



USAID
FROM THE AMERICAN PEOPLE

ELECTRICITY MARKET DEVELOPMENT: MARKET TRANSPARENCY METHODOLOGY FOR EUROPE AND EURASIA REGULATORS



October 2022

This publication was produced for review by the United States Agency for International Development (USAID). It was prepared by the National Association of Regulatory Utility Commissioners (NARUC).

ELECTRICITY MARKET DEVELOPMENT: MARKET TRANSPARENCY METHODOLOGY FOR EUROPE AND EURASIA REGULATORS

Project Title: Europe and Eurasia Market Performance Initiative

Sponsoring USAID Office: USAID Bureau for Europe and Eurasia

Cooperative Agreement #: AID-OAA-A-16-00049

Recipient: National Association of Regulatory Utility Commissioners (NARUC)

Date of Publication: October 2022

Date of Publication: Christian Hewicker, Juan-Jose Diaz Gonzalez, Božidar Radović, Nebojša Filipović – DNV Energy Systems Germany GmbH



This publication is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of the National Association of Regulatory Utility Commissioners (NARUC) and do not necessarily reflect the views of USAID or the United States Government.

Table of Contents

1. INTRODUCTION.....	7
2. BACKGROUND: TRANSPARENCY OF MARKET DATA AND THE EU REGULATIONS.....	9
2.1. Benefits of introducing transparency	9
2.2. EU electricity market regulations	10
2.2.1. EU Transparency Regulation and data requirements	11
2.2.2. REMIT and data requirements.....	15
2.3. Additional market and energy data.....	16
2.4. NRA role in transparency regulation	18
3. METHODOLOGY FOR DEVELOPMENT AND OPERATION OF NATIONAL TRANSPARENCY PLATFORMS.....	22
3.1. General requirements for establishment of a national transparency platform	22
3.1.1. Requirements related to transparency data	23
3.1.2. Roles and responsibilities	23
3.2. Data process.....	25
3.2.1. Data collection and data entry	26
3.2.2. Data processing and dissemination	28
3.3. Transparency platforms ownership structure	29
3.4. Fees and cost recovery	29
4. BEST PRACTICES AND COMMON TRANSPARENCY ISSUES.....	31
4.1. Best practices	31
4.2. Common Transparency Issues.....	32
APPENDIX 1. TRANSPARENCY DATA COLLECTION TEMPLATES	34
1. ENTSO-E collection templates.....	34
2. ACER UMM collection templates.....	37
3. Greece Public Data from the IPTO's API (Filetype, Process, Data-type, period covered and publication frequency)	40
4. Turkish transparency platform minimum data requirements by EMRA (NRA)	45
APPENDIX 2. TRANSPARENCY DATA DETAILS.....	56
1. Data subject to transparency requirements.....	56
2. Data subject to REMIT requirements	59
3. Additional market data	60
APPENDIX 3. EXAMPLES OF TRANSPARENCY PLATFORMS.....	62
1. TSO transparency platforms	62
1.1. ENTSO-E transparency platform.....	62
1.2. Separate national TSO transparency platform	66
2. National market data and REMIT platform.....	67
3. National joint transparency platform	73
APPENDIX 4. DATA PROCESS TECHNICALITIES	75
1. Control message	75
2. Usage of data formats	75
3. Communication means	77
APPENDIX 5. MARKET TRANSPARENCY COUNTRY EXAMPLES.....	78
1. Greece.....	78
2. Turkey.....	79
APPENDIX 6. A REGULATORY FRAMEWORK SAMPLE FROM TURKEY.....	82
1. Enabling article from the market rules regulation.....	82
2. The procedures and principles document approved by the board of NRA according to the enabling article from the market rules regulation	82

List of Figures

Figure 1: Main benefits of introducing transparency	9
Figure 2: Transparency requirements are found in both the EU Transparency Regulation and REMIT	11
Figure 3: Key areas of transparency data.....	11
Figure 4: EU Transparency Regulation—Illustration of roles and responsibilities	12
Figure 5: Schematic preview of the key NRA roles in development and operation of the transparency platforms	20
Figure 6: Simplified transparency platform illustration	22
Figure 7: Activities related to data management of a platform.....	26
Figure 8: Assembly model of TransmissionNetwork MarketDocument.....	34
Figure 9: Tree-view illustration of the XML scheme TransmissionNetwork MarketDocument.....	35
Figure 10: Tabular illustration of an XML scheme for TransmissionNetwork_MarketDocument messages	36
Figure 11: High level design of ARIS	37
Figure 12: List of fields for UMMs related to unavailability of electricity (I.), gas facilities (II.), and “other market information” (III.).....	38
Figure 13: Tabular illustration of the XML scheme for REMIT UMM Electricity messages	39
Figure 14: ENTSO-E transparency platform—Content of Manual of Procedures	64
Figure 15: ENTSO-E transparency platform dashboard	65
Figure 16: ENTSO-E transparency platform—Data view of unavailability of production/generation units	66
Figure 17: REMIT UMM platform overview	70
Figure 18: REMIT UMM message overview	71
Figure 19: HUPX UMM platform—Top of the page.....	72
Figure 20: HUPX UMM platform overview	72
Figure 21: HUPX UMM platform—Message overview	73
Figure 22: HEnEx data publication DAM and IDM	79
Figure 23: Data headers and data classes Turkish transparency platform.....	81

List of Tables

Table 1: Transparency data—Minimum data sets	13
Table 2: UMM data structure.....	16
Table 3: Other energy data—Data set.....	18
Table 4: Roles and responsibilities in national transparency platform—Matrix	25
Table 5: Transparency platforms and ownership.....	29
Table 6: Fees and cost recovery (for separate transparency platforms).....	30
Table 7: Common manipulation and abusive behavior in hourly markets.....	32
Table 8: Overview of data required by the EU regulations	56
Table 9: Key TSO reporting obligations under EU Transparency Regulation.....	57
Table 10: Overview of important REMIT articles.....	59
Table 11: List of typical additional market data.....	60
Table 12: List of IIPs.....	69

List of Acronyms or Abbreviations

ACER	Agency for the Cooperation of Energy Regulators
ARIS	ACER REMIT Information System
ATC	Available Transfer Capacity
BZ	Bidding Zone
CSV	Comma Separated Values (file format)
D	Current Day (D-1 is yesterday, D+1 tomorrow)
DAM	Day-Ahead Market
DSI	General Directorate Hydraulic Works
EBGL	Electricity Balancing Guideline
EBIX	European Forum for Energy Business Information eXchange
EC	Energy Community
EDI	Electronic Data Interchange
EDIFACT	United Nations/Electronic Data Interchange for Administration, Commerce, and Transport (UN/EDIFACT—international standard for EDI)
EIC	Energy Identification Code (X for Market Participants, Z for Metering Points, Y for BZ)
EIGM	General Directorate of Energy Affairs
EMRA	Energy Markets Regulatory Authority
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSO-G	European Network of Transmission System Operators for Gas
EPIAŞ	Enerji Piyasaları İşletme A.Ş. (Turkish)
EU	European Union
EXIST	Energy Exchange Istanbul
FTP	File Transfer Protocol
FTPS	Extension of FTP
GSI	A set of global message standards for EDI
GUI	Graphical User Interface
HEnEx	Hellenic Energy Exchange
HUPX	Hungarian Power Exchange
IDM	Intra-Day Market
IIP	Inside Information Platform
ISP	Integrated Scheduling Process
IT	Information Technology
JSON	JavaScript Object Notation (file format)
LNG	Liquefied Natural Gas
M	Current month (M-1 previous month, M+1 next months)
MCP	Market Clearing Price
MO	Market Operator
MW	Mega Watt
NARUC	National Association of Regulatory Utility Commissioners
NRA	National Regulatory Authority
NTC	Net Transfer Capacity
OTC	Over-the-Counter
PDF	Portable Document Format
PX	Power Exchange
REMIT	Regulation on Wholesale Energy Market Integrity and Transparency
RES	Renewable Energy Sources
REST	Representational State Transfer
SMTP	Simple Mail Transfer Protocol (email protocol)
SOAP	Simple Object Access Protocol (messaging protocol)
SOGL	System Operation Guideline

TSO	Transmission System Operator
UMM	Urgent Market Message
USAID	United States Agency for International Development
W	Current Week (W-I previous week, W+I next week)
XLSX	Microsoft Excel file format
XML	Extensible Markup Language (file format)
XSD	XML Scheme file (file format—defines validation rules for XML files)
Y	Current Year (Y-I previous year, Y+I next year)
YEGM	Renewable Energy General Directorate
ZIP	Archive file format

I. Introduction

This methodology focuses on assisting the National Regulatory Authorities (NRAs) of Europe and Eurasia in implementing effective market transparency and establishing transparency platforms. Transparency is essential for the creation of efficient, liquid, and competitive wholesale markets. It allows the creation of a level playing field between market participants in accessing the information regarding fundamentals of the market, and it prevents manipulation and insider trading. In addition, establishing market transparency provides the scope for effective market monitoring.

The objective is to provide NRAs with the necessary knowledge to oversee the implementation of a transparency platform. For this purpose, the methodology provides best practices and recommendations on various key elements to grant transparency covering legal and regulatory aspects, platform structure, and data collection. In addition, a webinar series focusing on transparency platforms took place in June–July 2021 and built capacity in outlining the purpose, underlining the importance, and providing an overview of the topic.

During the webinars, the participating NRAs and expert volunteers provided feedback and firsthand experiences of implementing transparency platforms. The information obtained during the webinars and through follow-on discussions has been incorporated in this document. This document should be treated as a methodology that provides a practical approach and suggestions regarding the design of a transparency platform and its management.

Transparency might refer to all data related to an electricity market. However, within the scope of this document, the term “transparency platform” relates to platforms that are dedicated to the collection and dissemination of certain data, namely:

- **Transparency data**—Minimum set of data subject to the European Union (EU) Commission Regulation on submission and publication of data in electricity markets no. 543/2013¹ (hereinafter EU Transparency Regulation). Relevant examples of platforms storing such data are the European Network of Transmission System Operators for Electricity (ENTSO-E) transparency platform² and national Transmission System Operator (TSO)³ transparency platforms.
- **REMIT data**—Data subject to the EU Commission Regulation on Wholesale Energy Market Integrity and Transparency no. 1227/2011⁴ (hereinafter REMIT) and Commission Implementing Regulation no. 1348/2014⁵ (hereinafter REMIT Implementing Regulation) on data reporting implementing Article 8(2) and Article 8(6) of Regulation (EU) no. 1227/2011⁶

¹ “Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council Text with EEA relevance.” EUR-Lex. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013R0543>

² The EU Transparency Regulation refers to the ENTSO-E transparency platform as the central information transparency platform.

³ By the EU Transparency Regulation, TSOs are often the primary source of relevant fundamental information. They are also used to collect and assess large amounts of information for system operation purposes and are a common choice for operators of national transparency platforms (in accordance with EU Transparency Regulation).

⁴ “Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency Text with EEA relevance.” EUR-Lex. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R1227>

⁵ “Commission Implementing Regulation (EU) No 1348/2014 of 17 December 2014 on data reporting implementing Article 8(2) and Article 8(6) of Regulation (EU) No 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency Text with EEA relevance.” EUR-Lex. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2014.363.01.0121.01.ENG

⁶ “Commission Implementing Regulation (EU) No 1348/2014 of 17 December 2014 on data reporting implementing Article 8(2) and Article 8(6) of Regulation (EU) No 1227/2011 of the European Parliament and of the Council on wholesale energy

(platforms that store inside information data are Urgent Market Message (UMM) platforms and National Market Operator (MO) market data platforms).

- **Other market data**⁷—Relevant data that are outside of the scope of EU regulations but important for stakeholders (platforms that store such data are national market data platforms).

The main objectives of this methodology are:

- To present important steps for development of a transparency platform, including requirements, responsibilities, data process, ownership structure, and cost recovery;
- To provide a list of best practices and common transparency issues;
- To explain the significance of implementing transparency and how it is essential for the creation of efficient, liquid, and competitive wholesale markets;
- To introduce both the EU Transparency Regulation and parts of the REMIT and REMIT Implementing Regulation (hereinafter the term REMIT regulations refers to REMIT and REMIT Implementing Regulation collectively); and
- To detail what is considered transparency data.

The countries in the region are at different stages of implementing electricity markets and commonly have different overall situations in the electricity sector. Since a one-size-fits-all approach is not applicable, the document takes a broader view on implementing transparency platforms, including practical experiences and international best practices. In fact, a few of the countries in the region are already operating national platforms for transparency data, and some also deliver data to the ENTSO-E transparency platform.

The methodology structure is based on the key focus areas identified as important for the establishment of a transparency platform. Chapter 2 provides a background on electricity market transparency in the EU and identifies what data are subject to transparency requirements. Chapter 3 provides insights for establishing a market transparency platform. Chapter 4 focuses on best practices and common transparency issues. Appendices provide additional details about transparency data collection templates, transparency data details, and examples of transparency platforms, including real-world examples from other countries.

market integrity and transparency Text with EEA relevance.” EUR-Lex. Implementing regulations are directly applicable upon decision of the Ministerial Council of the Energy Community and need not be transposed into national legislation.

⁷ Other market data includes data considered relevant for dissemination in a particular country.

2. Background: Transparency of market data and the EU regulations

This section provides the necessary background for understanding the benefits of introducing more transparency into the energy market environment and provides information about the EU Transparency Regulation and REMIT regulations.

2.1. Benefits of introducing transparency

Transparency is essential for the creation of efficient, liquid, and competitive wholesale markets. It allows to create a level playing field between market participants and limits the scope for abuse of market power. This means that involved and interested market parties have the opportunity to obtain market insights, and regulators can monitor market operation.

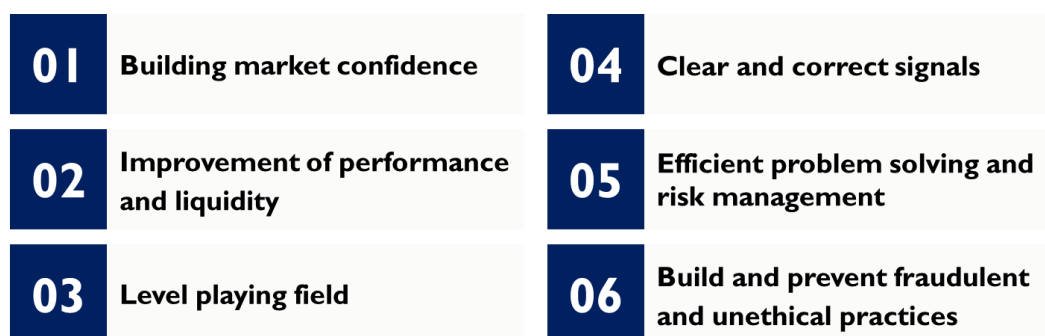


Figure 1: Main benefits of introducing transparency

Source: DNV Energy Systems Germany GmbH

The following briefly describes the main benefits of introducing transparency (highlighted in Figure 1) in the electricity market:

- **Building market confidence**—Timely and accurate dissemination of relevant market data to market participants removes uncertainty and any privilege of information. This aspect is especially important when electricity markets are introduced since the level of trust in the new market and among market participants might be low.
- **Improvement of performance and liquidity**—Market performance improves due to the increased capacity to make sound decisions based on transparent data. Improved market performance increases competition, which typically leads to higher market liquidity.
- **Level playing field**—Operators holding greater market power enjoy an information advantage that they can use to deter entry into the market and limit fair competition. Data transparency and accountability prevents or reduces exercise of market power by dominant market participants and prevents market inefficiencies. Transparency ensures that operational data are available to all market participants at the same time. This motivates market participants and improves engagement in the market.
- **Clear and correct signals for investments and use of resources**—Transparency provides clear overview of the electricity market and facilitates decision-making in the context of market development. Transparency promotes functioning of markets by ensuring that market participants have an adequate understanding of the market fundamentals and that the available data (prices and quantities) provides them with the right signals. This means that the prices are fair when information on fundamentals is publicly available. In this case, operational decisions are based on cost-efficient dynamic dispatch information.

- **Efficient problem solving and risk management**—It is important to clearly identify a problem in the electricity market operation through monitoring and then implement required solutions. This prevents disputes between market participants and brings additional confidence into the market.
- **Build and prevent fraudulent and unethical practices**—Without transparency mechanisms, market participants are forced to seek for information through different channels, which can lead to corrupt practices.

From a regulatory perspective, a lack of market transparency and an uneven availability of data may lead to inefficient markets. Thus, there is a regulatory interest in ensuring that wholesale prices are not distorted by abusive market practices or lack of transparency. It is for these reasons that the EU Member States have implemented the EU electricity market regulation consisting of the EU Transparency Regulation and the REMIT regulations.

2.2. EU electricity market regulations⁸

In this section, the methodology focuses on EU Transparency Regulation and inside information reporting requirement of the REMIT regulations. It is important to mention that there is an overlap between both regulations, as can be observed in Figure 2. This overlap covers information about planned and unplanned unavailability of generation, load, and transmission units. This information is fundamental since it affects the planning of market and system operation.⁹

The transparency requirements apply to all EU Member States, all states that are in the process of association to the EU, and all Energy Community (EC) Contracting Parties.¹⁰ It is important to note the amount of the actual data generated from system and market operations is more comprehensive than transparency data, which is mandatory by EU Transparency Regulation and REMIT. It is also true that data not covered by the EU regulations might be of interest for different groups of power system users and electricity market(s) participants.

⁸ The EU regulation package is quite extensive and relies on the following regulatory documents:

- The EU Transparency Regulation no. 543/2013 sets out the basic requirements around market transparency data.
- The Capacity Allocation and Congestion Management Regulation covers data about capacity allocation on transmission lines.
- System Operation Guideline (SOGL).
- Electricity Balancing Guideline (EBGL).
- REMIT (Regulation (EU) 1227/2011) addresses inside information and market manipulation.
- REMIT Implementing Regulation (Regulation (EU) 1348/2014).

⁹ Market participants and TSOs need to provide detailed information about where, when, and why units are not or will not be available to generate or consume electricity and when they are expected to return to a normal operation state.

