent authority. Website of appointed national competent authority. Contact details of the entity responsible for managing the mappings of national practices.	A public or private entity, that is responsible for managing the mappings of national practices. Different entities can be appointed as the national competent authority. It is for Member State to allocate this responsibility.
		Note: This competent authority can be a public or private entity.		
I2	Information on Member State data management set-up	Name  Website  Official contact  National regulatory basis  Documentation	If applicable, name of data management and exchange environment in accordance with Article 23 of Directive (EU) 2019/944.  If applicable, link to website explaining the provisions for data access in a Member State.  Contact details of the entity responsible for national data management provisions.  Reference to the legal basis for the data sharing infrastructure.  A self-sufficient description of the Member State provisions with regards to data access.	The information provided should include the common national name for the data management and exchange environment that is used as a reference for implementing market communication. Furthermore, it should include the legal framework governing access to metering and consumption data. Comprehensive descriptions, specific legal references, and/or web links to relevant information and resources, may also be included.
I3	Information about metered data administrators in a Member State (one mapping per each active metered data administrator in a Member State)	Name  Type of identification  Identification of organisation	Name of the organisation.  ACER registration code, Legal Entity Identifier (LEI), Bank Identifier Code (BIC), Energy Identification Code (EIC), Global Location Number (GLN/GS1) or National Identification Code (NIC).  Code or identification of the organisation (nominated as 'metered data administrator') based on the types of identification mentioned in the previous field.	When more than one Application Programming Interfaces (API) are offered, it is sufficient to map just one, with additional explanations provided as a comment within the national environment context. In terms of contact information, using a neutral or functional box email-address, such as 'office@yasdso.com', is preferable to a personal mailbox like 'john.doe@yasdso.com'. For metering points within the service area of the respective metered data administrator (MDA) or permission administrator (PA), it is important to specify the actual area covered.



GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

ID	Name	Description		Comments to assist MS in completing their national entries
		Website	If applicable, link to website or application that is used to download data.	
		Official contact	Contact details of the entity responsible for data access by final customers or eligible parties.	
		Metering grid area	Description of the set of metering points for which the metered data administrator is administering metered data.	
14	Information about metering point administrators in a Member State (one mapping per each active metering point administrator in a Member State)	Name	Name of the organisation.	Same comments as for I3.
		Type of identification	ACER registration code, Legal Entity Identifier (LEI), Bank Identifier Code (BIC), Energy Identification Code (EIC), Global Location Number (GLN/GS1) or National Identification Code (NIC).	To ensure clarity, if a single metering point administrator (MPA) / metered data administrator (MDA) / permission administrator (PA) covers an entire Member State, indicate 'Whole of MS' to represent this scenario.
		Identification of organisation	Code or identification of the organisation (nominated as 'metering point administrator') based on the types of identification mentioned in the previous field.	
		Website	If applicable, link to website or application that is used to download data.	
		Official contact	Contact details of the entity responsible for data access by final customers or eligible parties.	
		Metering grid area	Description of the set of metering points the metering point administrator is responsible for.	
15	Information about data access provider (at least one actor must be mapped per each metering point in a Member State)	Name	Name of the organisation.	It is possible that the same entity is the data access provider (DAP) as well as the metered data administrator (MDA).
		Type of identification	ACER registration code, Legal Entity Identifier (LEI), Bank Identifier Code (BIC), Energy Identification Code (EIC), Global Location Number (GLN/GS1) or National Identification Code (NIC).	Please explain the identity service providers (ISPs) and the control systems used. If for example BPASS is the <b>Member State B (MS B)</b> implementation of eID/eIDAS (electronic Identification, Authentication and Trust Services), please denominate this by writing 'national eID'.
		Identification of	Code or identification of the organisation based on the types of	

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

ID	Name	Description	Comments to assist MS in completing their national entries
		<p>organisation identification mentioned in the previous field.</p> <p>Website If applicable, link to website of a web application that is used for final customer data access.</p> <p>Official contact Contact details of the entity responsible for final customer data access.</p> <p>Permission management responsibility Metered data administrators for which the data access provider manages final customer data access.</p> <p>Identity service provider Identity service provider utilised by the data access provider to authenticate final customers.</p>	
16	Information about permission administrators in a Member State (at least one mapping per each active permission administrator in a Member State)	<p>Name Name of the organisation.</p> <p>Type of identification ACER registration code, Legal Entity Identifier (LEI), Bank Identifier Code (BIC), Energy Identification Code (EIC), Global Location Number (GLN/GS1) or National Identification Code (NIC).</p> <p>Identification of organisation Code or identification of the organisation based on the types of identification mentioned in the previous field.</p> <p>Website If applicable, link to website of a web application that is used for permission administration.</p> <p>Official contact Contact details of the entity responsible for data sharing.</p> <p>Permission management responsibility Metered data administrators for which the permission administrator manages permissions.  Note: it is also valid for a metered data administrator to utilise several permission administrators, and for a permission administrator to act for multiple metered data administrators.</p> <p>Documentation A self-sufficient explanation of the Member State provisions</p>	<p>'Documentation of access': this may include links to relevant legislation, regulatory decisions, and other pertinent resources.</p> <p>To identify service providers, the eligible party looking for this information might need to register as a third party on the company's website; then, the final customer grants permission to access and use. Furthermore, the final customer can opt to accept or decline further uses or sharing by the third party. Upon this authorisation, access to validated historical metering and consumption data is granted to the eligible party.</p> <p>Note that access to a test environment is required. Eligible parties should have the possibility to test their products and procedures before deploying them. Metered data administrators (MDA) and permission administrators (PA), including any central entity, if so designated by the Member State, must provide eligible parties with access to testing facilities. This enables them to pro-actively address and resolve, as much as possible, technical implementation issues, fine-tune their operations, and ensure that their products and services run smoothly in accordance with the</p>

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

ID	Name	Description	Comments to assist MS in completing their national entries
		<p>of access with regards to utilising access to validated historical metering and consumption data by an eligible party. It is recommended to also include an English version of this documentation.</p> <p>Identity service provider Identity service provider utilised by the permission administrator to authenticate final customers.</p> <p>Eligible party on-boarding Either a link to the English documentation of the on-boarding procedure or a complete, self-sufficient explanation in English for how an eligible party can on-board to the production environment to utilise access to validated historical metering and consumption data by an eligible party.</p> <p>Eligible party test on-boarding If applicable, either a link to the English documentation of the on-boarding procedure or a complete, self-sufficient explanation in English for how an eligible party can on-board to a test environment to utilise access to validated historical metering and consumption data by an eligible party.</p> <p>Price list for access to data by eligible parties Exhaustive description of all costs for eligible parties.</p>	<p>procedures outlined in the Implementing Regulation (EU) 2023/1162.</p>
17	Information about standardised near real-time interfaces of smart meters or smart metering systems in a Member State as by Article 20 point (a) of Directive (EU) 2019/944 (at least one mapping)	<p>Name Type designation of the meter model.</p> <p>Basic class of interface utilised Provide voltage level for which meter model is used.</p> <p>For medium and high voltage, please specify in detail standardised interface or remote access being used.</p> <p>For low voltage, answers should follow the classification</p>	<p>'Name' refers to the meter model in use, not to the name of the interface.</p> <p>When indicating the vendor's name, provide complete and clear vendor names (for example 'Davies + Smith' instead of 'D+S') as well as the standard or proprietary solution used.</p> <p>If there is no specific name for the data format used, or for the standard, or if it is a national / hard to find standard, always include in the national reporting a web link containing</p>

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

ID	Name	Description	Comments to assist MS in completing their national entries
	for each interface specification in use for smart meters deployed after July 4 2019 in a Member State must be applicable)	<p>(choose applicable option(s)):</p> <ul style="list-style-type: none"> <li>• H1 (as defined in CEN/CENELEC/ETSI TR 50572:2011<sup>13</sup>)</li> <li>• H2 (as defined in CEN/CENELEC/ETSI TR 50572:2011)</li> <li>• H3 (as defined in CEN/CENELEC/ETSI TR 50572:2011)</li> <li>• Remote access (specify in detail)</li> </ul> <p>Vendor                      Name of the vendor organisation of the smart meter or smart metering system components</p> <p>Metering point administrators using the model                      Identifiers of the metering point administrators using the model.</p> <p>Physical interface standard                      Name and version of the standard used.</p> <p>Communication protocol                      Name and version of the standard used.</p> <p>Data formats                      Name and version of the standard used.</p>	this information and/or a detailed explanation. If there are multiple standards in use, please map and report each standard accordingly.

<sup>13</sup> CEN/CLC/ETSI/TR 50572:2011 - 'Functional reference architecture for communications in smart metering systems', by CEN/CLC/ETSI Coordination Group on Smart Meters.

Table II

## Roles

Role name	Role type	Role description	Examples of possible entries	Comments to assist MS in completing their national entries
Final customer	Business	As defined in Article 2(3) of Directive (EU) 2019/944. This refers to a party connected to the grid that purchases electricity for its own use. Note: this also includes the case of active customer and participants of renewable energy communities or citizen energy communities.	Households (natural persons), including active customers that produce electricity behind the meter for their own consumption. Commercial consumers (for example Small and Medium Enterprises - SMEs) connected to distribution or transmission grid. Note: some large consumers (industrial or commercial) connected to transmission grid may have special arrangements concerning their data access and exchange; this is possible and should be accordingly reported.	There could be several mappings, depending on the different groups of final customers. Member States should provide mappings for every group of final customers. For every mapping provided: all types of final customers who are allowed to take part in the procedure must be listed. If there are customers excluded from the default procedure, a list of the excluded final customers should also be provided.
Competent authority	Business	A competent authority could be a public or private entity in a Member State.	Same parties as those in Table I point I1: 'National Competent Authority'.	The competent authority, as a role in the described procedures, has a task of keeping up-to-date and publishing the national mappings according to the reference model. In decentralised data exchange environments, the competent authority can be an association that brings together the relevant parties, organising and managing the information exchange on the electricity market.
Eligible party	Business	An 'eligible party' is an entity offering energy-related services to final customers, such as suppliers, transmission and distribution system operators,	<u>Eligible parties based on legal provisions:</u> <ul style="list-style-type: none"> <li>• Transmission system operator(s)</li> </ul>	All kinds (types) of parties that are allowed to assume the role

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Role name	Role type	Role description	Examples of possible entries	Comments to assist MS in completing their national entries
		delegated operators and other third parties, aggregators, energy service companies, renewable energy communities, citizen energy communities and balancing service providers, as far as they offer energy related services to final customers.	<p>(TSO)</p> <ul style="list-style-type: none"> <li>• Distribution system operators (DSO)</li> <li>• Energy Supplier (when contracted with customer).</li> </ul> <p><u>Eligible parties based on customer's permission:</u></p> <ul style="list-style-type: none"> <li>• Energy Supplier (with no supply contract with customer)</li> <li>• ESCO – Energy Service Company</li> <li>• Aggregator</li> <li>• Renewable energy communities</li> <li>• Citizen energy communities</li> <li>• Balancing service providers</li> <li>• Delegated operator and other third parties as far as they offer energy related services to final customers.</li> </ul>	<p>of eligible party in a given procedure, should be listed. The role can be assumed based on a legal or contractual obligation.</p> <p>For example, a supplier is eligible for consumption data of its customers that is required for billing purposes. The energy supplier's right to access metering data for billing purposes typically stems from legal provisions. In such cases, the supplier does not need any additional permission from the final customer and not to be registered by the permission administrator.</p> <p>Moreover, the reporting can also explain why certain parties are explicitly excluded from being considered an eligible party as per the definition of the role.</p>
Metered data administrator	Business	A party responsible for storing validated historical metering and consumption data and distributing these data to final customers and/or eligible parties.	Same parties as those in Table I point I3: 'Information about metered data administrators in a Member State'.	Usually, the list of metered data administrator(s) for the procedures is the same as stated in Table I. If there is some different set up of metered data administrator(s) for a given procedure, then the specific list of parties playing the role of metered data administrator should be provided.