¹⁰ EC Contracting Parties are bound to EU legislation according to the EC Treaty. This is not an automated process, meaning that mandatory implementation of each EU regulation of transposition of EU Directives takes place only upon decision of the EC Ministerial Council. In practice, implementation of EU legislation by EC Contracting Parties usually takes a few years and includes some minor administrative modifications to reflect specific aspects of the EC Contracting Parties.

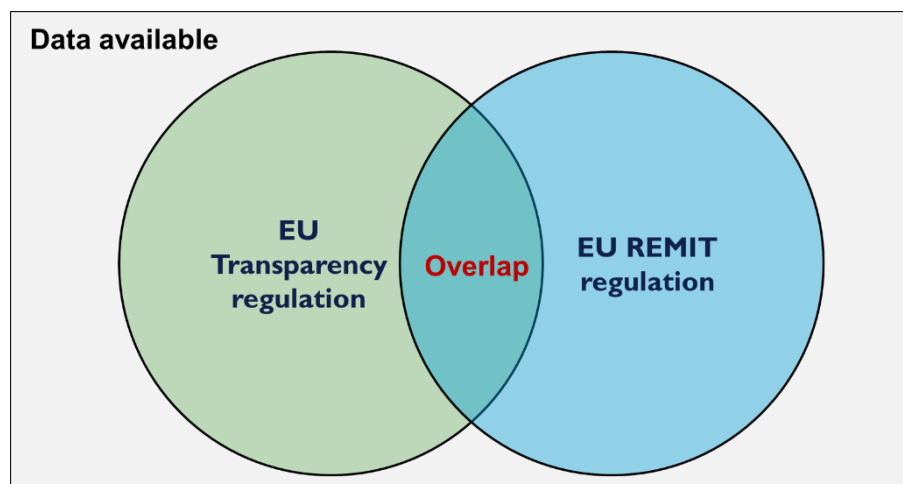


Figure 2: Transparency requirements are found in both the EU Transparency Regulation and REMIT

Source: DNV Energy Systems Germany GmbH

The following sections briefly describe the relevant aspects of the EU Transparency Regulation and the REMIT regulations.

2.2.1. EU Transparency Regulation and data requirements

The EU Transparency Regulation specifies what type of data should be published, when, and how, including responsibilities. It therefore specifies the minimum set of data that needs to be available related to generation, transportation, and consumption of electricity. To this end, data needs to be made available through a centralized platform that enables a user-friendly collection and publication process. For this purpose, a central information transparency platform—ENTSO-E transparency platform—has been established and is operated in an efficient manner by the ENTSO-E. The ENTSO-E transparency platform is available (in English) to the public and can be accessed free of charge through the internet. From a general perspective, data focus is set on the four key areas illustrated in Figure 3. The NRA is responsible for overseeing the whole process.

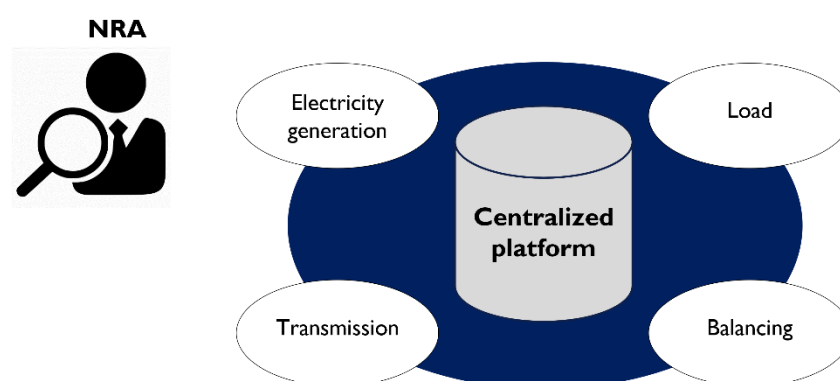


Figure 3: Key areas of transparency data

Source: DNV Energy Systems Germany GmbH

It is mandatory for EU Member State market participants to submit fundamental information for publication in the ENTSO-E transparency platform.¹¹ Three different types of roles can be distinguished in the data submission process.

- **Primary owners** are entities that generate relevant data related to generation, load, transmission, and electricity balancing. For instance, a TSO has access to data related to cross-

¹¹ The ENTSO-E transparency platform was launched on January 5, 2015 (platform existing on voluntary basis since 2011).

border power flows, results of transmission capacity auctions, outages planning, and power system balancing. Primary owners need to ensure that the data submitted are complete, have the required quality level, and are delivered in a timely and adequate manner (e.g., established format) so that data can be processed by ENTSO-E and published according to the EU Transparency Regulation.

- **Data providers** are entities that send the data to the ENTSO-E transparency platform. This role is typically assumed by the TSO,¹² which collects and sends data from primary owners. However, some generators and consumers could also send the information directly to ENTSO-E provided they use a third party acting as data provider on their behalf. In this sense, generators and consumers may fulfill their obligation either by sending the data directly to the transparency platform or by submitting data to the TSO (as an intermediate step). The TSO is both, primary owner of data¹³ and data provider, as it sends data to the platform.
- **Supervisor** shall ensure that the primary owners of the data, TSO, and third-party data providers comply with their obligations according to the established regulation. This role is assigned to NRAs.

A simplified illustration of the process of different roles and data submission to the centralized platform is presented in Figure 4.

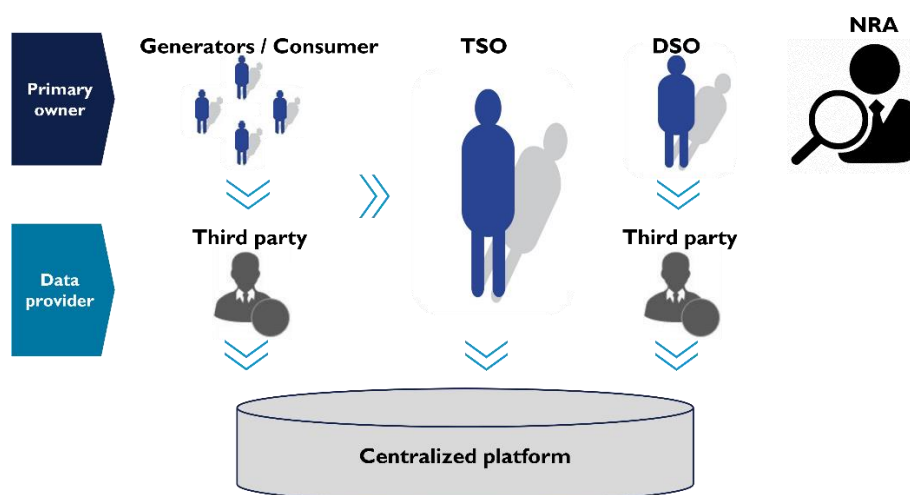


Figure 4: EU Transparency Regulation—Illustration of roles and responsibilities

Source: DNV Energy Systems Germany GmbH

The minimum set of data¹⁴ defined by EU Transparency Regulation is presented in Table I and is subdivided in four categories: Transmission, Load, Generation, and Balancing. Data needs to be provided to the ENTSO-E transparency platform by TSOs on a regular basis. As stated before, EU Member States and ENTSO-E members have the legal obligation to provide the data, while other countries may provide the data based on mutual agreements. In addition, countries may opt to create their own national transparency platform¹⁵ (typically under governance of the TSO), which would contain all ENTSO-E data and other data.

¹² Although the language in the EU Transparency Regulation seemingly differentiates TSOs from data providers by listing both TSOs and data providers separately in many articles, the definition of data providers definitely includes TSOs.

¹³ TSOs provide the biggest share of data to the centralized platform.

¹⁴ Transparency data are listed on the table—details concerning data in the table are commonly provided in a separate descriptive document “Detailed Data Descriptions,” which is part of the Manual of Procedures for the ENTSO-E transparency platform (“Manual of Procedures.” ENTSO-E. <https://www.entsoe.eu/data/transparency-platform/mop/>).

¹⁵ TSO transparency platforms are listed at “List of Inside Information and Transparency Platforms.” ACER. <https://www.acer-remit.eu/portal/list-inside-platforms>

Table 1: Transparency data—Minimum data sets

Load	Generation	Balancing
Actual total load per bidding zone (BZ)	Installed generation capacity aggregated	Rules on balancing
D-I total load forecast per BZ	Installed capacity by production unit	Amount of balancing reserves under contract
W-I total load forecast per BZ	D-I aggregated generation	Prices of the reserved capacity (procured) of balancing reserves
M-I total load forecast per BZ	D-I generation forecasts for wind and solar	Accepted aggregated offers (volumes)
Y-I total load forecast per BZ	Planned unavailability of a generation unit	Volumes of activated balancing reserves (activated balancing energy)
Y-I forecast margin	Actual unavailability of generation unit	Prices of activated balancing reserves (energy)
Planned unavailability of consumption units	Planned unavailability of production unit	Imbalance prices
Actual unavailability of consumption units (changes in actual availability of consumption units)	Actual unavailability of production unit	Total imbalance volume per balancing time unit
	Actual generation per unit	Monthly financial balance (financial expenses and income for balancing)
	Aggregated generation per type	Aggregated volumes of offers for cross-border balancing activation
	Actual wind and solar power generation	Prices for cross-control area for bids and offers
	Pumped storage/reservoir stored energy (aggregated filling rate of water reservoirs and hydro storage plants)	Volumes of cross-control area balancing energy activated
Transmission		
Report on developments (expansion and dismantling projects)	D-I offered cross-zonal capacity (flow-based allocation method)	Total capacity already allocated
Planned unavailability in the transmission grid	Other offered transfer capacities (semester, quarter, weekend, etc.)	Day-ahead prices
Changes in actual availability of interconnections and the transmission grid	Intraday offered cross-zonal capacity (NTC allocation)	Implicit allocations—net positions
Unavailability of offshore infrastructure	Intraday offered cross-zonal capacity (flow-based allocation)	Implicit allocations—congestion income
Yearly forecasted cross-zonal capacity	Restrictions on DC links—ramping restrictions	Total scheduled commercial exchanges
Monthly forecasted cross-zonal capacity	Restrictions on DC links—intraday transfer limits	Physical flows
Weekly forecasted cross-zonal capacity	Yearly report about critical network elements limiting offered capacity	Transfer capacities allocated between BZ in Member States/contracting parties and third countries
Yearly offered cross-zonal capacity	Explicit allocation—the capacity requested by the market	Congestion management—redispatching
Monthly offered cross-zonal capacity	Explicit allocation—the capacity allocated to the market	Congestion management—countertrading
Weekly offered cross-zonal capacity	Explicit allocation—the price of the capacity	Congestion management report (Costs of Congestion management)
D-I forecasted cross-zonal capacity (net transfer capacity, NTC)	Explicit allocation—the auction revenue per border between BZs	
D-I offered cross-zonal capacity (NTC allocation method)	Total capacity nominated from explicit allocation	

Source: DNV Energy Systems Germany GmbH

In the sets of data presented in Table I, specific importance is given to the data on unavailability of the generation, demand, and transmission assets. These data are crucial for operational planning of all players in the electricity sector. In the beginning of the electricity sector unbundling, data were considered highly confidential and commercially sensitive. Over time, it was recognized that their publication is mutually beneficial for all involved parties.

For the time being, mandatory requirements are limited to the demand/generation units and transmission infrastructure of significant size, which can impact system operations (above 100 megawatts (MW)). This may be a serious limitation in data availability if applied to individual units (not plants), since the number of demand/generation units with the installed capacity >100 MW is rather small.¹⁶ For countries with a relatively smaller electricity system (or with a significant cumulative amount of smaller size generation installations), it is advised to consider a lower threshold for reporting to their national transparency platforms in order to provide necessary transparency and ensure inside information is available to all market participants.

The following text box provides more details on the planned and unplanned unavailability data to be provided under the EU Transparency Regulation.

Text box 1: Planned and unplanned unavailability

Power generation and consumption units

Planned and unplanned unavailability (lasting at least one market time unit) of power generation and consumption units is one of the most important pieces of supply-demand information for market participants. Market participants and TSOs need to be provided with detailed information on where, when, and why units are not or will not be available to generate or consume and when they are expected to return to normal operation.¹⁷ The information shall be published as soon as possible, but no later than one hour after the decision is taken about planned unavailability. Furthermore, this information is key to help TSOs better reallocate reserves and thereby reduce the probability for blackouts. Unavailability information needs to be provided in the following cases:

- If the planned unavailability relates to a 100 MW or more of a generation/consumption unit.
- If there are changes of 100 MW or more in the planned unavailability of that generation/consumption unit.
- If there are changes of 100 MW or more in actual availability of a generation/consumption unit with a power rating of 100 MW or more.

Planned and unplanned unavailability—TSOs

Available cross-border capacity determines the scope of cross-border exchanges by individual market participants. In addition, it also impacts market prices on both sides of the border since any reduction of cross-border capacity will change the local supply or demand curves. For these reasons, market participants should be provided with information about planned and unplanned unavailability of existing cross-border transmission infrastructure and plans about infrastructure developments since this can have a direct effect on market prices.¹⁸ In this regard, TSOs should also provide and regularly update data on planned and offered cross-border transfer capacities for different time horizons as well as information related to the allocation and use of capacities. The information shall be published as soon as possible, but no later than one hour after the decision regarding the planned unavailability is made. Specifically, information shall be provided:

¹⁶ In contrast, no threshold is defined for inside information (UMM) reporting according to the REMIT.

¹⁷ The requirement is contained in Articles 7 and 15 of the EU Transparency Regulation.

¹⁸ The requirement is contained in Article 10 of the EU Transparency Regulation.

- If there are changes in the planned unavailability of interconnections and in the transmission grid that reduce cross-zonal capacities between bidding zones (BZs) by 100 MW or more.
- If there are changes in the actual availability of interconnections and in the transmission grid that reduce cross-zonal capacities between BZs by 100 MW.
- If there are changes in the actual availability of off-shore grid infrastructure that reduce wind power feed-in by 100 MW or more.

2.2.2. REMIT and data requirements

In the EU, energy market abuse is addressed via REMIT regulations. The main purpose of the REMIT regulations is to build confidence in the market and ensure that prices reflect a fair and competitive interplay between supply and demand. Thus, no profits should be drawn from market abuse. Specifically, insider trading (Article 3) and market manipulation (Article 5) are forbidden according to REMIT. In this context, the monitoring responsibility of wholesale energy markets is assumed by the Agency for the Cooperation of Energy Regulators (ACER) working in close collaboration with NRAs.

The REMIT Implementing Regulation defines the required data to be stored about energy products, contracts, and trade, and establishes the data reporting fundamentals. It also allocates responsibilities to ACER and ENTSO-E, among others, to develop platforms that store/publish inside information.¹⁹

Inside market information²⁰ is exposed to the public through UMMs. The UMM is information on occurrences that may affect electricity market operations. Most of this information has to do with the sudden (unexpected, unplanned) outages and major faults on transmission, generation, and consumption infrastructure. It also includes market-related information such as plans to shut down generation units (or to replace a transformer in a substation) for a period of time for any reason in the future.

Several platforms dedicated for disclosing inside information (UMM) have been established throughout the EU. These platforms were commonly established by MOs or power exchanges (PXs) as an instrument to disclose inside information data. Table 2 provides an overview of the UMM data structure to be published on these platforms.

¹⁹ In its guidance notes, ACER states that “the information shall be disclosed using a platform for the disclosure of inside information (inside information platform or IIP).” In practice, however, these platforms are often also referred to as “UMM platforms.” For this reason, both terms are used interchangeably throughout this document.

²⁰ According to Article 2 of REMIT, inside information is information of a precise nature that has not been made public, which relates, directly or indirectly, to one or more wholesale energy products and which, if it were made public, would likely affect the prices of those wholesale energy products.

Table 2: UMM data structure

Information	Explanation
Message ID	Unique identification of the message
Market participant code	Unique identification of the market participant (EIC X code)
Market participant	Official name of the market participant
Bidding zone (BZ)	Identification of the BZ (EIC Y code) where affected unit is located
Publication date-time	Date-time stamp when publication is made
Version	Number of version (market participant may change data, and after each change, version number is increased)
Message category	What kind of information is published (unavailability or other market information ²¹)
Event status	Active status, inactive status (event occurred in the past), or dismissed (cancelled) status
Type of event	Transmission, production, consumption, or other (for example storage) unavailability
Type of unavailability	Planned or unplanned
Reason of unavailability	Explanation of the cause of the unavailability
Available capacity	Capacity in MW that is available during event duration
Unavailable capacity	Capacity in MW that is unavailable during event duration
Installed capacity	Installed capacity in MW
Affected asset or unit	The official name of the affected facility
Affected asset or unit (Energy Identification Code, EIC)	EIC for affected facility
Fuel type	Not applicable for transmission unavailability
Event start	Date-time stamp when event started
Event stop	Date-time stamp when event ended
Duration	Duration of event—could be calculated from event start and event stop
Remarks	More detailed information about the event (if/where applicable)

Source: DNV Energy Systems Germany GmbH, based on ACER REMIT Manual of Procedures²²

Inside information also contains other market data that is not directly related to unavailability.²³ The same data structure above is used, but without data fields that relate to unavailability. Data are disclosed by affected market participants in case an inside information event takes place. The UMM platform managed by the MO is commonly used for this purpose (as part of a national²⁴ market data platform).

2.3. Additional market and energy data

In addition to the minimum transparency requirements defined in the EU regulations, TSOs and/or MO may publish additional data to support electricity market transparency.²⁵ (Some examples of typical additional market data are presented in Appendix 2.3 and Appendix 6 provides country

²¹ Events that are likely to significantly affect wholesale energy prices but are less structured and less frequent by nature than unavailability of facilities.

²² See Figure 1 in Annex VII of the ACER REMIT Manual of Procedures V7 (“REMIT Manual of Procedures on transaction data, fundamental data and inside information reporting [MoP on data reporting].” ACER. https://documents.acer-remit.eu/wp-content/uploads/ACER_REMIT_MoP-on-data-reporting_V7.pdf).