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Role name	Role type	Role description	Examples of possible entries	Comments to assist MS in completing their national entries
Metering point administrator	Business	A party responsible for administrating and making available the characteristics of a metering point, including the registrations of eligible parties and final customers linked to the metering point.	Same parties as those in Table 1 point I4: 'Information about metering point administrators in a Member State'.	<p>Moreover, it can be explained in the reporting why certain types of parties are excluded from serving as metered data administrator for a given procedure.</p> <p>Usually, the list of metering point administrator(s) for the procedures is the same as stated in Table I. If there is some different set up of metering point administrator(s) for a given procedure, then the specific list of types of parties playing the role of metering point administrator should be provided. Moreover, it can be explained in the reporting why certain types of parties are excluded from serving as metering point administrator for a given procedure.</p>
Data access provider	Business	A party responsible for facilitating access, including in cooperation with other parties, to validated historical metering and consumption data to the final customer or to eligible parties.	Same parties as those in Table I point I5 'Information about data access provider in a Member State.	<p>Usually, the list of data access provider(s) for the procedure is the same as stated in Table I. If there is some different set up of data access provider(s) for a given procedure, then the specific list of types of parties playing the role of data access provider should be provided. Moreover, it can be explained in the reporting why certain types of parties are excluded</p>

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Role name	Role type	Role description	Examples of possible entries	Comments to assist MS in completing their national entries
Permission administrator	Business	A party responsible for administering a register of data access permissions for a set of metering points, making this information available to final customers and eligible parties in the sector, on request.	Same parties as those in Table I point 16 'Information about permission administrators'.	<p>from being data access provider for a given procedure.</p> <p>Usually, the list of permission administrator(s) for the procedure is the same as stated in Table I. If there is some different set up of permission administrator(s) for a given procedure, then the specific list of the parties playing the role of permission administrator should be provided.</p>
Identity service provider	Business and/or System	A party that manages identity information; issues, stores, protects, keeps up to date, and manages identity information for a natural or legal person and provides authentication services to eligible parties and final customers.	<p>eIDAS compliant infrastructure (governance service).</p> <p>Bank Assurance Company.</p> <p>Same parties as those in Table I point 16 'Information about permission administrators in a Member State'.</p> <p>Same parties as those in Table I point 13 'Information about metered data administrators in a Member State'.</p>	<p>This role can be assumed by a specific party or can be fulfilled through a relevant System.</p> <p>The eIDAS compliant infrastructure is usually provided by governance agendas as a system service.</p> <p>Banks or insurance companies as well as other relevant actors may also provide identity services to other parties.</p> <p>As a common solution the identity service provider role will be assumed by the same party which has the role of metered data administrator, permission administrator or data access provider.</p>



GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Role name	Role type	Role description	Examples of possible entries	Comments to assist MS in completing their national entries
Meter operator	Business and/or System	A party responsible for installing, maintaining, testing, and decommissioning physical meters.	<p>List of DSO(s) being meter operator(s) for the distribution grid in a Member State or link to the website where such a list is provided and is regularly updated (: current list).</p> <p>Similarly, list of TSO(s) being meter operator(s) for transmission grid in a Member State, or link to a website where current list is provided.</p> <p>List of independent meter operators in a Member State; for example Messstellenbetreiber (MSB) in Germany or link to the website where current list is provided.</p>	Usually, DSO and TSO manage the metering infrastructure for their respective grids. However, in some Member States a liberalised market model for metering infrastructure has been implemented, hence introducing independent meter operators.
Smart meter	System	<p>An electronic metering device deployed within a smart metering system as defined in the Article 2(23) of the Directive (EU) 2019/944.</p> <p>Note: Such a smart metering system is supporting the functionalities described in Article 20 of Directive (EU) 2019/944.</p>	-	Covered in Table I.
Near real-time data consumption system	System	<p>A system or device that obtains the flow of non-validated near real-time data from a smart metering system as referred to in Article 20, first subparagraph, point (a) of Directive (EU) 2019/944.</p> <p>Note: this could be for example an energy management system, in-home display or another device.</p>	-	Any information on In Home Displays (IHDs) or similar devices provided in the context of the smart metering system, would be appreciated.

**Table III**  
*Procedure Conditions*

No.	Procedure name	Primary actor	Pre-condition	Comments
1	Access to validated historical metering and consumption data by the final customer	Final customer	Final customer is on-boarded.	No national reporting is expected with reference to this table, which is included here for completeness purposes.
2	Access to validated historical metering and consumption data by an eligible party	Final customer	Final customer is on-boarded. Eligible party is on-boarded.	No national reporting required.
3	Termination of service by an eligible party	Eligible party	Active permission is available or other legal or contractual basis.	No national reporting required.
4	Revocation of an active permission by the final customer	Final customer	Active permission is available.	No national reporting required.
5	Activate near real-time data flow from smart meter or smart metering system	Final customer	Smart meter or smart metering system is installed in metering point of the final customer.	No national reporting required.
6	Read near real-time data from smart meter or smart metering system	Near real-time data consumption system	Steps in Procedure 5 have been accomplished.	No national reporting required.

Table III.1

*Procedure 1 - Access to validated historical metering and consumption data by the final customer*

Procedure name		Access to validated historical metering and consumption data by the final customer					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
1.1	Identify data access provider	Final customers identify the data access provider that is responsible for their metering points under consideration.	Competent authority	Final customer	[not relevant]	<p><b>Member State A (MS A):</b> Final customer finds the website of their TSO/DSO (also the identity data access provider) as indicated in their bill.</p> <p><b>MS B and MS C:</b> Final customer gains access to datahub end user portal on 'https://thisisourhub.io'.</p>	For the reporting, it is important to provide high-level information on how people can find the organisation responsible for this role or access the online application. <b>IMPORTANT:</b> It is not necessary for the national competent authority, for instance, to provide an online service to query/ search for their particular identity data access provider.
1.2	Authenticate final customer	Final customers identify themselves to the data access provider.	Final customer	Data access provider	[not relevant]	<p><b>MS A:</b> All TSO/DSO portals support eIDAS/EU Logins. Final customers authenticate using their eID.</p> <p><b>MS B:</b> Final customers log in to data hub using their national eIDs.</p> <p><b>MS C:</b> Permission administrator maintains their own credentials for final customers that are assigned to users at the first login.</p>	Describe how final customers can log in to the data access provider online applications.
1.3	Check credentials	Data access provider transfers authentication information to identity service provider.	Data access provider	Identity service provider	[not relevant]	-	In certain settings, this step might not be distinguishable for mapping purposes. Nonetheless, it is included for the sake of completeness.
1.4	Inform final customer of credential check results	Data access provider communicates validation result and provides a meaningful indication in	Data access provider	Final customer	[not relevant]	In case of successful validation, final customer gains access to the data hub end user portal. In case of failed authorisation, the final customer is shown	

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Access to validated historical metering and consumption data by the final customer					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
		case of an invalid request.				an error message on the login screen.	
1.5	Link final customer and metering point	Final customer finds out metering point id to request data for.	Data access provider	Final customer	A – Metering point identification	In the online application under <My Consumption> <My accounting points> final customer gets a list of his accounting points and selects the one(s) to download data for.	
1.6	Request data	Final customer specifies the requested data.	Final customer	Data access provider	C - Metered data request	For the selected accounting point, final customer can select a start time and end time in a popup that opens when the button "Download my data" is clicked. The data can be requested until 8 years from the present (legal retention period), or a shorter period depending on the 'MOVEIN' event of the final customer.	
1.7	Validate request at data access provider	The data access provider validates the specified metered data request and provides a meaningful indication in case of an invalid request.	Data access provider	Final customer	D - Request validation information	Validation result is displayed in the online application. If validation is successful, the download starts.	Unless there is a specific requirement to highlight particular solutions, there is no need to go further into detail.
1.8	Forward request to metered data administrator for validation	Check if the specification of the requested data in terms of time, scope, accessibility etc. is acceptable.	Data access provider	Metered data administrator	C - Metered data request	If data from more than 3 years back is requested or if the meter is not communicating, an error message is shown.	This can only be marked as "not applicable" if only standard consistency and entitlement checks are done, or if this step is executed internally within the same platform.
1.9	Validate specified request at metered data	The metered data administrator validates the specified metered data request.	Metered data administrator	Data access provider	D - Request validation information		In specific settings where this step may not be applicable, like when it occurs within a single platform (e.g., within a data hub or a Transmission System Operator (TSO)/Distribution

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Access to validated historical metering and consumption data by the final customer					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
	administrator						System Operator (DSO) portal), mapping is not expected. In these cases, this explanation serves as a reference.
1.10	Inform final customer about validation results	If the input is not valid, a meaningful message should indicate the reason.	Data access provider	Final customer	D - Request validation information	-	The mapping, where applicable, should flag if there is a significant deviation or if meaningful notification messages are not available.
1.11	Notify metered data administrator	Metered data request needs to be notified in order to provide the requested data package.	Data access provider	Metered data administrator	C - Metered data request	<p><b>MS A and MS B:</b> not applicable.</p> <p><b>MS C:</b> National permission administrator' portal notifies the correct metered data administrator to prepare and forward the data package for the final customer.</p>	<p>In specific settings where this step may not be applicable, like when it occurs within a single platform (e.g., within a data hub or a Transmission System Operator (TSO)/Distribution System Operator (DSO) portal), mapping is not expected. In these cases, this explanation serves as a reference.</p> <p>If, e.g., the permission administrator role is fulfilled by a different actor like the metered data administrator role, it is helpful to identify how procedures are implemented.</p>
1.12	Transfer data	Final customers receive without undue delay the requested data.	Metered data administrator	Final customer	E – Validated historical data	<p><b>MS A and MS B:</b> Download starts immediately from the DSO online application / national data hub.</p> <p><b>MS C:</b> Connecting TSO/DSO sends meter data package to the national permission</p>	

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Access to validated historical metering and consumption data by the final customer					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
						administrator, who then shows it as a downloadable file on Downloads/My consumption records. From there, final customers may download the package.	

**Table III.2**

*Procedure 2 - Access to validated historical metering and consumption data by an eligible party*

Procedure name		Access to validated historical metering and consumption data by an eligible party					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
2.1	Identify permission administrator	Final customers identify the permission administrator that is responsible for their metering points under consideration.	Competent authority	Final customer	[not relevant]	<p><b>MS A:</b> Final customer identifies web portal responsible TSO/DSO as permission administrator.</p> <p><b>MS B and C:</b> Final customer gains access to central permission administrator end user portal on a website.</p>	Note: it is not required to include a query-based search option on the national competent authority's website. Instead, it suffices to provide final customers with an area overview of active permission administrators and an approach/guidance on identifying them (e.g. for locating relevant information on the bill).
2.2	Identify eligible party	Final customers identify the eligible party to which they	[not relevant]	Final customer	[not relevant]	<p><b>MS A, B and C:</b> Identification of the eligible party is</p>	To identify an eligible party, the registration of that party is

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Access to validated historical metering and consumption data by an eligible party					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
		intend to make data available.				done through an individual agreement of this party and the final customer.	needed in the sharing data platform (Datahub, Data Exchange Authority or equivalent).
2.3	Preset permission details	Specification of data needed by the eligible party. Optional (but broadly available) means for specifying data needed (for example through a click on a 'share my data'-button) in order to avoid that the final customer has to do complex inputs.	Eligible party	Permission administrator	G – Preset permission information	<b>MS A:</b> Eligible parties can send a specification to the TSO/DSO. <b>MS B and C:</b> Eligible parties are able to preset permission details to central permission administrator.	Optional step to avoid that the final customer has to do complex inputs.
2.4	Authenticate final customer	Final customers identify themselves to the permission administrator.	Final customer	Permission administrator	[not relevant]	<b>MS A:</b> The final customers identify themselves at the TSO/DSO level. The TSO/DSO acts as identity service provider. <b>MS B and C:</b> The final customers identify themselves centrally at the ISP used by the permission administrator.	Note, the authentication schemes for natural and legal persons can be different.
2.5	Check credentials	Permission administrator transfers authentication information to identity service provider.	Permission administrator	Identity service provider	[not relevant]	<b>MS A:</b> Credentials are checked in the TSO/DSO portal which serves as the identity service provider. <b>MS B and C:</b> Credentials are checked at central identity service provider used by the permission administrator.	No additional information might be required for this step.
2.6	Inform final customer of credential check	Permission administrator communicates validation result and provides a	Permission administrator	Final customer	[not relevant]	<b>MS A:</b> Validation results in the web-portal of the TSO/DSO which serves as	

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Access to validated historical metering and consumption data by an eligible party					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
	results	meaningful indication in case of an invalid request.				identity service provider. <b>MS B and C:</b> Validation results in central identity service provider.	
2.7	Link final customer and metering point	Final customer finds out metering point id to request data for.	Permission administrator	Final customer	A – Metering point identification	<b>MS A:</b> The linking procedure of final customer and metering point is executed by the TSO/DSO who has the role of the permission administrator. <b>MS B and C:</b> The linking procedure is executed by the central permission administrator.	The final customer is able to select the available metering point(s).
2.8	Specify attributes of permission	Final customers specify the data they intend to make available and confirm their permission to the permission administrator. This can also be assisted by pre-specified permission requests coming from the eligible party through step 2.3.	Final customer	Permission administrator	H - Basic permission information	<b>MS A:</b> The final customer can specify attributes of the permission through the eligible party or the TSO/DSO. <b>MS B and C:</b> The final customer can specify attributes of the permission in the web user portal of the permission administrator with or without a pre-specified permission request.	Pre-specification of attributes can be done by either an eligible party (step 2.3) or final customer.
2.9	Validate specified permission request at permission administrator	The permission administrator validates the specified permission request and provides a meaningful indication in case of an invalid request.	Permission administrator	Final customer	D - Request validation information	<b>MS A:</b> Final customer is informed of validation result by the TSO/DSO or the eligible party. <b>MS B and C:</b> The central permission administrator validates permission requests and communicates directly to final customer.	
2.10	Forward	If applicable, check if the	Permission	Metered data	H - Basic	<b>MS A:</b>	Information to be provided if



GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Access to validated historical metering and consumption data by an eligible party					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
	permission request to metered data administrator for validation	specification of the requested data in terms of time, scope, accessibility, entitlement, etc. is acceptable.	administrator	administrator	permission information	If applicable: Request is already validated. TSO/DSO is permission and metered data administrator. <b>MS B and C:</b> If applicable: The central permission administrator validates permission requests, no further validation is needed.	step is relevant to map.
2.11	Validate specified permission request at metered data administrator	If applicable, the metered data administrator validates the specified permission request.	Metered data administrator	Permission administrator	D - Request validation information	-	Information to be provided if step is relevant to map.
2.12	Inform final customer about validation result	If the input is not valid, a meaningful message should indicate the reason.	Permission administrator	Final customer	D - Request validation information	-	No additional information might be necessary for this step.
2.13	Store permission	Permission administrator stores the permission, together with a unique identifier for reference and a timestamp indicating the creation.	Permission administrator	Permission administrator	I – Established permission information	<b>MS A:</b> Permission is stored by the TSO/DSO as permission administrator. <b>MS B and C:</b> The central permission administrator stores the permission.	No additional information might be necessary for this step.
2.14	Notify final customer	The permission administrator informs the final customer that the permission has been established.	Permission administrator	Final customer	I – Established permission information	<b>MS A:</b> The final customer is informed of the granted/established permission through the TSO/DSO web portal, or the notification is inherently conveyed during the eligible party's initiation of service. <b>MS B and C:</b> The final customer is directly notified about the established permission in	

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Access to validated historical metering and consumption data by an eligible party					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
						the web user interface of the permission administrator.	
2.15	Notify eligible party	The permission administrator informs the eligible party that the permission has been established.	Permission administrator	Eligible party	I – Established permission information	<b>MS A, B and C:</b> Upon granting/establishing permission, the eligible party is directly informed by the central / decentralised permission administrator using appropriate tokens and response codes.	The notification of eligibility can occur through various means, either by pushing information to the recipient or enabling them to pull it themselves.
2.16	Notify metered data administrator	Optional step. The permission administrator informs the metered data administrator that the permission has been established.	Permission administrator	Metered data administrator	I – Established permission information	<b>MS A and B:</b> If applicable: TSO/DSO or central permission administrator is also the metered data administrator. <b>MS C:</b> If applicable: The eligible party will send data request with reference to the relevant permission.	Information to be provided if step is relevant to map.
2.17	Transfer already available data	Data is transferred from the metered data administrator as specified in the permission either until the requested reading end point or the current timestamp (for instances where the requested reading end point is in the future) to the eligible party.  Note: Characteristics for the <u>trigger</u> of the transfer of that sort of data shall be mapped against this step.	[not relevant]	[not relevant]	[not relevant]	<b>MS A, B and C:</b> Transfer of data is initiated through a one-time trigger event from the market process or by utilising trigger information specified in the token.	
2.18	Transfer of data that gets	For intervals that are not currently available but will be	[not relevant]	[not relevant]	[not relevant]	<b>MS A, B and C:</b> Data transmission occurs when	Data transfer will be carried out according to transmission

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Access to validated historical metering and consumption data by an eligible party					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
	available in the future	in a future point in time – but also covered by the permission – the respective data is transferred from the metered data administrator using the indication defined by the attribute 'Transmission schedule' of information object described in Table IV. Note: Characteristics for the <u>trigger</u> of the transfer of that sort of data shall be mapped against this step.				available; settings done by eligible party or metered data administrator (based on availability of data).	schedules. The characteristics of the trigger for transferring this type of data should be mapped under this step.
2.19	Transfer data	Data is actually being transferred to the eligible party. Note: Communication approach (for example 'pull via REST API', 'push via message-based communication'), prerequisites and characteristics of the <u>actual transfer</u> shall be mapped in this step.	Metered data administrator	Eligible party	F - Validated historical data with final customer information	<b>MS A and C:</b> Data can be transferred through various options, including the TSO/DSO User Portal, email, or automatically from decentralised metered data administrators. The eligible party has access to multiple automatic methods, such as push or pull. <b>MS B:</b> The eligible party retrieves validated consumption data from the central datahub using different available options (push / pull).	The communication approach, prerequisites and characteristics of the actual transfer should be mapped in this step.

Table III.3

## Procedure 3 – Termination of service by an eligible party

Procedure name		Termination of service by an eligible party					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
3.1	Trigger termination of permission	Eligible party considers the service or purpose referred by the permission terminated.	Eligible party	-	[not relevant]	<b>MS A, B and C:</b> Termination process is executed by the eligible party.	
3.2	Execute permission end tasks	The eligible party shall perform all tasks required to fulfil its related responsibilities immediately and without undue delay and in accordance with Regulation (EU) 2016/679.	Eligible party	-	[not relevant]	<b>MS A, B and C:</b> The eligible party must fulfil related responsibilities of service termination.	The eligible party is obliged to fulfil its related responsibilities in accordance with Regulation (EU) 2016/679.
3.3	Notify permission administrator	The eligible party immediately and without unnecessary delay shall inform the permission administrator.	Eligible party	Permission administrator	J – Notification of termination of service	<b>MS A:</b> The eligible party notifies the TSO/DSO as permission administrator. <b>MS B and C:</b> The eligible party notifies the central permission administrator about the termination of service.	Notification of the permission administrator can be done through messaging or through web user portals.
3.4	Notify final customer	The permission administrator makes available the information that the permission has been revoked to the final customer.	Permission administrator	Final customer	J – Notification of termination of service	<b>MS A, B and C:</b> The final customer can check the TSO/DSO web portal or web user interface of the central permission administrator.	
3.5	Notify metered data administrator	The permission administrator forwards the respective notification to the metered data administrator.	Permission administrator	Metered data administrator	J – Notification of termination of service	<b>MS A, B:</b> If applicable: TSO/DSO or central permission administrator is also the metered data administrator. <b>MS C:</b> If applicable: Notification is not needed; metered data administrator checks	Information to be provided if step is relevant to map.

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Termination of service by an eligible party					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
3.6	End of data sharing	The metered data administrator stops transferring data to the eligible party.	Metered data administrator	Eligible party	J – Notification of termination of service	<p>permission with each data request.</p> <p><b>MS A and C:</b> No data is available for the eligible party after termination of service from the TSO/DSO as metered data administrator.</p> <p><b>MS B:</b> No data will be transferred after termination of service by the central metered data administrator (datahub).</p>	No data will be shared with the eligible party. The mechanisms to ensure that there is no data transmission may vary. Examples include verifying permission for each data request and ceasing data push for services that have been revoked.