²³ For example, government decisions, impact of forecasts, events in power system, and so on.

²⁴ Also, there is regional market data platforms that publish data for particular regions (like Nord Pool platform or Elia platform).

²⁵ In this context, a national market data platform could gather TSO and MO data as a one-stop-shop solution instead of having different platforms.

examples). Of course, data needs to be in line with the confidentiality rules and be useful for stakeholders. For instance, data related to individual market participants is generally considered confidential, unless publication of such data are explicitly required under REMIT, or similar rules and regulations in a given country.

As an alternative, it may be useful to publish anonymized data at the beginning of the market operation. Besides, aggregated market data (minimum, maximum, summary, average, or weighted average) for different time frames (day, month), fuel (or generation) type, consumption type, and market segment might be useful during the regular market operation.

The level of power system and market data granularity (e.g., including smaller units) depends on the market characteristics (e.g., market size, maturity, liquidity) and usefulness of data for stakeholders. Basic market data (bids, offers, accepted bids, and offers) could be provided per trading interval without indication of related market participant. This approach is more adequate for larger markets, since in small markets identity of related market participants could be deduced.

Text box 2: Decision point—Management of additional market data

Key question: Should additional market data be considered relevant for transparency?

Option 1: Additional market data are considered relevant for transparency apart from the minimum data requirements defined in EU regulation.

- Pros: Additional market data will increase electricity market transparency and contribute to build market confidence.
- Cons: Additional resources are required to define the data set, harmonize it with stakeholders, and make it subject to transparency (i.e., available in a platform). Additionally, management of additional market data makes the process more complex.

Option 2: No additional market data required for transparency. Minimum data requirements according to EU regulation is regarded as sufficient for transparency purposes.

- Pros: Minimum set of data are already defined and harmonized, and there is previous experience with its implementation.
- Cons: This approach could cause lack of confidence in the market. Market operation may not be optimal due to a lack of useful data.

Recommendation: In general, Option 1 is recommended as it provides benefits for the efficient market functioning and development. It is necessary to determine which additional market data are useful for each electricity market. The quantity but especially the quality of data is important to generate value for stakeholders. It is important that the data set for disclosure is aligned with the level of electricity market development.

Option 2 might be suitable at the beginning of the market operation when data are not available or additional data do not bring significant additional value. However, this could be a temporary solution/transition phase toward Option 1.

The satisfactory national transparency platforms implementation moved some countries to expand the scope and include other types of energy data not directly related to electricity markets. Some examples of other energy data are presented in Table 3.

Table 3: Other energy data—data set

Other energy data	Details
Natural gas ²⁶ system data	Capacity reserves, stocks, interruptions, etc.
Renewable energy sources (RES) policy and support data	Additional data regarding country's RES policies and other data that may help in development of the renewable energy sector
RES operational data	Aggregated on a daily or monthly level, by participants, voltage level, fuel type (technology)
Hydropower plants	Reservoirs and inflows data
Other markets/industry sector affecting power price and usage	Depending on the actual situation in an individual country

Source: DNV Energy Systems Germany GmbH

Text box 3: Decision point—Management of other energy data

Key question: Other energy data should be considered under transparency?

Option 1: Other energy data are considered relevant for transparency. Data are typically for a particular industry/market related to the electricity market.

- **Pros:** Availability of other energy data will contribute to development of particular industry/market (natural gas, water utility...) and increase electricity market transparency.
- **Cons:** It is required to invest additional resources to define this set of data, harmonize it with stakeholders, and integrate it into the platform. Besides, issues might appear (data responsibility, confidentiality, etc.) as energy data owners, and platform administrators need to be coordinated and bound by an arrangement.

Option 2: No other energy data are considered relevant for electricity market transparency.

- **Pros:** Process is simpler, as including other energy data in the platform requires additional resources.
- **Cons:** Lack of other energy data that could be useful for market participants and improve electricity market transparency.

Recommendation: In case of an industry/market with a relevant impact on the electricity market, Option 1 should be considered. It is necessary to carefully determine which set of other data would contribute to the transparency of the electricity sector. In this sense, legal, organizational, and technical arrangements should be established between data owners/providers and the platform responsible party. During the development of the electricity market and other energy-related industry/market, it is necessary to monitor and review or amend the relevant other energy data.

Option 2 could be implemented if it is determined that other energy data will not bring additional value to the electricity market transparency, or its implementation is linked to significant burden/costs.²⁷

2.4. NRA role in EU Transparency Regulation

NRAs play an important role in decision-making because they are expected to utilize the established (also costly) transparency and reporting framework. The cost of establishing the transparency framework is justified through the benefits of established transparency for power system users and market participants.

²⁶ European Network of Transmission System Operators for Gas (ENTSO-G) is also publishing data on the ENTSO-E transparency platform (<https://transparency.entsog.eu/#/map>).

²⁷ This may occur when there are multiple national transparency platforms in a particular country. Option 1 better fits with a one-stop-shop solution.

- The role of the NRA is crucial in all stages of development of the transparency framework. The main NRA actions to be taken can be structured as follows: **Development of the legal and regulatory framework for the establishment and operation of transparency platforms, including a scheme for recovery of associated costs**—this is a crucial step. In the transparency process, roles and responsibilities of the individual electricity sector stakeholders have to be elaborated in detail in the secondary legislation (Network Codes and Market Code, developed by TSO/distribution system operator (DSO) and MO, approved by the NRA).²⁸ In addition, appropriate manuals should complement this framework listing implementation aspects and securing a smooth operation. Finally, a scheme for recovery of transparency platform fees based on TSO and/or MO tariffs should be approved by the NRA.
- **Ensuring compliance with related EU and national legislation in the electricity sector and regarding transparency of power system and electricity market operations**—the NRA, together with relevant state institutions in the electricity sector (ministries), is responsible for ensuring compliance with the EU and national legislation. In its capacity, the NRA is entitled to develop (or initiate development of) the compliance procedures in all respective areas, including transparency obligations in power systems and electricity market operations. The NRA is responsible to also regulate activities of PX registered in its country, regardless of whether its activities are financed from the tariff approved by the NRA or not.
- **Monitoring/surveilling the process of establishment and operation of the transparency platforms and their compliance with the set rules and procedures**—the NRA regularly monitors power system and electricity market operations as part of its regular activities. It issues licenses to both market participants and network/MOs, approves tariffs for network/system/market operations, and accordingly has to make sure that all stipulations from those licenses are fulfilled as agreed and that funds from the tariff are used appropriately. This included, even before the EU legislation on transparency was adopted, monitoring of publishing and reporting activities of network operators and MOs. Upon adoption of the EU Transparency Regulation and REMIT, and following development of the highly integrated electricity market in Europe, monitoring/surveillance of the transparency platforms' operations became a significant part of the NRA activities.
- **Regular activities on improvement of the transparency framework and operations of the relevant platforms**—again, the NRA as a key responsible entity for ensuring full implementation and compliance with EU legislation on transparency not only by MOs and network operators, but by all actors in the electricity sector, is obliged to work on improving the existing transparency framework in its country. This also includes actions toward integration of national platforms into the central information transparency platform (ENTSO-E transparency platform) and ACER REMIT Information System (ARIS).

Figure 5 gives a schematic overview of the main NRA roles in the development and operations of transparency platforms.

²⁸ In EU Member States and EC contracting parties, roles and responsibilities of the individual electricity sector stakeholders, have to be defined in the primary legislation (laws, decrees).

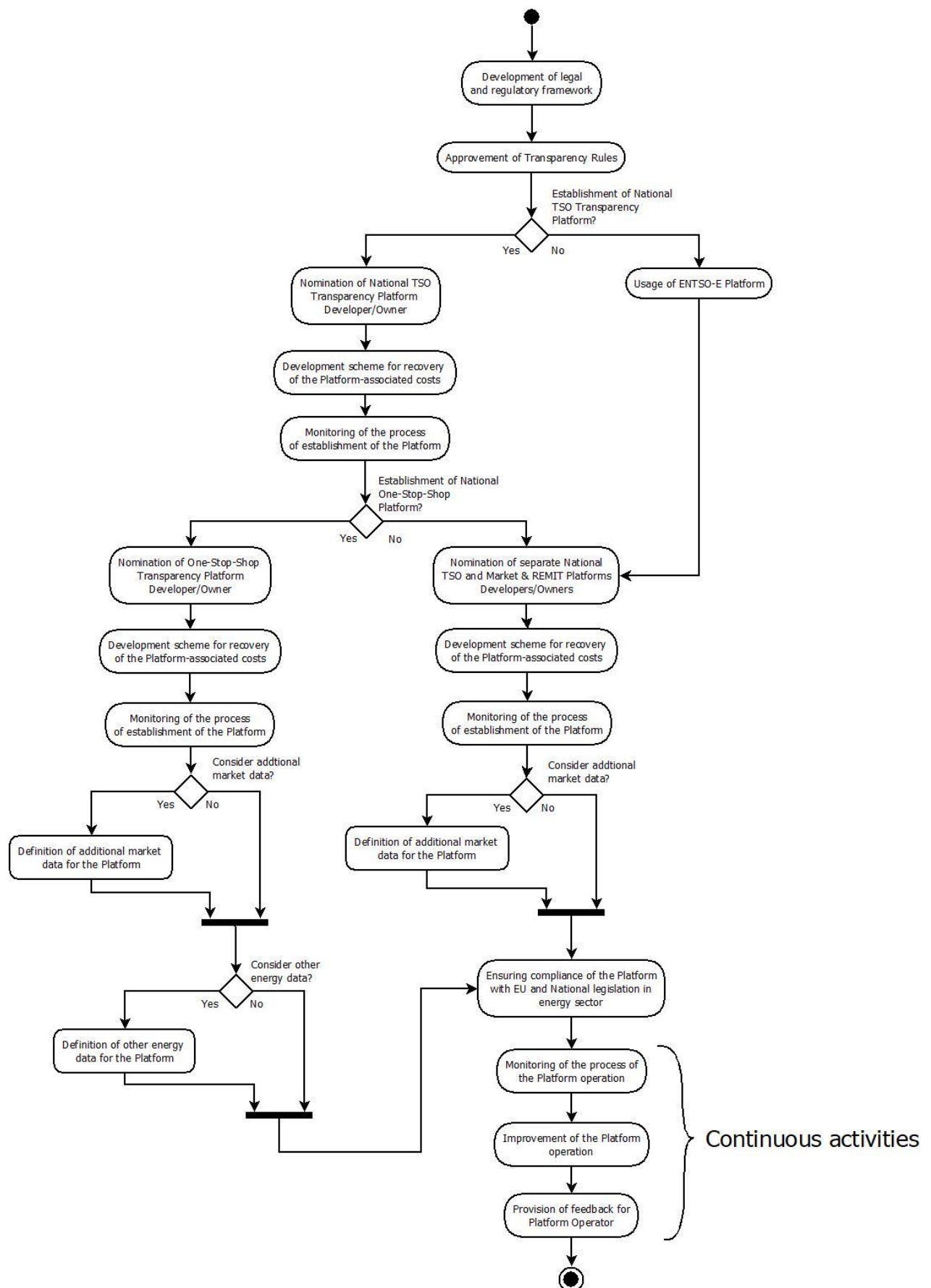


Figure 5: Schematic preview of the key NRA roles in development and operation of the transparency platforms

Key roles of the NRA in development of the transparency platforms include enforcing the creation of the transparency platforms, nominating platform operators, ensuring compliance with effective legislation, and determining fees and costs recovery scheme for the platform(s). The NRA should be involved in the decisions related to the early development of the transparency platforms, but also later, in the operation of the transparency platform or platforms. Initial decision in the selection of national transparency platforms is also one of the tasks of the NRA (see Appendix 6 for a regulatory framework sample).

In addition to its basic tasks for the national REMIT platform (part of the market data and REMIT platform or one-stop shop, as the case may be), the NRA should be involved in the monitoring of the establishment of the platform and its operation. Compliance with REMIT, the REMIT Implementing Regulations, and ACER guidelines should be achieved, especially the compliance related to the treatment of fundamental data and the role of MOs.

In addition, the NRA also has to make arrangements with the MOs regarding operation of the national market data platform (part of the market data and REMIT platform or one-stop shop, as the case may be) about the structure, content, format, and timing of confidential reports with relevant market data/reports, which MO submits to NRA, in accordance with the national legal and regulatory framework. This may be a part of market rules (or market transparency rules) prepared by MO and approved by NRA. Additionally, the NRA should participate in the process of defining the additional market data specific for the national electricity sector that will also be included in the market transparency platform.

The NRA's role in national TSO transparency platforms (or part of the one-stop shop, as the case may be) is to monitor compliance with data requirements from TSO as mandated by the EU Transparency Regulation and national regulations. The NRA should approve transparency rules that are drafted by the TSO. The NRA should also contribute to the definition of additional (to the minimum defined by EU Transparency Regulation) market data sets that shall be managed by the national TSO transparency platform. The NRA can get reports from this platform when all data are public and available. However, this does not prejudice TSO from its obligations toward the NRA regarding reporting and data submission for monitoring purposes, in accordance with national legislation.

In case of a one-stop-shop transparency platform, the NRA has to address issues mentioned in the previous two paragraphs for two parts of the platform: market data and TSO data. NRA may be involved in the ownership and operation of the single transparency platform, but this option is not necessarily recommended because NRA is in a better position to set the rules and supervise the implementation. The NRA should contribute to the process of inclusion of other energy data into a one-stop-shop platform that is not defined by EU Transparency Regulation, and REMIT and the implementing regulation.

3. Methodology for development and operation of national transparency platforms

This chapter provides an overview of the general requirements and guidelines for the establishment of national transparency platforms. These requirements are applicable to any of the possible configurations—TSO, market data and REMIT (UMM), and joint (one-stop shop). Subsequently, specific requirements for each of these national transparency platforms is described.

A simplified national transparency platform is presented in Figure 6 for illustration purposes. It is important to note that this section does not dive into specific information technology (IT) infrastructure design details. Instead, it presents the needs and requirements from the market stakeholders, NRAs, and regulation perspective.

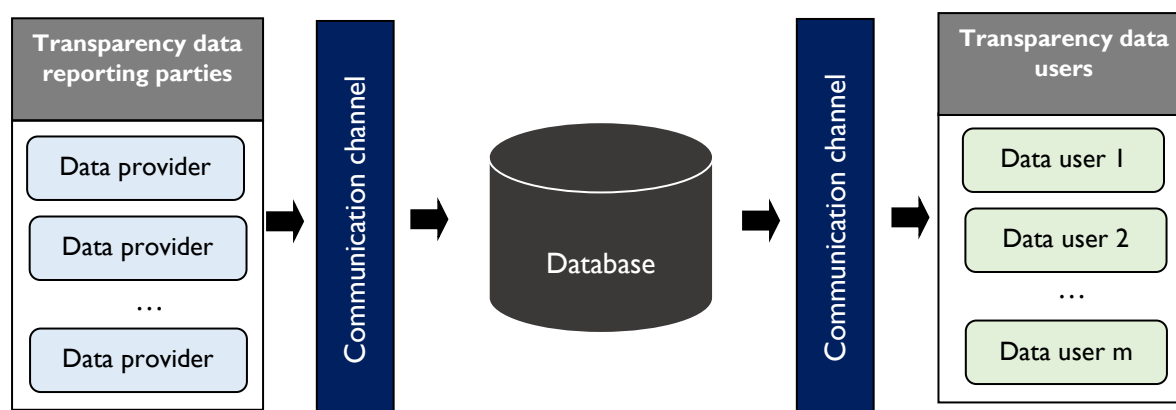


Figure 6: Simplified transparency platform illustration

Source: DNV

Figure 6 depicts the data process. On the left side of the figure, reporting parties enter transparency data via the specified communication channels in the predefined file formats. The platform database is the central repository where transparency data are stored and managed. On the right side, data users access the transparency platform and obtain data or reports in the defined download formats. It should be acknowledged that depending on the specific requirements, number of users, and volume of data, the structures could become quite complex (for instance, Appendix 1, section 2 presents a high-level design of ARIS).

3.1. General requirements for establishment of a national transparency platform

The general requirements for the establishment of a national transparency platform are the following:

- **Development of the legal and regulatory framework** with the definition of roles and responsibilities for creating and maintaining the transparency platform as well as for the mandatory data provision.
- **Establishment of organizational aspects** covering the establishment of the platform, including provision of logistic, technical, IT, telecommunications, and human resources necessary for its operation.
- **Definition of the list of data** to be submitted and ensure confidentiality of sensitive data.
- **Elaboration of the platform structure**, including data, reports, views, aggregation, accessibility, and so on.

- **Development of the necessary operational documentation**, including procedures, manuals, templates covering all involved processes, data collection, and reporting.

Specific requirements related to platform data, roles and responsibilities, surveillance and administration, data entry, and data publication are described more in detail in the following sections.

3.1.1. Requirements related to transparency data

Most of the data requirements concerning transparency are defined in the network codes or market codes. Requirements for transparency data encompass a set of conditions that relate to the definition of data and related business processes, preservation of data quality and security, and identification of users that work with the data. The network/MOs usually issue manuals that explain details on data management aspects such as delivery, verification, validation, confidentiality, and so on. In this sense, they typically publish and regularly update the list of data and delivery frequency for operational purposes.

The following general data requirements need to be fulfilled:

- **Detailed data description**—Data entered in the platform needs to be clearly defined so that data providers have no doubts about what data has to be delivered. Typically, detailed data manuals (or similar documents) provide data examples, details about data aggregation, data validation, specific data connections²⁹ (if any), and references to other relevant documents (if applicable).
- **Data quality**—Data quality is commonly attained through the fulfillment of different aspects, such as completeness, uniqueness, timeliness, validity, accuracy, and consistency.³⁰
- **Data security**—Data needs to be protected from unauthorized access and data corruption. Thus, common practice is that only authenticated users are granted access to the platform with specific assigned privileges. Access to the critical system and data are limited/restricted.
- **Definition of business processes**—Processes related to the platform (user's registration, data entry, data publication, acknowledgement, validation, processing, etc.) need to be clearly defined and documented.
- **Unique identification of users**—It is important to assign platform users a unique identification. For instance, the Energy Identification Code (EIC) coding scheme is widely used for the identification of electricity market participants.

3.1.2. Roles and responsibilities

It is necessary to define a clear role structure to grant an effective implementation, maintenance, and operation of the transparency platform. In addition, stakeholder engagement and responsibilities need to be specified. The critical roles directly involved in a national transparency platform are:

- **Data provider (or data publishers)**—Responsible for data entry into the platform in accordance with relevant legal and regulatory framework, and technical documentation.

²⁹ For example, if a specific data value depends on another data value.

³⁰ For example, ACER data quality ("Data Quality." ACER. <https://acer.europa.eu/remit/data-collection/data-quality>)

- **Primary owner of data**—Responsible for data creation and submission to a data provider. For instance, a primary owner sends data to the TSO, which then in its behalf enters the data into the platform.
- **Platform owner**—Procures, develops, owns, and operates the platform. It is also responsible for the monitoring of the platform operation and market surveillance. For instance, this could be the TSO in case of the national transparency platform, ENTSO-E in case of the ENTSO-E transparency platform, the MO in case of a national market transparency platform, or REMIT platform.
- **Administrator**—Responsible for the national transparency platform and related IT administrative tasks, such as security, reliability, backup, restoration,³¹ access to the platform, and so on. It could be the situation that the administrator is employed directly by the platform owner, or it works as a third party under a service level agreement. The administrator is responsible for the technical surveillance of the platform. In this sense, it is recommended (and common practice) that user activities on the platform are tracked (e.g., via time stamps), which is useful to prevent disputes and enable audit trail. Equally important is that the platform is secured from viruses, malware, and hacker attacks. This task is assumed by IT experts who can be internal or an external third-party service provider.
- **Data user**—Has access to the platform to navigate and download allowable published data. System messages should be displayed on the platform, indicating important events and information for users.

In Table 4, the common relationship between various roles and parties in different transparency platform types (TSO, market, and REMIT) can be observed. When marked with an “x,” the respective stakeholder has a specified role. When marked with an “(x),” the stakeholder may have a specified role.

³¹ The operation of the platform includes regular backups, (eventual) restoration, and correct/uninterrupted operation (24 hours a day, 7 days a week). The platform needs to be reliable and operating in accordance with specifications.

Table 4: Roles and responsibilities in national transparency platform—Matrix

	Platform type	Primary owner of data	Data provider	Administrator	Data user	Platform owner	Comment
TSO	TSO	x	x	(x)	x	x	Role of administrator could be assigned to a third party.
Generator	TSO	x	(x)		x		Generator, load, and DSO may choose to submit data into the platform, and in this case, they are also data providers.
Load	TSO	x	(x)		x		
DSO	TSO	x	(x)		x		
MO/PX	Market and UMM	x	x	(x)	x	x	Market participants are entering bids and offers into the trading system, but MO/PX creates clearing, settlement, and other data. Role of administrator could be assigned to a third party.
Market participant, TSO, Load, DSO	Market and UMM	x	x		x		
NRA	TSO, Market, and UMM			(x*)	x	(x)	NRA receives market monitoring reports from platform(s). *In some designs, NRA may be the one-stop shop transparency platform owner.
General public					x		

Source: DNV

Legal basis for data collection (data entry) constitutes the mandatory provision of EU Directives and Regulations, with obligation of EC contracting parties and EU accession candidates to gradually transpose them into national legislation. NRAs should make sure that requirements stemming from national legislation are further elaborated into applicable secondary legislation and licenses. Last, responsible entities are obliged to develop rulebooks, manuals, instructions, and templates, for data collection/entry. This applies to transparency platforms, market data platforms (that include REMIT data), and any other data publishing platform. There is a need to have operational rules and procedures in place that guide platform operation. NRAs are obliged to strictly monitor all transparency-related processes being authorized to apply penalties when/where applicable.

For the ENTSO-E transparency platform, the data collection process is organized in a way that the relevant data are provided by primary data owners, and subsequently entered by ENTSO-E or one of the TSOs serving as data providers into the centralized platform. As explained previously, depending on the platform, data entry rights are generally given to data owners only, while information users will have the right to see the information available.

3.2. Data process

There are different methods for collecting, processing, and reporting transparency data, including details about obligations and rules needed to enforce this process. The process and involved basic activities that are required for the data management of a platform are captured in Figure 7.



Figure 7: Activities related to data management of a platform

The four main activities that can be distinguished in the data management process of a platform are:

- **Data collection** activity commonly presents gathering of required data and validation of its consistency and plausibility.
- **Data entry** activity focuses on the insertion of collected data into the platform.³² During insertion, data are regularly checked based on defined criteria. A successful validation is precondition for its acceptance.
- **Data processing:** Once data are available in the transparency platform repository, data are available for further processing, calculation, and (where applicable) aggregation to prepare the platform outputs.
- **Data dissemination:** Through dissemination activity, data are made available for users of the platform in an appropriate format (using text, tabular presentation of data, and charts)—web pages are typically used to present data or reports (e.g., in Excel and/or PDF).

3.2.1. Data collection and data entry

Data collection refers to a systematic method of data gathering from different sources of information. Collected data are stored in the platform, where data are available for further processing. Before data are entered into the platform, it is important to verify and check data against specific predefined rules (e.g., value range, value sign, values relationship, logical and arithmetic conditions for values, etc.) and thus prevent entry of “bad” data.³³

Data stored in the national transparency platform is entered by data providers. To be able to submit data to the platform, the data provider needs to be registered on the platform with specification of the scope of data that can be submitted. This allows to guarantee the origin of the data and block the entry of wrong, nonrelated, or unnecessary data. Entry of data are typically organized in defined regular periods/frequency.

During the registration process, the users’ rights are defined. Users commonly have an overview of master data as well as platform acknowledgements and system information. In addition, users are commonly allowed to overview, insert, and update or delete inserted data, using the platform graphical user interface (GUI), in accordance with assigned privileges. It is possible to submit/resubmit data or modify individual values using GUI.

The platform commonly has several communication channels for the entry and download of data. While the basic channel for data entry is used in regular circumstances, a backup channel (or channels) is necessary in case of extraordinary or fallback situations. Lately, web services gained relevance for reliable and efficient data entry (Appendix 4 presents further information on data process technicalities).

³² Sometimes it is assumed that data entry is a part of data collection.

³³ In this context, unstructured data, inaccurate, incomplete, inconsistent, duplicated, and so on.

Data entry into the platform may be organized in one of the following ways:

- **Manual data entry**—This data entry method assumes manual typing of data into the platform by the user. Using the platform GUI, users log in by entering credentials (username and password, and some device, if applicable) and type data into defined fields/boxes (controls) using the platform GUI. Once all data are typed into predicted controls, users press the button for data saving. Thereafter, typed data are checked for errors, and if there are none,³⁴ inserted into the platform database. In general, modern platforms still preserve manual data entry (as its realization is usually not complex and expensive), but it is used only in cases where other data entry methods fail or cannot be applied.
- **Semi-automated data entry**—This method represents an upload of previously prepared data file(s) into the platform. This data file has a predefined format and is created by the user using some external software (e.g., if data files are in Excel or Comma Separated Values (CSV) format, Microsoft Excel can be used for preparation of data files). After the file has been prepared and saved on the local disk, the user logs into the platform and by using a platform GUI, selects the prepared file from the local computer and uploads it (by pressing the button) to the platform. Consequently, the platform automatically validates the uploaded file, and in case that there are no errors, inserts the entire data content into the IT platform database. If errors are identified during the validation process, these are presented to the user, and data are not entered into the platform.
- **Automated data entry**—The automated data entry into the platform takes place without user intervention. Commonly, the term electronic data interchange (EDI) is used in the literature referring to a transfer of structured data, by agreed message standards, from one computer system to another without human intervention.³⁵ In this context, the message/file (relevant message, so-called business message) in a predefined format is received by the platform (receipt—transparency, market, or joint) from another platform (sender—data provider) via a communication protocol³⁶ (e.g., email or other). The received message/file is automatically processed and parsed, data are extracted from the file, and in case it passes the validation process, data are entered into the platform database. Hence, the receipt and validation of incoming messages is done automatically, in accordance with predefined rules.

Text box 4: Decision point—Data entry method

Key question: What type of data entry should be used in the transparency platforms?

Option 1: Manual data entry.

- **Pros:** Manual data entry is suitable for a smaller amount of data or in case data are not in a format recognizable by computers (e.g., image files). High skills are not required for users that do manual data entry (could be company employees from other sectors, students, volunteers, etc.). Could be combined with the other two methods as a reserve data entry solution.
- **Cons:** This method is prone to mistakes; it is time consuming and in general nonefficient for the entry of a larger data quantity.

Option 2: Semi-automated data entry.

³⁴ In case of errors, details about each error is presented to the user, facilitating data correction and re-entry.

³⁵ Within a business process, a sequence of messages is exchanged between two parties (i.e., IT platforms)—originator and recipient.

³⁶ In this context, communication protocol is a system of rules that allows two or more entities of a communications system to transmit information via any kind of variation of a physical quantity. The protocol defines the rules, syntax, semantics, and synchronization of communication and possible error recovery methods.

- **Pros:** Data entry into files (in a predefined format) will expectedly last shorter in comparison with previous options. Once data entry is successfully established (i.e., after several data entries), no significant problems with this approach are expected in the future.
- **Cons:** Data needs to be entered into files, which may be challenging in case format is complicated and/or software tools for this are not developed.

Option 3: Automated data entry.

- **Pros:** Fits very well with the exchange of vast amounts of data with other relevant IT platforms, within particular business processes. Human intervention in the processing is typically intended only in case of error conditions and special situations, or for quality review. This approach is characterized with speed, efficiency, and reduction of data entry errors (in comparison with manual data entry).
- **Cons:** Initial setup is much more expensive in comparison with previous approaches. It is necessary to develop interfaces for data exchanges with other IT platforms. In addition, more resources are required for maintenance and correction of errors.

Recommendation: TSO and market transparency platforms require immense quantity of data,³⁷ and in this case, Option 3 is recommended. Option 1 could be considered for a UMM platform where a smaller amount of data are required, and data entry/updates are not so frequent. Options 1 and/or Option 2 should be available in TSO and market transparency platforms as a backup solution, only where problems with automated data entry occur.

3.2.2. Data processing and dissemination

Once data are inserted into the transparency platform, it is available for dissemination. Target data sets (or data view) should be identified with the structure and content for the transparency platform, as well as data granularity, time resolution, confidentiality, metadata, and so on.

There is a set of strict provisions regarding data presentation and reporting that involves transparency platforms. Data in a platform should be presented in a clear and transparent manner, should be easily accessible, and available in tabular and graphical format. Navigation on the platform should be straightforward and intuitive. In this regard, an overview of data in tabular form should support data sorting functionality, enabling sorting columns by ascending or descending order. Further, users should have the possibility to create and remove data filters.³⁸ In addition, graphical format should support standard chart types showing values and chart legends (e.g., initially invisible but presented when user moves cursor over chart or its parts).

Users can download data from the transparency platform.³⁹ In case the transparency platform is public (which is the case with the TSO transparency platforms), data are available for download free of charge, and user registration might not be necessary (but may be enforced). In case of a private ownership of the transparency platform, the users need to be registered because data download and access might be subject to a specific fee. Alternative access to data from the platform via web services could be provided, as well as the possibility of a data subscription (e.g., using web feeds).

Data publication follows a predefined reporting frequency and specific deadlines. Nowadays, the transparency platform can be accessed via different devices such as personal computers, tablets, and

³⁷ A scalable IT platform is required, where additional data requirements would not cause problems with its operation; scope of data is constantly growing, and market transactions are going closer and closer to the real time.

³⁸ These filters are created by entering values into specific data fields (text boxes, drop-down lists, calendar controls, etc.), so that after clicking on the button user “filters” that is, it reduces the presented set of data in the tabular form, in accordance with the criteria specified in data fields.

³⁹ Download (export) of data should be supported in different formats, such as Microsoft Excel (XLSX), CSV, Extensible Markup Language (XML), or JavaScript Object Notation (JSON).

smart phones. The GUI should be browser-based to enable smooth navigation and provide an overview of data in tabular and/or graphical form.

Reports with market data have predefined structure and contain textual, tabular, and graphical information. Their creation is automated, based on the platform data, and they contain relevant information for each particular market segment (day-ahead, intra-day, balancing, over-the-counter, OTC, etc.). They are commonly prepared in Portable Document Format (PDF) and Excel (XLSX) file formats and are available for download by users (who should just click on the corresponding link). Reports (i.e., links) should be grouped in the related section and subsection (if any—for example, section: day-ahead market (DAM), subsection: market results). The content of the reports is usually predefined, although platforms may enable to tailor reports on demand for specific users.

3.3. Transparency platforms ownership structure

Table 5 presents common ownership solutions for transparency platforms.

Table 5: Transparency platforms and ownership

Platform	Owner
TSO Transparency Platform	TSO (national platform), ENTSO-E (ENTSO-E platform)
Market Transparency Platform	MO, PX
UMM Platform	MO or External Party

Source: DNV

The TSO transparency platform may be a common or a separate (national) transparency platform. In case of a national platform, it is exclusively owned by the TSO because all the data are either owned or collected by the TSO through its operations. TSO is responsible for organization, operation, maintenance, and development of this transparency platform, as well as for the coordination with data providers and data users. Within the footprint of ENTSO-E, if there is no separate TSO transparency platform in a country, data are collected by the TSO and uploaded on the ENTSO-E transparency platform, which is owned and managed by ENTSO-E.

The market transparency platform may be owned and operated by the national MO appointed by the NRA or by the national/independent PX. There are also some hybrid cases where national MOs or PXs are operating as franchises of a larger PX, such as SEEPEX (Serbia), CROPEX (Croatia), or IBEX (Bulgaria). Similarly, market coupling, especially in the Western Balkan region, may end with the implementation of single markets covering several countries/power systems. In such a case (and in line with current practice), the publication of market-related transparency data is applicable to all transactions/trades concluded in the concerned market. If the MO or PX is the owner of the market transparency platform, the framework is defined by the NRA.⁴⁰

TSO and MO/PX are typically the owners of the TSO and market transparency platform, respectively. However, in the case of the UMM platform, ownership is more flexible. Namely, the national MO could own the UMM platform, a supranational PX may have it under its domain, or an external party (service provider) might be responsible.

3.4. Fees and cost recovery

This section looks at the fees and cost recovery for the establishment and operation of the transparency platform. This is one of the key components in the legal and regulatory framework that needs to be determined prior to any further action establishing the transparency platform. The

⁴⁰ This also applies if a local PX is operated by a foreign entity. In this case, the foreign entity will have to comply with local regulations in each of the market areas or countries it covers.

decisions related to fees and cost recovery fall typically under the NRA responsibility, especially when these decisions need to comply with EU regulations. Table 6 entails common cost recovery methods applied for different transparency platform types. Subsequently, the different methods are briefly described.

Table 6: Fees and cost recovery (for separate transparency platforms)

Platform	Cost recovery options
Transparency Platform	<ul style="list-style-type: none"> - System operation component of the TSO tariff - TSO membership fees for the ENTSO-E platform
Market Data Platform	<ul style="list-style-type: none"> - Part of the market membership fee - Part of the MO tariff - Selling data to interested parties that are not trading in the concerned market
UMM (Inside Information) Platform	<ul style="list-style-type: none"> - Part of the market membership fee - Part of TSO/MO tariffs - Annual subscription

Source: DNV

- **Cost recovery of the TSO transparency platform**—A separate transparency platform owned by the TSO typically recovers its costs through the system operation component of the TSO tariff. In the case of the ENTSO-E transparency platform, costs are recovered from the TSO membership fee, which is again compensated from the system operation component of the TSO tariff at the national level. Meaning that in both cases, costs for establishment and operation of the transparency platforms (regardless of the solution and ownership) are financed by the TSO tariff's grid component.
- **Cost recovery of the market transparency platform**—Generally, the costs are recovered from the following one or multiple sources:
 - Participation fee paid by the registered market participants to the MO/PX.
 - Selling information/reports to parties that have no access to the platform (e.g., not registered market participants).
 - In markets with low liquidity (a small number of market participants and small turnover of energy trading transactions), certain cost recovery contributions may be sourced from the MO tariff allocated by the NRA.

It is important to note that to increase transparency the NRAs are encouraged to follow the EU Transparency Regulation's approach (Article 3.1) and require that the data are publicly available (also in English) and free of charge through the internet.

- **Cost recovery of the UMM platform**—This recovery is similar to the market transparency platform. Notably, costs should not be charged to parties accessing the information to avoid any transparency barriers. In line with European requirements under REMIT, information owners should cover (at least) the costs of providing all necessary information to the platform. Additionally, information owners could be obliged to pay for the (incremental) costs of implementing the platform and its operator. Depending on the size of the market, these costs could also be partially socialized, that is, to avoid undue hardships for information owners.

For more details on data process technicalities about control messages, data formats, and communication means, see Appendix 4.

4. Best practices and common transparency issues

This chapter presents identified best practices and common issues in implementing market transparency and transparency platforms.