Table III.4

*Procedure 4 – Revocation of an active permission by the final customer*

Procedure name		Revocation of an active permission by the final customer					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
4.1	Identify permission administrator	Final customers identify the permission administrator that is responsible for their metering points under consideration.	Competent authority	Final customer	[not relevant]	<b>MS A, B and C:</b> See #2.1	See #2.1 (procedure 2, step 1)
4.2	Authenticate final customer	Final customers identify themselves to the permission administrator.	Final customer	Permission administrator	[not relevant]	<b>MS A:</b> See #2.4	See #2.4 (procedure 2, step 4)
4.3	Check credentials	Permission administrator transfers authentication	Permission administrator	Identity service provider	[not relevant]	<b>MS A:</b> Credentials are checked in the	No additional information might be necessary for this step. See also

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Revocation of an active permission by the final customer					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
		information to identity service provider.				TSO/DSO portal that plays the role of the identity service provider. <b>MS B and C:</b> Credentials are checked at the level of the identity service provider used by the central permission administrator.	step #2.5 (procedure 2, step 5)
4.4	Inform final customer of credential check results	Permission administrator communicates validation result and provide a meaningful indication in case of an invalid request.	Permission administrator	Final customer	[not relevant]	<b>MS A:</b> See #2.6	See #2.6 (procedure 2, step 6)
4.5	List of permissions	Permission administrator makes available to the final customer a list of active and expired permissions he has previously given.	Permission administrator	Final customer	I – Established permission information	<b>MS A:</b> Permissions are available for the final customer through the TSO/DSO portal. <b>MS B and C:</b> The central permission administrator web user interface gives an overview of permissions to the final customer.	
4.6	Trigger permission revocation (explicit)	The final customer indicates to the permission administrator which permission shall be revoked.	Final customer	Permission administrator	I – Established permission information	<b>MS A:</b> The final customer can identify and revoke the permission through the TSO/DSO web portal. <b>MS B and C:</b> The final customer selects the permission to be revoked via the web user portal of the central permission administrator.	
4.7	Receive change of metering point entitlement	External reasons (for example, a move-out) lead to an invalidation of the	Metering point administrator	Metered data administrator	[not relevant]		Metering point administrator and metered data administrator roles could be combined.

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Revocation of an active permission by the final customer					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
	(implicit)	entitlement of a final customer to a metering point. The metering point administrator informs the metered data administrator about these events.					In that case, no additional information might be necessary for this step.
4.8	Notify permission administrator	Metered data administrator informs the permission administrator about the necessity to revoke all permissions for the metering point.	Metered data administrator	Permission administrator	I – Established permission information	<p><b>MS A and B:</b> No notification is needed; both roles (metered data administrator and permission administrator) are combined.</p> <p><b>MS C:</b> The decentralised metered data administrator notifies the central permission administrator to revoke all permissions for the metering point. Permission management occurs in the central platform, and as a result the metered data administrator is not aware of any permit termination.</p>	No additional information might be necessary for this step.
4.9	Notify metered data administrator	The permission administrator informs the metered data administrator about the revocation.	Permission administrator	Metered data administrator	I – Established permission information	<p><b>MS A, B:</b> If applicable, TSO/DSO or central permission administrator is also the metered data administrator.</p> <p><b>MS C:</b> If applicable, the metered data administrator will check the validity of each data request from an eligible party regarding the permissions. Permission revocation management occurs through the central platform without the intervention of the metered data administrator.</p>	Information to be provided if step is relevant to map.

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Procedure name		Revocation of an active permission by the final customer					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
4.10	End data sharing	The metered data administrator must not transfer data under the scope of the revoked permission anymore.	Metered data administrator	[not relevant]	[not relevant]	<p><b>MS A and C:</b> After permission revocation from the TSO/DSO as the metered data administrator, no data is available for the eligible party. After permission revocation, no data is available for the eligible party from the platform.</p> <p><b>MS B:</b> No data will be transferred after revocation of permission by the central metered data administrator (datahub).</p>	<p>No data will be transferred to an eligible party. The mechanisms to ensure that no data is sent can differ.</p> <p>Examples include permission checks per data request, or deactivating push actions resulting from revoked permissions.</p>
4.11	Notify eligible party	The permission administrator must inform the affected eligible party immediately and without unnecessary delay.	Permission administrator	Eligible party	I – Established permission information	<p><b>MS A, B and C:</b> Once permission revocation is complete, the eligible party is notified by the TSO/DSO (acting as the permission administrator) or the central permission administrator.</p>	
4.12	Execute permission end tasks	The eligible party performs all tasks required to fulfil its related responsibilities immediately and without undue delay and in accordance with Regulation (EU) 2016/679.	Eligible party	[not relevant]	[not relevant]	See #3.2	See #3.2 (procedure 3, step 2)
4.13	Notify final customer	The permission administrator makes available the information that the permission has been revoked to the final customer.	Permission administrator	Final customer	I – Established permission information	See #3.4	See #3.4 (procedure 3, step 4)



**Table III.5**

*Procedure 5 – Activate near real-time data flow from smart meter or smart metering system (where applicable)*

Procedure name		Activate near real-time data flow from smart meter or smart metering system (where applicable)					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
5.1	Identify meter operator	Final customer finds out contact information for responsible party to activate data flow.	Competent authority	Final customer	[not relevant]	The final customer identifies the meter operator in his/her connection agreement. In the Member State, the meter operator is consistently the connecting system operator, so the final customer contacts that organisation.	Final customer finds out contact information for the responsible party to activate data flow.
5.2	Final customer requests near real-time data flow to be turned on	Final customer sends meter operator the necessary information to make data flow accessible.	Final customer	Meter operator	M – Data flow activation request		Not necessarily a standardised procedure; may differ among various meter operators. Different data formats may be used depending on hardware manufacturers. Please keep in mind that we need a mapped procedure for ALL smart metering systems rolled out, so all meter models and configurations need to be covered. If this is not the case, a justification must be provided.
5.3	Provide meter credentials	Meter operator sends the final customer all information necessary to consume and/or decrypt data flowing out of the meter.	Meter operator	Final customer	N – Confirmation of data flow activation		

Table III.6

## Procedure 6 – Read near real-time data from smart meter or smart metering system

Procedure name		Read near real-time data from smart meter or smart metering system					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
6.1	Connect near real-time data consumption system to meter	If applicable, final customer connects near real-time data consumption system with near real-time interface and provides credentials or certificates as defined by national procedures.	Final customer	[not relevant]	[not relevant]	<p>The final customer connects their near-real time data system to the meter using an RJ12 cable. Specifications can be found here [...].</p> <p>The final customer connects their near-real time data system to the meter using an optical interface of type XYZ. Specifications can be found here [...].</p> <p>The final customer connects their near-real time data system to the meter through in-home PLC communication. Specifications and readers can be found here [...].</p> <p>DSOs connect near-real time data system through the smart metering systems of the DSOs.</p>	The background for this question is the different implementation by Member States of the requirements of Article 20(a) of the Directive (EU) 2019/944. Some provide a standard interface in the form of an optical interface, while others offer the option of an RJ12 or Ethernet interface. More recent implementations even write non-validated near real-time consumption data to the in-house electricity system, to be read via power line communication (PLC).
6.2	Transfer data through near real-time interface	Push or pull data through meter's (local or remote) near real-time data interface.	Smart meter or smart metering system	Near real-time data consumption system	O – Raw meter data	This step is integrated in 6.1. Data transfer starts immediately after connection of the near real-time data consumption system. The final customer may read the data using DLMS/COSEM standards and their PC' serial interface. The data communication standard is CBNSD in configuration XXX. An API call is made by a central platform to the	Please provide a detailed description of the steps required to connect/receive these data streams.

Procedure name		Read near real-time data from smart meter or smart metering system					
Step No.	Step	Step description	Information producer	Information receiver	Information exchanged (IDs)	Examples of possible entries	Comments to assist MS in completing their national entries
6.3	Interpret data	Near real-time data consumption system processes the data that was received in the previous step. If required, it de-crypts the data using the cypher provided by the meter operator in step 5.3. It is recommended that at the end of step 6.3, attributes of information object P must be available in a form that can easily be used in the follow-up processes. When mapping this step, it is not enough to refer to a standard - descriptions of all necessary steps must be provided exhaustively. Note: Further use, processing or transfer of process-able meter data is not part of this reference model.	Near real-time data consumption system	Near real-time data consumption system	P – Processable meter data	smart metering system of the DSO to request the data in near real time. The near real time data is shown through the central platform interface.  Detailed specifications are required to interpret the data accessible to final customers. Data received through the standardised interface can be de-crypted using the cypher received from the meter operator in step 6.1. After decryption, the message contains information such as [...].	Specifications may vary depending on the hardware type used. Please refer to relevant standards (as applicable) and provide a detailed overview of the connection requirements, preferably in English.

**Table IV**  
*Information objects exchanged*

Information exchanged, ID	Name of information	Description of information exchanged		Examples of possible entries	Comments to assist MS in completing their national entries
A	Metering point identification	Metering point identifier	Unique identifier for the metering point within the metered data administrator's meter identification space.	38ZEE-10000001-S (:national example of the attribute value); 'mRID' (:technical notation of the information exchange(attribute) used)  1762580	Energy Identification Code - EIC code ; code for metering points or for accounting points   National code
		Reading start timestamp [B1]	Start of the time interval covered by the data package.	01.10.2023 00:00:00 (:national example of the attribute value); 'subjectPeriodFrom' (:technical notation of the information exchange(attribute) used)	Date and time
B	Metered data specification	Reading end timestamp [B2]	End of the time interval covered by the data package.	31.10.2023 23:45:00 (national example of the attribute value)  'subjectPeriodTo' (:technical notation of the information exchange(attribute) used)	Date and time
		Direction [B3]	Flow direction metered by the metering point. This can be either solely production, consumption, or combined.	A+ / A-	Active energy up / down
		Energy product [B4]	Energy product measured by the metering point (for example, active energy, re-active energy).	A+, A- / R+, R- kWh, MWh / kvarh, Mvarh	Active / Reactive energy
C	Metered data request	Metering point identifier [C1]	Unique identifier for the metering point within the metered data administrator's meter identification space.	Same as A	

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Information exchanged, ID	Name of information	Description of information exchanged	Examples of possible entries	Comments to assist MS in completing their national entries
		Metered data specification [C2]      Information object B– Metered data specification	All attributes of B	
D	Request validation information	Validation result      Information about the outcome of the validation step.	82 – wrong process date CE108 – invalid metering point code	From the list of codes
E	Validated historical data	<i>Meta Information</i>		
		Metering point identifier [E1]      Unique identifier for the metering point within the metered data administrator's meter identification space.	Same as A	
		Creation timestamp [E2]      Timestamp when the data package has been generated.	2023-01-01 10:00	Date and time
		Energy product [E3]      Energy product measured by the metering point (for example, active energy, re-active energy).	Same as B4	
		Reading start timestamp [E4]      Start timestamp of the time series.	Same as B1	
		Reading end timestamp [E5]      End timestamp of the time series.	Same as B2	
		Unit of measure [E6]      The measurement unit in which the quantities in field 'Quantity' have been stated.	kWh, kvarh	
		<i>Time series information (once per interval in reading)</i>		
		Start timestamp [E7]      Start timestamp of interval.	01.10.2023 00-01	Date and time
		End timestamp [E8]      End timestamp of interval.	01.11.2023 00-01	Date and time
		Direction [E9]      Flow direction metered by the metering point. This can either be production, consumption or combined.	Same as B3	
		Quality of reading [E10]      Indication of the quality of the interval reading (for instance, based on the fact that the value is metered or estimated).	E / M CK0032 – read disturbed	Estimated / Metered From the list of codes
Quantity [E11]      Volume consumed or generated.	0,826	kWh, three decimals		
F	Validated historical data with final customer information	Validated historical data [F1]      Information object E – Validated historical data	All attributes of E	
		Final customer      Information that allows the eligible party to potentially	38X-AVP-BB7A00EO	Customer's EIC code