4.1. Best practices

The following lists a series of best practices for the transparency methodology:

- **Development of rules for transparency is recommended even before the commencement of the market operation**—Planning of transparency in the early stages of market development could pay off multiple times by avoiding unnecessary delays and flaws in establishing new market segments and would provide market participant confidence in market outcomes.
- **Rules for transparency should be monitored and regularly updated**—Revisiting the market operation and market development to ensure the applicability of transparency rules is mandatory. Rules should be amended as needed (i.e., their provisions do not fit market circumstances anymore).
- **Data should be publicly available and free of charge**—This will bring benefits to relevant academics, institutions, and associations as well as to small market participants, which will result in a general increase of trust in the market.
- **Define additional market data tailored to a country's specific situation**—As there is no “one-size-fits-all,” NRA, TSO/MO, and market participants should decide which additional data are of best use for market participants, evaluating specifics of the electricity sector landscape.
- **One-stop-shop platform where data for many industries/markets are accessible is good to have**—Still, there are potential caveats reflected in complexities regarding confidentiality and other required arrangements between parties that provide data and platform operators.
- **In case there are multiple national transparency platforms, it is required to delineate data**—It is necessary to avoid duplication of data through platforms, as this may cause confusion among market participants.
- **TSO transparency platform(s) operation and electricity market monitoring enforced by NRA are related**—The number of data requests from the NRA to TSO regarding market operation could be reduced through a well-designed platform. As data are already available in the platform, the level of such data requests will expectedly decrease.
- **In the design process or for existing platforms, TSO and MO may come up with some requirements for access to the platform for data users, but it is important for the NRA to assess if these are justified**—TSO may insist on limited (exclusive for transmission owners) access to transmission data. MO may insist on a fee-membership approach to a majority of data. It is necessary to find proper balance between interest of TSO/MO and interest of the market and transparency. For example, daily market data should be free of charge, but access to historical data can be charged. Nevertheless, it is advisable to make access to all available nonconfidential data free of charge for increased transparency and much needed analysis on the markets to come into reality through academic studies.

- **Important decisions require cost-benefit analysis**—Each important decision requires analysis of costs and benefits, as seemingly default solutions may be either too expensive or not applicable for particular situations.

4.2. Common transparency issues

Manipulation and abusive behavior in hourly markets comprises most of the transparency issues. Such a situation occurs when a subset of market participants is able, during select hours, to earn super-normal profits by manipulating market prices. Such a situation can be more easily triggered based on structure of markets, short-term market conditions, and flaws in market rules. In this regard, following transparency considerations apply:

- The NRA should acquire detailed bid data and determine if manipulation/abusive conduct occurred (commonly market monitor's role).
- Public disclosure of bid data may conflict with bidder confidentiality requirements and may facilitate future manipulation.
- Holding participants accountable for proven abuses through legally available sanctions (e.g., fines, disgorgement, disqualification).

Table 7 depicts common transparency issues related to manipulation and abusive behavior in hourly markets.

Table 7: Common manipulation and abusive behavior in hourly markets

Behavior	Description	Role of Transparency
Economic withholding reflected in bids	<ul style="list-style-type: none"> • Sellers bid a small block at a high price that cannot be explained by underlying cost • Sellers bid the rest of its capacity at a reasonable price • If the seller's assessment is correct, the small block sets hourly clearing price, providing rents on all its capacity. • If small block does not clear the market, the seller's opportunity cost is small. 	<p>Responsible entity (market monitor):</p> <ul style="list-style-type: none"> • Collects bid information and looks for patterns ex-post: <ul style="list-style-type: none"> – Concentration of sellers during certain hours – Unexplained mark-ups over cost for select blocks during certain hours – The same block is bid at very different price levels during certain hours • Determines appropriate level of public disclosure • Refers to others for sanctions in some cases
Creating artificial congestion	<ul style="list-style-type: none"> • Seller that has generators at many locations across several nodes on the network creates artificial congestion to drive up prices at select nodes: <ul style="list-style-type: none"> – Bids a large volume at zero or negative price at a specific node resulting in congestion and higher prices at other nodes where seller has large amounts of generation – The profit from selling generation at high prices nodes more than offsets 	<p>Responsible entity (market monitor):</p> <ul style="list-style-type: none"> • Collects bid information and congestion information, ex-post: <ul style="list-style-type: none"> – Identifies causes of congestion on certain lines and impact on spreads between select nodes – Identifies generators that benefit from higher prices

	the loss (opportunity cost) of bidding zero or a negative price at another node	and examines their contribution to congestion <ul style="list-style-type: none"> • Determines appropriate level of public disclosure • Refers to others for sanctions in some cases
Erecting entry barriers	<ul style="list-style-type: none"> • When one party (commonly an incumbent utility) has an interest in making its own long-term investment, it can erect barriers for new entrants by imposing unreasonable conditions—that is, interconnection; connecting to fuel sources • Transmission access can be an entry barrier except to the extent all transmission operations are in the hands of an independent system operator 	Responsible entity must identify potential entry barriers and look at remedies: <ul style="list-style-type: none"> • Must examine whether restrictions on incumbent utility participation in new generation is necessary • Assess whether some entry barriers can be addressed by regulatory policy—that is, using independent third parties for interconnection studies
Information advantages relating to the physical system	<ul style="list-style-type: none"> • The incumbent utility has the most detailed information on the best locations (from an electric system perspective) for distributed resources. If incumbent is also in the distributed resources business, this can provide an unfair advantage. 	Responsible entity must identify information advantages and look at potential remedies: <ul style="list-style-type: none"> • Make transparent information on locational value of distributed resources • Limit incumbent utility activity in distributed resources market
Gaming of competitive solicitations	<ul style="list-style-type: none"> • When new generation resources are being procured—commonly by an incumbent utility—the rules of the solicitation can create an unequal playing field, especially if its affiliate is allowed to compete. For example: <ul style="list-style-type: none"> – The incumbent may know more about the evaluation method (tools and scoring rules) than other competitors – Specific locations, where only the incumbent has site(s) may be awarded a high score 	Responsible entity must look for unfair advantages in the solicitation and address as appropriate: <ul style="list-style-type: none"> • Retain independent evaluator that makes transparent ahead of time the evaluation method (tools and scoring rules) • Determine if incumbent or its affiliate must be precluded from participating

Source: Epoch Energy Advisory Services

Appendix I. Transparency data collection templates

I. ENTSO-E collection templates⁴¹

Within the Manual of Procedures, ENTSO-E developed a set of XML schemes⁴² (Load, Generation, Transmission, Outage, and Balancing) that are used for data collection. Data are collected in the XML file format that have predefined tree structure and constraints. These constraints are defined by XML schemes, which are used for validation of collected XML files. In this appendix, the data collection template⁴³ for transmission networks is presented in Figure 8.

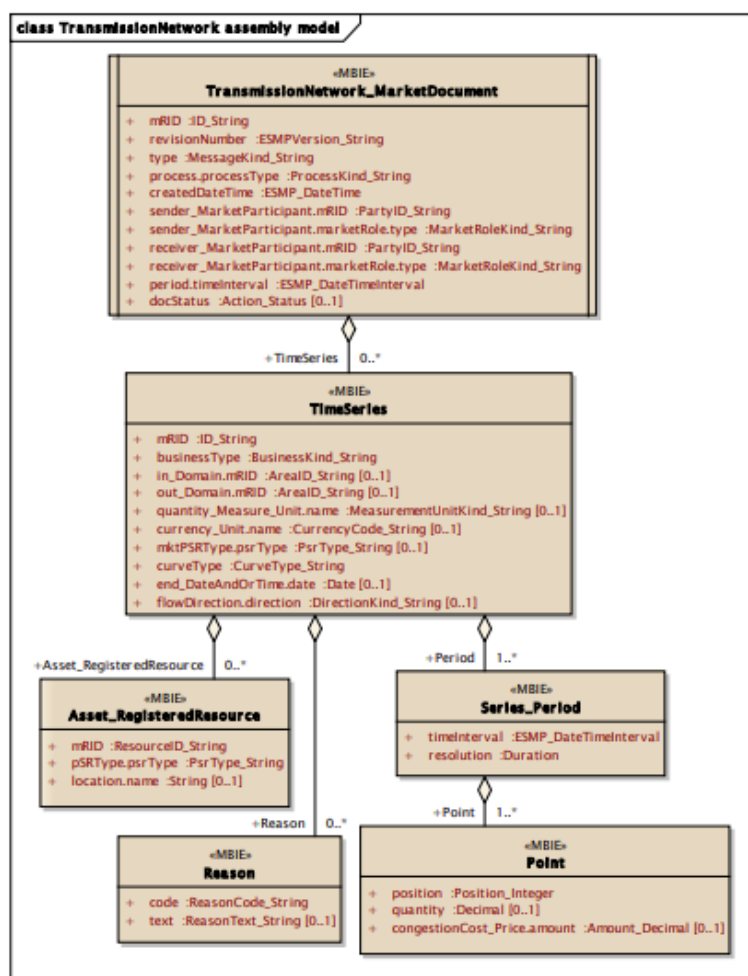


Figure 8: Assembly model of TransmissionNetwork MarketDocument

An XML scheme for a particular XML file is determined based on an assembly model for this message, which is the graphical representation of the structure, content, and constraints of the XML file. Based on the assembly model, an XML scheme is created with defined constraints regarding the parent/child relationship between data fields (XML elements), if data fields are mandatory or optional, the data field type (string, integer, decimal, ...), and so on.

Figure 9 illustrates part of the XML scheme.

⁴¹ Source: ENTSO-E Manual of Procedures ("Manual of Procedures (MoP).") ENTSO-E. <https://www.entsoe.eu/data/transparency-platform/mop/>.

⁴² XML scheme is a textual description of a specific XML file that expresses constraints on the structure and content of that XML file (submitted by data provider).

⁴³ Templates are commonly presented with UML models and XML schemes as a part of Manual of Procedures in related PDF files.

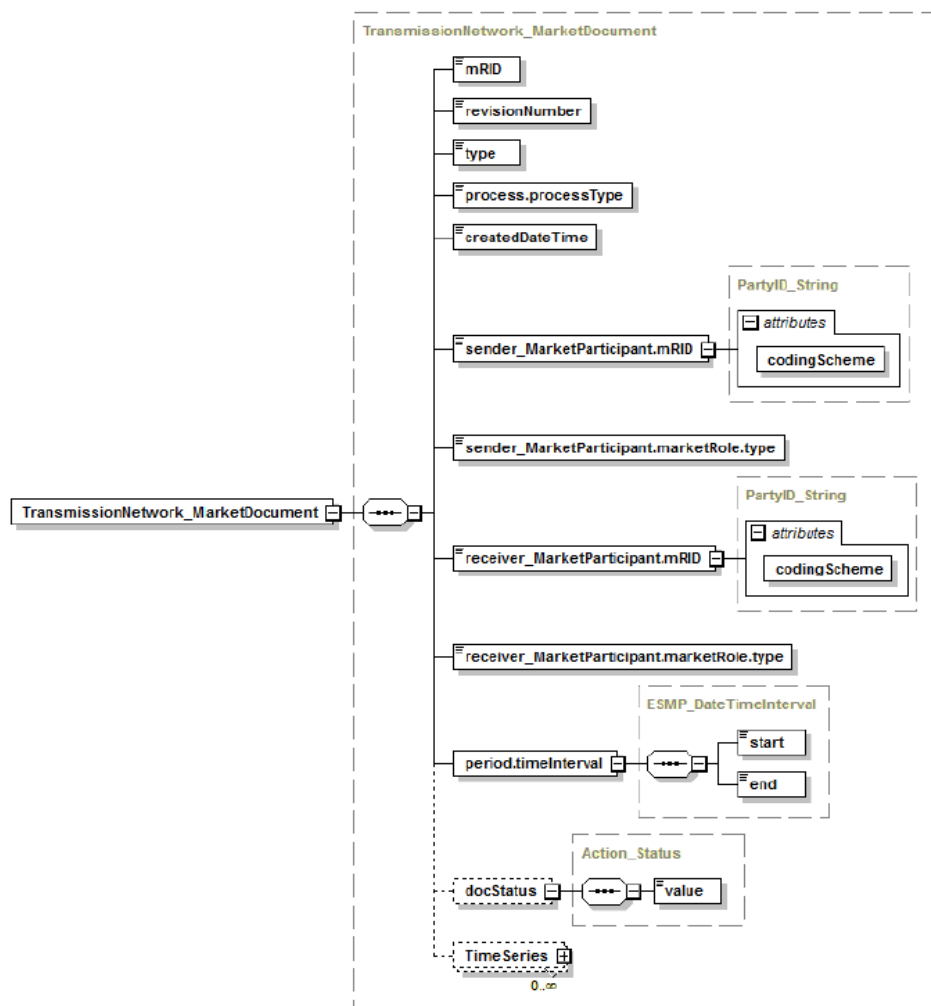


Figure 9: Tree-view illustration of the XML scheme *TransmissionNetwork_MarketDocument*

The XML file that fulfills all constraints specified in the XML scheme is compliant to the XML scheme and valid. In case the XML file does not fulfill some constraint specified in the XML scheme then it is not compliant to that XML scheme and is invalid. Only validated XML files are subject to further processing and data entry into the ENTSO-E platform.

Tabular presentation of the XML file, compliant to the presented XML scheme, is shown in Figure 10 (XML elements are located in the first column, Node, and corresponding values in the second column, Content).

Node	Content
?? xml	version="1.0" encoding="UTF-8"
Publication_MarketDocument	urn:iec62325.351tc:57wg16451-3:publicationdocument:7.0
xm:ns	1
mRID	1
revisionNumber	A61
type	A61 = Estimated capacity
sender_MarketParticipant.mRID	A04
sender_MarketParticipant.marketRole.type	(code of role associated with MarketParticipant) A04 = System Operator or TSO A39 = Data Provider A07 = Transmission Capacity Allocator A11 = Market Operator A32 = Market I
receiver_MarketParticipant.mRID	(code of doc. recipient)
receiver_MarketParticipant.marketRole.type	A32
createdDateTime	(code of role associated with MarketParticipant)
period.timeInterval	2013-12-18T12:15:21Z
TimeSeries	
mRID	2
businessType	A27
in_Domain.mRID	A27 = NTC (Estimated capacity)
out_Domain.mRID	The domain where energy is going associated with a TimeSeries
quantity.Measure_Unit.name	The domain where energy is coming from associated with a TimeSeries.
curveType	MAW
Period	A01
timeInterval	
resolution	PT60M
Point	
position	1
quantity	100
Point	
position	2
quantity	100
Point	
Point	
Point	
Point	
Point	
Point	
Point	
Point	
Point	

Figure 10: Tabular illustration of an XML scheme for TransmissionNetwork MarketDocument messages

2. ACER UMM collection templates⁴⁴

ACER collects market data through a comprehensive information system that is structured in four tiers as presented in Figure 11. Tier 1 of ARIS (ACER REMIT Information System) is the data collection and reporting system.⁴⁵

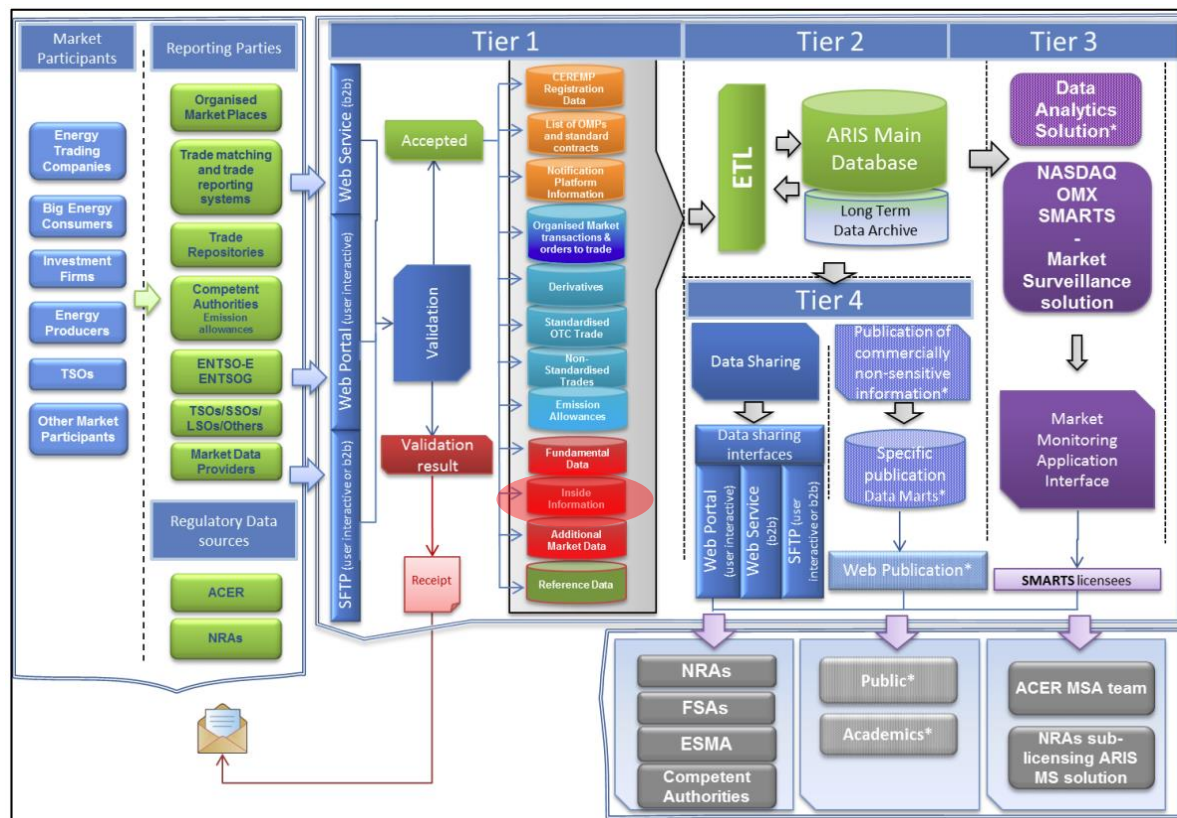


Figure 11: High level design of ARIS

A smaller part of this system (indicated with red ellipse in Figure 11) relates to collection of inside information data from the UMM platform using web feeds. For the purpose of this data collection, ACER developed three different XML schemes accommodating all types of inside information:

- “Unavailability of electricity facilities”—This schema should be used when market participants publish UMMs reporting planned or unplanned electricity unavailability of any size that are likely to significantly affect wholesale energy prices.
- “Unavailability of gas facilities”—This schema should be used when market participants publish UMMs reporting planned or unplanned gas unavailability of any size that are likely to significantly affect wholesale energy prices.
- “Other market information”—This schema should be used when market participants publish UMMs that do not fall under type I or II. Typically, these are events that are likely to significantly affect wholesale energy prices but are less structured and less frequent by nature.

⁴⁴ Source: REMIT Manual of Procedures on transaction data, fundamental data, and inside information reporting (“REMIT Manual of Procedures on transaction data, fundamental data and inside information reporting [MoP on data reporting].” ACER..

⁴⁵ Reporting format, channels, and times are set by the European Commission with the Implementing Regulation according to Article 8(2) and (5) of REMIT.

than unavailability of facilities (e.g., reporting corporate or market developments, commissioning a new power plant, etc.).

For the sake of consistency and simplicity, the three XML scheme types contain exactly the same fields whenever possible (e.g., the publication date and time of the UMM applies to any kind of UMM regardless of the type of inside information; see Figure 12).

I. Unavailability of electricity facilities	II. Unavailability of gas facilities	III. Other market information
1 Message ID	1 Message ID	1 Message ID
2 Event Status	2 Event Status	2 Event Status
3 Type of Unavailability	3 Type of Unavailability	5 Publication date/time
4/a Type of Event	4/b Type of Event	6 Event Start
5 Publication date/time	5 Publication date/time	7 Event Stop
6 Event Start	6 Event Start	13 Remarks
7 Event Stop	7 Event Stop	18 Market Participant
8/a Unit of measurement	8/b Unit of measurement	19 Market Participant Code
9 Unavailable Capacity	9 Unavailable Capacity	
10 Available Capacity	10 Available Capacity	
11/a Installed Capacity	11/b Technical Capacity	
12 Reason for the unavailability	12 Reason for the unavailability	
13 Remarks	13 Remarks	
14 Fuel Type	15/b Balancing Zone	
15/a Bidding Zone	16 Affected Asset or Unit	
16 Affected Asset or Unit	17 Affected Asset or Unit EIC code	
17 Affected Asset or Unit EIC code	18 Market Participant	
18 Market Participant	19 Market Participant Code	
19 Market Participant Code	22 Direction [V2 schema only]	
20 Interval Start [V2 schema only]		
21 Interval Stop [V2 schema only]		

Figure 12: List of fields⁴⁶ for UMMs related to unavailability of electricity (I.), gas facilities (II.), and “other market information” (III.)

For validation of XML file XML scheme REMIT UMM ElectricitySchema_V2.xsd is used. Tabular presentation of the XML file is presented in Figure 13 (XML elements are in the left column, Node, and values are in the right column, Content).

⁴⁶ Mark “V2” in the table refers to version 2 of corresponding XML schemes—this means that a particular field is implemented only for the second version of the respected XML scheme.

Node	Content
xml	version="1.0" encoding="UTF-8"
ns1:REMITUrgentMarketMessages	
xmlns:ns1	http://www.acer.europa.eu/REMIT/REMITUMMElectricitySchema_V1.xsd
xmlns:ns2	http://www.acer.europa.eu/REMIT/REMITUMMCommonSchema_V1.xsd
xmlns:xsi	http://www.w3.org/2001/XMLSchema-instance
xsi:schemaLocation	http://www.acer.europa.eu/REMIT/REMITUMMElectricitySchema_V1.xsdfile:/D:/aris_stuff/UMM/REMIT_Inside%20Information_Electricity_Schema.xsd
ns1:UMM	
ns1:UMM	
ns1:messageld	messageld2fgertrertyer_001
ns1:event	
ns1:eventStatus	Active
ns1:eventType	Production unavailability
ns1:eventStart	2006-05-04T18:13:51.0Z
ns1:eventStop	2006-05-04T18:13:51.0Z
ns1:unavailabilityType	Planned
ns1:publicationDateTime	2006-05-04T18:13:51.0Z
ns1:capacity	
ns1:unavailabilityReason	unavailabilityReason1
ns1:bittingZone	00Taaaaaaaaaaaaa
ns1:bittingZone	00Taaaaaaaaaaaaa
ns1:affectedAsset	
ns2:name	name3
ns1:marketParticipant	
ns2:name	name4
ns2:bic	bic11111111
ns1:marketParticipant	
ns2:name	name5
ns2:lei	lei5555555555555555

Figure 13: Tabular illustration of the XML scheme for REMIT UMM electricity messages

3. Greece public data from the Independent Power Transmission Operator's (IPTO) API (file type, process, data type, period covered, and publication frequency)

No.	Data type	Process	File type (API name)	Period covered	Publication frequency
1	ISP Results	Integrated Scheduling Process (ISP)	AdhocISPResults	Day	Daily
2	Activated Energy and Prices	Balancing Market Settlement	AwardBalancingCapacity	Week	
3	Activated Energy and Prices	Balancing Market Settlement	AwardBalancingCapacityProduct	Week	
4	Activated Energy and Prices	Balancing Market Settlement	BalancingCapacityProduct	Week	
5	Current Transmission Lines Outage Planning	Maintenance	CurrentLineOutages	Year	Yearly
6	Current Protection Outage Planning	Maintenance	CurrentProtectionOutages	Year	Yearly
7	Current Substations Outage Planning	Maintenance	CurrentSubstationOutages	Year	Yearly
8	Available Transfer Capacity (ATC)	DAM	DailyAuctionsSpecificationsATC	Day	Daily
9	Energy Balance	System Operation	DailyEnergyBalanceAnalysis	Day	
10	Load Forecast	DAM	DayAheadLoadForecast	Day	Twice a day and on demand
11	RES Forecast	DAM	DayAheadRESForecast	Day	Twice a day and on demand
12	Dispatching Justification	Dispatching	DayAheadSchedulingRealTimeDeviations	Day	Daily
13	Day Ahead Scheduling Requirements	DAM	DayAheadSchedulingRequirements	Day	Daily

14	Unit Availabilities	DAM	DayAheadSchedulingUnitAvailabilities	Day	Twice a day and on demand
15	Italian Interconnection Deviation Schedules	DAM	Devit	Week	Weekly
16	North Interconnections Deviation Schedules	DAM	Devnor	Month	Monthly
17	Dispatch Schedule	Dispatching	DispatchSchedulingResults	Day	Daily
18	Dispatch Schedule	Ex-post Market, Imbalance Settlement	ExPostImbalancePricingResults	Day	Three Times Per Month
19	High Voltage (HV) Customer Consumption	Metering, Imbalance settlement	HVCUSTCONS	Month	Monthly
20	Activated Energy and Prices	Balancing Market Settlement	IMBABE	Week	
21	Interconnection Maintenance	Forward Market	InterconnectionsMaintenanceSchedule	Year	Yearly (on demand)
22	Intra Day Dispatch Schedule	Dispatching	IntraDayDispatchSchedulingResults	Day	Daily (on demand)
23	ISP Forecast	ISP	ISP1DayAheadLoadForecast	Day	
24	ISP Forecast	ISP	ISP1DayAheadRESForecast	Day	
25	ISP Results	ISP	ISP1ISPResults	Day	Daily
26	ISP Requirements	ISP	ISP1Requirements	Day	
27	Unit Availabilities	ISP	ISP1UnitAvailabilities	Day	
28	ISP Forecast	ISP	ISP2DayAheadLoadForecast	Day	
29	ISP Forecast	ISP	ISP2DayAheadRESForecast	Day	
30	ISP Results	ISP	ISP2ISPResults	Day	Daily
31	ISP Requirements	ISP	ISP2Requirements	Day	
32	Unit Availabilities	ISP	ISP2UnitAvailabilities	Day	
33	ISP Forecast	ISP	ISP3IntraDayLoadForecast	Day	
34	ISP Forecast	ISP	ISP3IntraDayRESForecast	Day	

35	ISP Results	ISP	ISP3ISPResults	Day	Daily
36	ISP Requirements	ISP	ISP3Requirements	Day	
37	Unit Availabilities	ISP	ISP3UnitAvailabilities	Day	
38	ISP Requirements	ISP	ISP4Requirements	Day	
39	ISP Offers	ISP	ISPCapacityOffers	Week	Weekly
40	ISP Offers	ISP	ISPEnergyOffers	Week	Weekly
41	ISP Forecast	ISP	ISPWeekAheadLoadForecast	week	
42	Long Term Physical Transmission Rights (LT PTR) Nominations	DAM	LTPTRsNominationsSummary	Day	Daily
43	Load Forecast	FORWARD MARKET	MonthlyLoadForecast	2 Months	Monthly
44	NTC	FORWARD MARKET	MonthlyNTC	Month	Monthly
45	Monthly System Imbalance Price (SIP) Results	Ex-post Market	MonthlySIPResults	Month	
46	Activated Energy and Prices	Balancing Market Settlement	NetFinPosImbalAggregated	Week	
47	Provisional Transmission Lines Outage Planning	Maintenance	ProvisionalLineOutages	Year	Yearly
48	Provisional Protection Outage Planning	Maintenance	ProvisionalProtectionOutages	Year	Yearly
49	Provisional Current Substations Outage Planning	Maintenance	ProvisionalSubstationOutages	Year	Yearly
50	Net Interconnection Flows	System Operation	RealTimeSCADAImportsExports	Day	Daily
51	RES Injections	System Operation	RealTimeSCADA RES	Day	Daily
52	System Load	System Operation	RealTimeSCADASystemLoad	Day	Daily
53	Cost Recovery Transactions	Cost Recovery	Recovery_cost	Month	Monthly
54	Reservoir Filling Rate	DAM	ReservoirFillingRate	Day	Daily

55	Noncertified Medium Voltage (MV) RES Injections	Metering, Imbalance settlement	RESMV	Day	Daily
56	Certified MV, Low Voltage (LV) RES Injections	Metering, Imbalance settlement	RESMVLVPROD	Month	Monthly
57	Significant Events	Dispatching	SignificantEvents	Every 3 Months	Every 3 months
58	System Bounds Energy	Metering, Imbalance settlement	SYSBOUNDS	Month	Monthly
59	Meter Data Corrections	Metering, Imbalance settlement	SystemEstimationsCorrections	Month	Monthly
60	Unit Production and System Facts	Ex-post Market, Imbalance settlement	SystemRealizationSCADA	Day	Daily
61	Detailed Unit Availabilities Results	Uplift Accounting	UA_ANALYSIS	Month	Monthly
62	Unit Availabilities	ISP	UnitAvailabilities	Day	
63	Unit Production and System Facts	Metering, Imbalance settlement	UnitProduction	Day	Three Times Per Month
64	Unit Maintenance	FORWARD MARKET	UnitsMaintenanceSchedule	Year	Yearly (on demand)
65	Activated Energy and Prices	Balancing Market Settlement	UpliftAccountsWeekly	Week	
66	Activated Energy and Prices	Balancing Market Settlement	UpliftAccountsYearly	Year	
67	Load Forecast	DAM	WeekAheadLoadForecast	Week	Daily
68	Water Usage Declaration	DAM	WeekAheadWaterUsageDeclaration	Week	Daily
69	Load Forecast	FORWARD MARKET	YearlyLoadForecast	Year	Yearly
70	Water Usage Declaration	FORWARD MARKET	YearlyWaterUsageDeclaration	Year	Monthly

4. Turkish transparency platform minimum data requirements by Energy Markets Regulatory Authority (EMRA; NRA)⁴⁷

No	Data Class	Report Title	Definition of Data	Data Sharing Obligation/Institution to Provide Data	Data Resolution (Time Period)	Release Time	Data Content and Details
1	Distribution	MV System	Planned Downtime Information	Distribution Companies	Daily	D-I	Planned outage information in the relevant distribution regions, outage start and end time, and affected area
2	Distribution	MV System	Unplanned Downtime Information	Distribution Companies	Instant	Instant	Unplanned outage information in relevant distribution regions, estimated completion time, and affected area
3	Balancing	Balancing Power Market Instruction Causes	Prices, Quantities, and Reasons for Balancing Power Market Instructions	TEIAS (TSO)	Hourly	D+I	Quantity, price, reason for order, unfulfilled quantity, merit order/non-merit order/own price
4	Balancing	Ancillary Services	Primary Frequency Reserve Amount	TEIAS (TSO)	Hourly	D-I	Hourly total reserve amounts
5	Balancing	Ancillary Services	Primary Frequency Reserve Usage	TEIAS (TSO)	Hourly	D+I	Selected total bid amount, total amount provided by participants
6	Balancing	Ancillary Services	Primary Frequency Reserve Capacity Fee	TEIAS (TSO)	Hourly	D-I	Primary frequency capacity fee determined by tender on an hourly basis
7	Balancing	Ancillary Services	Secondary Frequency Reserve Amount	TEIAS (TSO)	Hourly	D-I	Hourly total reserve amounts
8	Balancing	Ancillary Services	Secondary Frequency Reserve Usage	TEIAS (TSO)	Hourly	D+I	Selected total bid amount, total amount provided by participants

⁴⁷ EMRA Board Decision No. 7912, June 22, 2018.

9	Balancing	Ancillary Services	Secondary Frequency Reserve Capacity Fee	TEIAS (TSO)	Hourly	D-I	Secondary frequency capacity fee determined by tender on an hourly basis
10	Balancing	DGP (Balancing Power Market)	DGP (Balancing Power Market) Reserve Amount	TEIAS (TSO)	Hourly	D+I	Maximum capacity offered to DGP (Balancing Power Market) in up regulation and down regulation direction
11	Balancing	DGP (Balancing Power Market) Total Transaction Volume	Income/Expenses in Balancing Power Market	TEIAS (TSO)	Hourly	D+I	Maximum capacity offered to DGP (Balancing Power Market) in YAL and YAT direction
12	Balancing	Imbalance Amount	Positive and Negative energy imbalance quantities in MWh	EPİAŞ	Hourly	M+I	The total amount paid for the DGP (Balancing Power Market) instructions, and the total amount obtained from the instructions
13	Balancing	Imbalance Transaction Volume	Energy Imbalance Volumes Received or Paid	EPİAŞ	Hourly	M+I	Total imbalance income and expenses
14	Balancing	The Group Responsible for Balance	Total Imbalance Amounts of the Group Responsible for Balance	EPİAŞ	Monthly	M+I	Total imbalance amounts of the parties in the relevant settlement period
15	Balancing	DGP (Balancing Power Market) Offers	Cumulative Price - Quantity Curves of Bids in Balancing Power Market	TEIAS (TSO)	Hourly	D+I	Amount and price of bids submitted to the system
16	Production	EAK (Available Capacity)	Available Capacity of Generation Plants	TEIAS (TSO)	Hourly	D-I	Based on UEVCB
17	Production	EAK (Available Capacity)	Changes in Available Capacity of Generation Plants	TEIAS (TSO)	Hourly	Instant	Based on UEVCB

18	Production	Planning	Production plan	TEIAS (TSO)	Hourly	D-I	Available capacity by fuel type
19	Production	Production plan	Finalized Daily Production Plan	EPİAŞ	Hourly	D-I	The determined daily production plan data based on the sources, based on the UEVCB reported the day ahead
20	Production	Production plan	Final daily production schedule updated after intraday market (IDM)	EPİAŞ	Hourly	D-I	Finalized daily production plans, which are formed by updating the finalized daily production plans according to the sources based on the settlement points announced in the day ahead within the scope of the article 69 of the Balancing and Settlement Regulation (DUI) after the closing of the IDM.
21	Production	Realized Production	Power Plant Production	TEIAS (TSO)	Hourly	D+I	Plant-based productions
22	Production	YEKDEM (Renewable Portfolio)	YEKDEM Production	EPİAŞ	Hourly	D+I	Plant-based productions within the scope of YEKDEM (Renewable Portfolio)
23	Production	Resource Allocation	Hourly Production of Power Plants with and without Balancing Unit by Fuel Type	TEIAS (TSO)	Hourly	H + 2/ D+I	Hourly production of the last 2 years on a resource basis, updates are processed in D+I
24	Production	Wind Forecasts	National Wind Forecasting Tool (RITM) data	Renewable Energy General Directorate (YEGM)	Daily	D-I	Electrical power projections to be generated from 48 hours of wind on a wind farm basis

25	Production	Hydro Electric Power Plant (HEPP) Water Condition	HEPP Reserve Level, Volume, Incoming and Released Water, Active Volume, Active Occupancy Rate, Energy Equivalent of Water	DSİ	Daily	D-I	By production unit
26	Production	YEKDEM (Renewable Portfolio)	YEK (Renewable Mechanism) Participation List	EPIAŞ	-	Y-I/M-I	Power plants benefiting from YEKDEM, region, resource type, installed power, support price, start year
27	Production	YEKDEM (Renewable Portfolio)	YEK (Renewable Mechanism) Total Amount	EPIAŞ	Hourly	M+I (After the settlement is released)	Total amount paid to power plants included in YEKDEM
28	Production	YEKDEM (Renewable Portfolio)	YEKDEM Cost Data	EPIAŞ	Monthly	M+I	YEKDEM cost per MWh loaded on suppliers to reflect on end consumers
29	Production	Power Plants to Be Activated	Information on Power Plants with Pre-Acceptance Approved and Commissioned	General Directorate of Energy Affairs (EİGM)	Daily	W + I/M+I	Installed power information on license basis, regional breakdown, and resource type
30	Production	Planning	Test Periods of Power Plants to Be Commissioned	TEİAŞ (TSO)	Daily	D-I	Notification of test production processes of the plant to be commissioned
31	Production	Breakdown and Maintenance	Plant-Based Maintenance Information	EPIAŞ	Daily	D-I	Unavailable capacity, maintenance start and end dates
32	Production	Breakdown and Maintenance	Power Plant-Based Failure or Other Reason Unavailability Information	Market participants with production license	Hourly	Instant	Data of failure start, estimated end date and amount of power not given due to failure (MW)