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Information exchanged, ID	Name of information	Description of information exchanged	Examples of possible entries	Comments to assist MS in completing their national entries
		[F2] verify that it gets the data for the correct final customer.		
G	Preset permission information	Eligible party [G1] Eligible party for which the permission has been given.	38X-AVP-RJNE00CO	Eligible party's EIC code
		Metering point identifier [G2] Optional. Unique identifier for the metering point within the metered data administrator's meter identification space.	Same as A1	
		Metered data specification [G3] Information object B– Metered data specification	All attributes of B	
		Purpose [G4] The specified, explicit and legitimate purpose for which the eligible party intends to process the data. For non-personal data this is optional.	SALES_OFFER	Text of the purpose
		Transmission schedule [G5] For future data covered by the permission, but not available at the time the permission is established, the periodicity - when and how often - data packages are to be made available where applicable.	2023-12-01T03:55:02Z	Date and time of the end of permission – future data can be requested any time until the end of permission.
		Permission limit timestamp [G6] The timestamp by which the eligible party has to delete the received data, even if the processing purpose is not fulfilled by then.	2023-11-30T22:00:00Z	Date and time of the end of permission – only final customer can end the permission.
H	Basic permission information	Final customer [H1] Final customer that has given the permission.	Same as F2	
		Eligible party [H2] Eligible party for which the permission has been given.	Same as G1	
		Metered data request [H3] Information object C– Metered data request	All attributes of C	
		Purpose [H4] The specified explicit and legitimate purpose for which data is processed. For non-personal data this is optional.	Same as G4	
		Transmission schedule [H5] For future data covered by the permission, but not available at the time the permission is established, the periodicity - when and how often - data packages are to be made available where applicable (for example, in data exchange scenarios where data is pushed rather than requested).	Same as G5	
		Permission maximum lifetime [H6] The timestamp after which the eligible party has to consider the permission as expired or revoked, even if the processing purpose is not fulfilled by then.	Same as G6	

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Information exchanged, ID	Name of information	Description of information exchanged		Examples of possible entries	Comments to assist MS in completing their national entries
I	Established permission information	Permission identifier [I1]	A unique identifier of the permission.	2E9721E4-8FEB-476E A732-180FDBE0ADD6	Internal UUID (Universally Unique Identifier) Date and time of sending the create request + UUID of the creator
		Creation timestamp [I2]	Creation timestamp the permission administrator has attached to the permission.	2022-12-08 09:15:00.4030530	
		Basic permission information [I3]	Information object H– Permission information	AC6C5A72-D6C0-495C-AE75-3798803692A0 All attributes of H	
J	Notification of termination of service	Permission identifier [J1]	A unique identifier of the permission referring to information object I – Established permission information.	Same as I1	Date and time of the end of permission – only final customer can end the permission. However, if the eligible party terminates the service, then the access to data is revoked and permission end date is changed by the administrator.
		Termination timestamp [J2]	Timestamp indicating the point in time when the service is considered terminated by the eligible party.	2023-11-30T22:00:00Z	
K	Details of information on listed permission	Details of the permission [K1]	Attributes of the permission as described in I – Established permission information.	All attributes of I	Date and time of the end of permission – the only reason for ending the permission is the arrival of the end date.  Text of the reason Date (and time)  However, this may not be applicable if the permission ends due to the arrival of normal end of permission.
		Reason for the end of permission [K2]	If permission is not active anymore, the reason for why the permission administrator considers the permission has ended. For instance, this can indicate fulfilment of purpose, reach of permission end timestamp, revocation of final customer or termination by the eligible party.	2025-10-14T00:00:00Z	
		Permission end timestamp [K3]	If permission is not active anymore, the timestamp since when the permission administrator considers the permission as ended.	/Reason 31.12.9999	
L	Revocation notification by	Permission identifier [L1]	A unique identifier of the permission referring to information object I – Established permission information.	Same as I1	

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Information exchanged, ID	Name of information	Description of information exchanged		Examples of possible entries	Comments to assist MS in completing their national entries
	permission administrator	Permission end timestamp [L2]	Timestamp for when the revocation should be considered active.	Same as K3	
M	Data flow activation request	Meter identifier [M1]	Identifier for the metering device or the metering point required by the meter operator to identify the correct meter.	Same as A1	Metering point ID, customer ID, requested activation date, etc.
		Other required information [M2]	Listing of all other attributes needed by the meter operator to enable the data flow.		
N	Confirmation of data flow activation	Physical connectivity [N1]	Information on the physical interface of the meter and how to connect external devices.	RJ12 socket (6P6C connector)	This is used as the physical interface.
				The P1 interface is a wired M-Bus interface according to EN 13757-2 with a fixed baud rate of 2,400 Baud. The physical interface is defined as an RJ12 modular jack 6P6C connector with the following pin assignment.	
		Cipher [N2]	Mandatory, if a cipher is needed to de-encrypt the flow of information.	Will be sent by the connecting meter operator on request	
		Credentials [N3]	Mandatory, if credentials are needed to access the smart meter interface.	Not needed  Username and password are sent by the meter operator on request	
		Other required information [N4]	Listing of all other attributes needed by the meter operator to enable the data flow and interpret it semantically.		Metering point ID, customer ID, network contract ID.
O	Raw meter data	Data package	List of attributes in the received raw data. If a reference to a standard is provided here in the mappings of national practices, this standard must be publicly available in an easily accessible form or free of charge. Otherwise, all elements of the respective data package must be listed		



GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Information exchanged, ID	Name of information	Description of information exchanged	Examples of possible entries	Comments to assist MS in completing their national entries	
		and mapped.			
P	Process-able meter data (attributes described are a minimum – other data items may also be provided and documented if available in national settings)	Meter data timestamp [P1]	Time of data capture as regarded by the smart meter or smart metering system.	31.10.2023 00:03:10 07E701080310341A80000 - 2016-01-04 23:34:35	Date and time 12 bytes hexadecimal
		Active import power value [P2]	Instantaneous forward active power P+ (in W)	1234.123 03E8 OBIS-Code: 1.0.1.7.0.255 / 456.12	Instantaneous three - phase power 4 bytes hexadecimal OBIS Code-based value
		Active import power unit of measure [P3]	(W)	kW W	
		Active export power value [P4]	Instantaneous reverse active power P- (in W)	1234.123 03E8 OBIS-Code: 1.0.2.7.0.255 / 456.12	Instantaneous three - phase power 4 bytes hexadecimal OBIS Code-based value
		Active export power unit of measure [P5]	(W)	kWh Wh	
		Import active energy A+ [P6]	Forward active energy A+ (in Wh)	12345678.123 03E8 OBIS-Code: 1.0.2.8.0.255 / 3177	4 bytes hexadecimal
		Import active energy A+ unit of measure [P7]	(Wh)	kWh Wh	

GUIDANCE FOR THE REPORTING OF NATIONAL PRACTICES

Information exchanged, ID	Name of information	Description of information exchanged	Examples of possible entries	Comments to assist MS in completing their national entries
		Export active energy [P8]      Reverse active energy A- (in Wh)	12345678.123 03E8 OBIS-Code: 1.0.2.8.0.255 / 3177	4 bytes hexadecimal
		Export active energy unit of measure [P9]      (Wh)	kWh Wh	

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