33	Production	Breakdown and Maintenance	Plant-Based Maintenance Information	Market participants with production license	Daily	Y-I/M-I	The data are updated when the maintenance start, end date, and the amount of power (MW) that will not be delivered during this maintenance, in case of any changes made in the program.
34	Natural gas	Total Estimated Transport Amounts	Input and Output Quantity Estimation	BOTAS (Gas TSO)	Daily	D-I	Point-based at physical inputs, cumulative gas supply at virtual inputs and outputs
35	Natural gas	UDN (National Balancing Point) Trade Amounts	Intraday and End of Day Bilateral Agreement Amounts	BOTAS (Gas TSO)	Daily	D+I	Cumulative transactions made through Electronic Bulletin Board (EBT)
36	Natural gas	Entry Points Capacity and Reserved Amount Data	Maximum Separable Capacity at Natural Gas Entry Points, Reserved Capacity	BOTAS (Gas TSO)	Daily	D-I	Maximum capacity, reserved capacity
37	Natural gas	Total Entry Points Quantity Data	Total Actual Realization Amount	BOTAS (Gas TSO)	Daily	D+I	Cumulative realization amounts
38	Natural gas	Storage	Natural Gas Storage Facilities Data	BOTAS (Gas TSO)	Daily	D+I	Cumulative warehouse occupancy, liquified natural gas (LNG) + underground tanks
39	Natural gas	Pipeline Stock Amount	Gas Amount in the Pipeline	BOTAS (Gas TSO)	Daily	Daily	Pipeline stock quantities
40	Natural gas	Exit Point Data	Natural Gas Transmission Line Exit Point Data	BOTAS (Gas TSO)	Daily	D+I	Cumulative consumption values
41	Natural gas	Cuts and Curtailments	Natural Gas System Restriction Information	BOTAS (Gas TSO)	Daily	D-I	Cumulative estimated cut-off amount

42	Transmission	Transmission Line Restriction	Congestion Information	TEIAS (TSO)	Hourly	D+I	Constraint location, constraint duration, affected zone, constraint reason
43	Transmission	Interconnection	Planned Outages in Network and Interconnection	TEIAS (TSO)	Monthly	Y-I	Start and end time, its effect on the capacity in the network, and at each interconnection point
44	Transmission	Interconnection	Planned Downtime Information (Line Maintenance Information)	TEIAS (TSO)	Hourly	Instant	Location, working time, effect on capacity
45	Transmission	Interconnection	Unplanned Downtime Information	TEIAS (TSO)	Hourly	H+I	Start-end time and points, reason for interruption, effect on capacity
46	Transmission	Interconnection	Details on Realized/Eliminated Outages (Planned and Unplanned)	TEIAS (TSO)	Hourly	D+I	Components affected by outages, interruption location, lost capacity
47	Transmission	Interconnection	Year-Ahead Estimates of Interconnection Capacity	TEIAS (TSO)	Yearly	Y-I	For Y, Y + 1, Y + 2
48	Transmission	Interconnection	Month-Ahead Forecasts for Interconnection Capacities	TEIAS (TSO)	Weekly	M-I	Separating peak and non-peak hours, for M+12
49	Transmission	Interconnection	Week-ahead Forecasts for Interconnection Capacities	TEIAS (TSO)	Hourly	W-I	Ex. Changes in maintenance plans for H + 4
50	Transmission	Interconnection	Available Transmission Capacity and Day Ahead Allocations of interconnection lines	TEIAS (TSO)	Hourly	D-I	Allocation period, allocated ENH, allocated MWh capacity

51	Transmission	Interconnection	Capacity Demands of Market Participants	TEIAS (TSO)	Hourly	H+1	Capacity proposed and distributed by TEIAS (TSO)
52	Transmission	Interconnection	Priority capacity	TEIAS (TSO)	Hourly	Session + 1	The capacity demanded by market players as a priority right; Capacity recommended by TEIAS (TSO) as priority right
53	Transmission	Interconnection	Reserve Capacity	TEIAS (TSO)	Hourly	H+1	Capacity held by TEIAS (TSO) for security
54	Transmission	Interconnection	Nominated Capacity	TEIAS (TSO)	Hourly	Session + 1	Total capacity nominated by market players by interconnections (Commercial Transactions)
55	Transmission	Import Export	Realized Import-Export Quantities	TEIAS (TSO)	Hourly	H + 2	Net import and export volumes for each country on hourly country basis for the last 2 years
56	Transmission	Zero Balance Adjustment Amount	Breakdown Detail of Zero Balance Correction Amount	EPIAŞ	Hourly	M+1	KEYALT and KEYATT (on the basis of amount and quantity and separating the instructions with codes 0, 1, and 2 considered in these items on the basis of labels)
57	Consumption	Non-Eligible Consumers	Number of Non-Eligible Consumers	Distribution Companies	Monthly	M+1	On the basis of consumption ranges to be determined by EPIAŞ, subscriber group and distribution regions
58	Consumption	Non-Eligible Consumers	Consumption Breakdown of Non-Eligible Consumers	Distribution Companies	Monthly	M + 2	Consumption range to be determined by EPIAŞ on the basis of subscriber group and distribution regions

59	Consumption	Eligible Consumers	Number of Consumers Using/Not Using the Right to Choose Their Supplier	EPIAŞ	Monthly	M+1	Total number of eligible consumers, the number of consumers using and not using this right
60	Consumption	Eligible Consumers	Consumption Breakdown of Consumers Using/Not Using the Right to Choose Their Supplier	EPIAŞ	Monthly	M+1	Total number of eligible consumers, including consumption information by consumers who use this right and those who do not
61	Consumption	EDAŞ and Industry Breakdown Consumption	Consumption Estimation Based on City	Distribution Companies	Monthly	M-1	The percentage share of each province to have much in Turkey consumption
62	Consumption	EDAŞ and Industry Breakdown Consumption	Consumption Estimated Breakdown by Sectoral and Percentage	Distribution Companies	Monthly	M-1	How much share of electricity each consumer group covers as a percentage
63	Consumption	Demand Side	Demand Forecast	TEIAS (TSO)	Yearly	Y-1	For Y + 10
64	Consumption	Demand Side	Actual Load	TEIAS (TSO)	Hourly	H + 2	Actual system load (MWh) will be stored for 2 years
65	Consumption	Demand Side	Day-Ahead Load Forecast	TEIAS (TSO)	Hourly	D-1	Load forecast plan (excluding planned import/export)
66	Consumption	Demand Side	Week-Ahead Load Forecast	TEIAS (TSO)	Hourly	W-1	Weekly load forecast plan
67	Consumption	Demand Side	Estimated Load	TEIAS (TSO)	Hourly Daily Monthly	D-1/M-1/Y-1	Estimated draws in the network; estimated load + planned net exports
68	Cross-Border Trade	Import Export	The Amount of Imported/Exported Electric Energy	TEIAS (TSO)	Hourly	H + 2	The amount of electrical energy imported/exported on the basis of energy transmission lines within the scope of border trade

69	Cross-Border Trade	Import Export	Capacity Auction Results	TEIAS (TSO)	Variable	Session + 1	Tender results
70	Market	Participant Information	Market Participation Situations	EPİAŞ	-	D+1	DAM, IDM, DGP (Balancing Power Market), and Market participation status of the participants on organization basis; license type; active-passive status
71	Market	DAM	Market Clearing Price (PTF)	EPİAŞ	-	D-1	Not finalized and final PTF for each hour in the DAM
72	Market	Balancing Power Market	System Marginal Price for Balancing Market (SMF)	TEIAS (TSO)	Hourly	H + 5	SMF of each hour generated in DGP (Balancing Power Market)
73	Market	IDM	Weighted Average Price	EPİAŞ	Hourly	H	Weighted average of all match prices for each hour in the IDM
74	Market	Bilateral Agreement Amount Subject to Regulation of the Tariff	Bilateral Agreement Amounts of Suppliers of Last Resort under Regulated Tariffs	TETAŞ	Hourly	D-1/W-1/Y-1	Hourly bilateral agreement amounts covered by the regulated tariff
75	Market	Bilateral Agreements	Bilateral Agreement Volumes by Market Participant (MWh)	EPİAŞ	Daily	D+1	Bilateral agreements are presented cumulatively in terms of purchase and sale without giving information to the counterparty
76	Market	Block offers	Block Bid Amounts	EPİAŞ	Daily	D-1	Total block bid amount in buy and sell direction
77	Market	Block offers	Block Bid Match Quantities	EPİAŞ	Daily	D-1	The total amount of accepted and unaccepted block bids in buying and selling direction

78	Market	Flexible Offers	Flexible Order Quantities	EPIAŞ	Daily	D-1	Total flexible bid amount per day
79	Market	Flexible Offers	Flexible Bid Match Quantities	EPIAŞ	Hourly	D-1	Total hourly flexible bid match quantity
80	Market	DAM	Match Quantities	EPIAŞ	Hourly	D+1	Hourly total cleared amounts in terms of buying and selling on an organization basis
81	Market	DAM	Difference Amount	EPIAŞ	Daily	D-1	Daily total difference amount arising from purchase offers, sales offers, and rounding in the DAM
82	Market	GDDK (the settlement correction component)	Number of Meters Requested by GDDK (the settlement correction component) by Distribution Company	EPIAŞ	Monthly	M+1	Current last value of each month according to subscriber group
83	Market	GDDK (the settlement correction component)	Electrical Energy Volumes (MWh) Subject to GDDK (the settlement correction component) on a Distribution Company Basis	EPIAŞ	Monthly	M+1	Current last value of each month according to subscriber group

UEVÇB Active electric energy generating or consuming entities which are defined by market participants and registered via MMS so that the settlement calculations for each market participants can be made

EPIAŞ Turkish Energy Exchange Company

YEGM Renewable Energy General Directorate

DSİ: General Directorate Hydraulic Works

EIGM General Directorate of Energy Affairs

YEKDEM Renewable Energy Support Mechanism

RITM Wind forecast system

YEK	Renewable Energy Source
TEIAS	Transmission System Operator Company
TETAŞ:	Public wholesale company
KEYALT	Accepted up regulation in the balancing market
KEYATT	Accepted down regulation in the balancing market

Source: Transparency Platform Web Service Guidelines (“Transparency Platform Web Service Guidelines V2.0.” EPIAS. https://www.epias.com.tr/wp-content/uploads/2016/10/Web_Service_Technical_Guidelines_v2.0.pdf)

Appendix 2. Transparency data details

1. Data subject to transparency requirements

An overview of data required by the EU regulations is presented in Table 8. While this list is not exhaustive, it encompasses the relevant data for establishing the required market transparency basis.

Table 8: Overview of data required by the EU regulations

Transparency data	Regulation
Information on total load	EU Transparency Regulation, article 6
Information related to the unavailability of consumption units	EU Transparency Regulation, article 7
Year-ahead forecast margin	EU Transparency Regulation, article 8
Transmission infrastructure	EU Transparency Regulation, article 9
Information related to the unavailability of transmission infrastructure	EU Transparency Regulation, article 10
Information on the estimation of cross-zonal capacities	EU Transparency Regulation, article 11
Information related to the use of cross-zonal capacities	EU Transparency Regulation, article 12
Information related to congestion management measures	EU Transparency Regulation, article 13
Forecast generation	EU Transparency Regulation, article 14
Information related to the unavailability of generation and production units	EU Transparency Regulation, article 15
Actual generation	EU Transparency Regulation, article 16
Balancing	EU Transparency Regulation, article 17
Information relevant to the capacity and use of facilities for production, storage, consumption, or transmission of electricity or natural gas or related to the capacity and use of LNG facilities, including planned or unplanned unavailability of these facilities—Inside Information/UMM	REMIT regulations (REMIT and REMIT Implementing Regulation)

Source: DNV

Table 9 presents an overview of the most relevant EU Transparency Regulation articles including a brief description of the scope covered by each of them. The regulation also defines responsibilities and roles of the different market stakeholders. Through the ENTSO-E transparency platform, the TSOs are requested to make the relevant data available.

Table 9: Key TSO reporting obligations under EU Transparency Regulation

Article	Covering
Article 6 – Information related to total load	Per control area, calculate and provide data on the total load as well as forecasts of the total load for the day/week/month/year ahead
Article 7 – Information related to unavailability of the consumption unit	Report on changes in planned and actual availability of the consumption units with 100 MW or more installed capacity
Article 8 – Year-ahead forecast margin	Per control area and bidding zone, calculate and provide the year-ahead forecast margin ⁴⁸
Article 9 – Transmission infrastructure	Establish and provide information on future changes to network elements and interconnector projects with an impact of at least 100 MW
Article 10 – Information related to unavailability of transmission infrastructure	Report on transmission infrastructure planned availability, as well as changes in planned and actual availability that reduces cross-zonal capacity for more than 100 MW
Article 11 – Information related to the estimation and offer of cross-zonal capacities	Provide forecasted and offered capacity (MW) per direction between bidding zones based on net transmission capacity-based allocation, or flow-based capacity allocation
Article 12 – Information related to the use of cross-zonal capacities	Report on: In case of explicit allocations: Capacity (MW) requested and allocated to the market; The price of the capacity (currency/MW); The auction revenue per border between bidding zones; Total capacity nominated; and Prior to each capacity allocation, the total capacity already allocated through previous allocation procedures; In case of implicit allocations, for every market time unit the net positions of each bidding zone (MW) and the congestion income (in currency) per border between bidding zones; Day-ahead prices in each bidding zone (currency/MW); Scheduled day-ahead commercial exchanges in aggregated form between bidding zones; Physical flows between bidding zones; and Cross-zonal capacities allocated between bidding zones in Member States and third countries.

⁴⁸ Year-ahead forecast margin means the difference between the yearly forecast of available generation capacity and the yearly forecast of maximum total demand.

Article 13 – Information related to congestion management measures	Information related to redispatching and countertrading, including costs incurred
Article 14 – Information related to generation	For their control areas, TSOs shall calculate and provide data on the total generation as well as forecasts of the generation for the day/week/month/year ahead
Article 15 – Information related to unavailability of the generation units	TSOs should report on changes in planned and actual availability of the generation units with 100 MW or more installed capacity
Article 16 – Actual generation	Actual generation output (MW) and per generation unit with 100 MW or more installed generation capacity
Article 17 – Balancing	Rules and methodologies Balancing reserves and prices Accepted aggregated offers Amount of activated balancing Imbalance prices and total imbalance volume per balancing time unit (called also “balancing intervals”)

Source: DNV

2. Data subject to REMIT requirements

In the EU, energy market abuse is addressed via REMIT regulations. REMIT regulations' main purpose is to build confidence in the market and ensure that prices reflect a fair and competitive interplay between supply and demand. Thus, no profits should be drawn from market abuse. Specifically, insider trading (Article 3) and market manipulation (Article 5) are forbidden according to the EU REMIT Regulation. In this context, the monitoring responsibility of wholesale energy markets is assumed by the ACER working in close collaboration with NRAs. For the electricity sector, the following stipulations are relevant:

- According to Article 8 of the REMIT Implementing Regulation, ENTSO-E is obliged to submit to ACER fundamental data on electricity as soon as the data becomes available on the ENTSO-E transparency platform. This includes planned and unplanned unavailability of all facilities covered under Articles 6 to 17 of the EU Transparency Regulation.
- According to REMIT Implementing Regulation Article 10, market participants holding and disclosing inside information, or service providers disclosing such information on market participants' behalf, have to provide web feeds⁴⁹ to enable efficient collection of this information by ACER.

The platforms for publishing UMM are registered by ACER as inside information platforms (IIPs). ACER defines them as “an electronic system for the delivery of information that allows multiple market participants to share information with the wider public and complies with the minimum quality requirements listed in the ACER Guidance.” Development of IIPs is based on the Article 4(1) of REMIT, which describes the obligation of market participants to publicly disclose inside information that they possess with regard to their businesses.

The idea behind developing IIPs is to aggregate UMMs from market participants in an effective way with the objective to disclose inside information to as wide a public as possible. ACER maintains register of IIPs based on their compliance with the minimum quality requirements for effective disclosure of inside information, as defined in the ACER Guidance on application of REMIT.⁵⁰ Table 10 presents an overview of the most relevant REMIT articles, including a brief description of the scope covered by each of them.

Table 10: Overview of important REMIT articles

Article	Covering
Article 4 (1) – Obligation to publish inside information	Market participants shall publicly disclose inside information about businesses or facilities that the market participant owns or is somehow related to.
Article 8 (5) – Data collection	Market participants shall provide to ACER and NRA ⁵¹ data related to the capacity and use of facilities for production, storage, consumption, and transmission of electricity or natural gas as well as usage of LNG facilities. This information should allow for monitoring trading in wholesale energy markets.

Source: DNV

⁴⁹ Web feed is a data format to provide users with content (in this case UMM data in XML format) that is frequently updated.

⁵⁰ The most recent version of this ACER Guidance is the 6th edition from July 22, 2021, which can be reached at “Guidance on REMIT application.” ACER. <https://www.acer.europa.eu/remit-documents/guidance-remit-application>

⁵¹ In the REMIT Implementing Regulation, this information is defined as “fundamental data.”

It should be noted that part of REMIT is not relevant for the purpose of this methodology. For instance, Article 8 (1) states that market participants, among others,⁵² need to provide ACER a record of wholesale energy market transactions, including trade orders, wholesale energy products traded, price and quantity settled, dates and times of execution, involved transaction parties, beneficiaries of the transaction, and other relevant information.

3. Additional market data

In addition to the minimum transparency requirements defined in the EU regulations, TSOs and/or MOs may publish additional data to support electricity market transparency.⁵³ Some examples of typical additional market data are presented in Table 11.

Table 11: List of typical additional market data

Additional data	Details
Market volumes and prices (DAM/Intraday Market, IDM)	
Market Clearing Price (MCP) of Bidding Zone	Hourly MCP, maximum, average, and minimum MCP on a daily level
MCP for baseload and peak load	Average, on a daily level
MCP comparison	Average, on a daily level—comparison with neighboring markets (if any) MCP
Baseload MCP	Weighted average, on a daily level
MCP duration curve	MCP for each time interval sorted descending in a certain period
Traded volume	Hourly traded volumes aggregated on a daily/weekly/monthly level
Supply mix (accepted offers)	Aggregate sum of accepted offers per fuel type (lignite, gas, hydro, RES, imports, etc.) on a daily or monthly level, values, and percentages
Demand mix (accepted bids)	Aggregate sum of accepted bids per consumption type (high voltage load, medium voltage load, low voltage load, pumping, export, losses, etc.) on a daily or monthly level, values, and percentages
Traded bids	Aggregate sum per incumbent companies and others on hourly, daily, or monthly level
Ratio between values: minimum MCP, average MCP, maximum MCP, and traded volume	Percentual increase/decrease between respective values for two consequent months
Total and traded bids	Aggregate sum on daily level
Total and traded offers	Aggregate sum on daily level
Market schedules (DAM and IDM)	

⁵² Market participants, a third party acting on behalf of the market participant, a trade reporting system, an organized market, a trade-matching system or other person professionally arranging transactions, or a trade repository registered or recognized under applicable Union legislation on derivative transactions, central counterparties, and trade repositories or a competent authority in accordance with Article 25(3) of Directive 2004/39/EC or the European Securities and Markets Authority.

⁵³ In this context, a national market data platform could gather TSO and MO data as a one-stop-shop solution instead of having different platforms.

Traded bids and offers (market schedules)	Aggregate sum of traded volumes on a daily level. Separately for DAM and IDM. Separately for bids (by consumption type), and offers (by fuel type)
Interconnector flows	
Cross-border volume – Imports	Aggregate sum, by border and on an hourly, daily, or monthly level
Cross-border volume – Exports	Aggregate sum, by border and on an hourly, daily, or monthly level
Cross-border volume – Net position	Difference between aggregate summary values by cross-border on an hourly, daily, or monthly level
Market shares	
Shares for production units	Percentage of accepted offers in relation to the total production by generation plant
Shares for RES production	Percentage of accepted offers in relation to the total RES production by RES plants
Shares for domestic load	Percentage of accepted bids in relation to the domestic load by market participants
Shares for domestic load	Percentage of accepted bids in relation to the domestic load and voltage level by market participants
Market shares of imports	Aggregated per market participant
Market shares of exports	Aggregated per market participant
Bilateral contracts	
Bilateral contract volumes	Aggregated by participants on a daily/weekly/monthly level, separately for buys and separately for sells

Source: DNV

Appendix 3. Examples of transparency platforms

In addition to participating in international or regional transparency platforms, countries may organize their own national transparency platforms (or platform), with the objective to materialize benefits described in section 2.1. In this appendix, details and examples for different types of platforms for transparency data are provided. Furthermore, the following sections discuss relevant issues regarding the mentioned platforms as well as the requirements regarding the support provision of the national TSO to the ENTSO-E platform.

Three national platform types can be differentiated:

- TSO transparency platform—Contains transparency data (see section 2.2.1) subject to EU Transparency Regulation as well as additional data (if applicable).
- Market data and REMIT platform—Contains market data (see section 2.3) as well as REMIT inside information data⁵⁴ (see section 2.2.2).
- Joint transparency platform—Contains all abovementioned data and other (relevant) energy data (see section 2.3).

1. TSO transparency platforms

TSOs in certain countries fulfill their transparency obligation by posting data on the ENTSO-E transparency platform. At the same time, a link to the ENTSO-E transparency website is included in their own website. Other TSOs have their own transparency platform where they publish data about power system and market operations. All or a part of this data are then uploaded to the ENTSO-E transparency platform.

The following section describes the ENTSO-E transparency platform and the role of TSO members in populating the platform and provides further details about the operation and functionality of this platform. Subsequently, the section elaborates on the requirements related to the potential national TSO transparency platforms.

1.1. ENTSO-E transparency platform

The EU regulation mandatory requirements cover relevant data, that is, data that has the largest impact on both power system and electricity market operations. The definition of mandatory requirements in the EU legislation is a very successful trade-off between magnitude and complexity of required data and clarity and simplicity of the transparency platforms. This is the principle of gradual implementation of mandatory requirements that ensures smooth implementation, already proved to be very successful with legal packages in the energy sector, consisting of mandatory EU Directives and Regulations that have been gradually introduced since the mid-1990s.

The EU approach has resulted in the creation of the ENTSO-E transparency platform, which sets the ground for a gradual increase of data over time. In fact, additional information has been disclosed on the transparency platform over the years that went beyond the mandatory requirements and was relevant and interesting for stakeholders. This has allowed the ENTSO-E transparency platform to evolve from a simple platform for the fulfillment of mandatory requirements to a more pragmatic operational tool.

⁵⁴ Although these platforms could be separate, it makes sense to keep them together.

The ENTSO-E transparency platform was developed primarily for the internal use of ENTSO-E members, and its development started even before the EU Transparency Regulation was adopted. In a way, transparency issues identified in the Union for the Coordination of Transmission of Electricity (Europe) and European Transmission System Operators (separate before they were merged into ENTSO) were important reasons for the regulation to be developed. It became clear that mandatory operational rules (Operational Handbook and Multilateral Operational Agreement) could not be implemented without a sufficient level of transparency on power system operation. In the earlier days of the electricity sector's unbundling process, cross-border electricity trading was seriously obstructed by nontransparent allocation and utilization of cross-border transmission capacities. In addition, the development of the transmission infrastructure was uncoordinated until the implementation of the ENTSO-E Ten-Year Network Development Plan. Thus, through a high visibility level among ENTSO-E partners, a fair play in daily operations/trading, and a higher discipline in interconnected power system operations could be achieved.

It is common practice in the EU and the EC that national energy laws transpose EU Transparency Regulations.⁵⁵ In this regard, the energy law contains rules for publishing data at the ENTSO-E transparency platform with detailed provisions related to transparency requirements. Regular reporting is done with a different level of detail by the TSO members of ENTSO-E. This platform has been in operation since 2014 already. Since October 30, 2020, this platform furthermore serves to fulfill ENTSO-E's obligations for publication of data on balancing and system operations as defined by the Electricity Balancing Guideline (EBGL; EC Reg. 2017/2195) and System Operation Guideline (SOGL; EC Reg. 2017/1485), but only for EU Member States. In the case of TSOs from EC parties, it can be observed that they are lagging behind in the implementation.⁵⁶

According to the legal framework obligations, data providers of EU Member States or members of ENTSO-E, need to support operation of the ENTSO-E transparency platform by submitting a predefined data set (see section 2.2.1) in a defined format and respecting established deadlines. TSOs are the key data providers and primary owners of data since they create the majority of data for the ENTSO-E transparency platform. Other primary data owners may either directly submit data to the platform, provided they use a third party acting as a data provider on their behalf or send data to the TSO. More details about the ENTSO-E transparency platform are presented in the next text box.

Text box 5: ENTSO-E transparency platform

ENTSO-E, the European Network of Transmission System Operators for Electricity, is the association for the cooperation of the European TSOs for electricity. The organization has 42-member TSOs representing 35 countries. The mission of ENTSO-E is to ensure the security of the interconnected power system in all time frames at the pan-European level and the optimal functioning and development of the European interconnected electricity markets, while enabling the integration of electricity generated from renewable energy sources (RES) and from emerging technologies.

According to EU Transparency Regulation, ENTSO-E is obliged to make the data available to the public through a central information transparency platform. Accordingly, the ENTSO-E transparency platform has been established for publication of electricity system data. The following requirements apply:

- The platform shall be available to the public free of charge.

⁵⁵ Legal and regulatory requirements for the transparency platform are defined by the EU Transparency Regulation no. 543/2013 and specific data requirements in the Capacity Allocation and Congestion Management Regulation, SOGL, and EBGL documents.

⁵⁶ For example, Georgia has not published its data on the platform so far.

- The data shall be up-to-date, easily accessible, downloadable, and available for at least five years.
- Data updates shall be time stamped.

The information published by ENTSO-E is collected from data providers such as TSOs, PXs, or other qualified third parties. The Manual of Procedures published by ENTSO-E⁵⁷ provides details about the data that needs to be submitted, or it can be extracted data from the platform. Figure 14 presents an overview of the aspects covered under the Manual of Procedures.

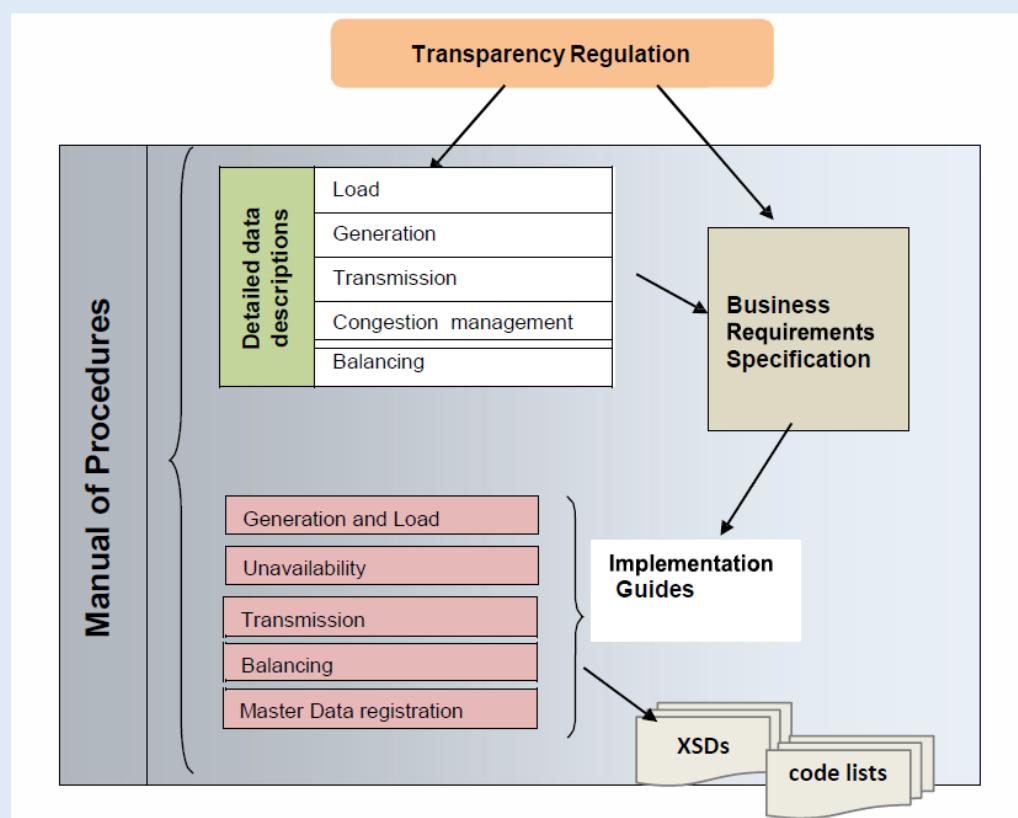


Figure 14: ENTSO-E transparency platform—Content of Manual of Procedures

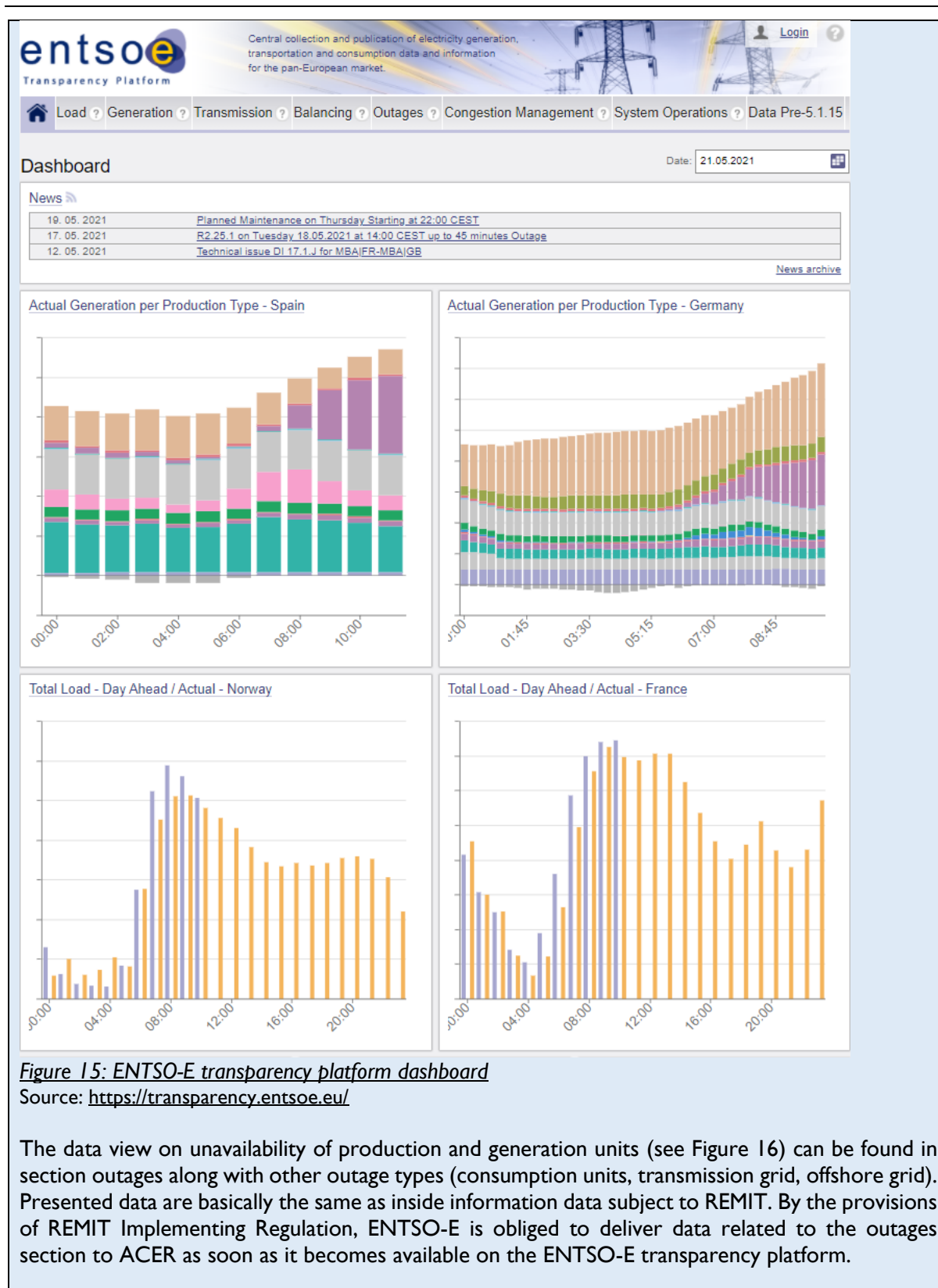
Source: <https://transparency.entsoe.eu/>

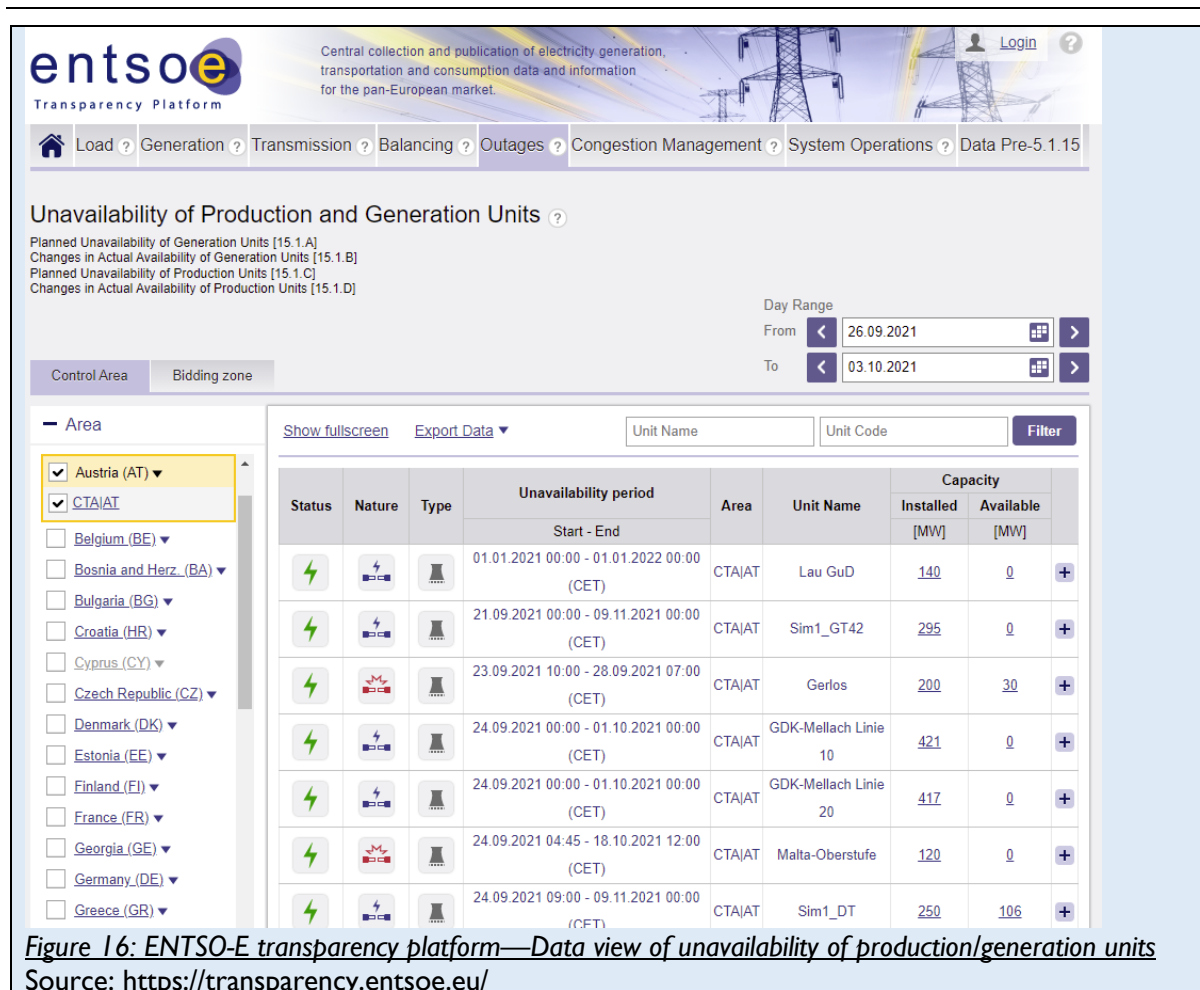
The detailed data descriptions distinguish different categories of data with the specification of business requirements and implementation guides. For definition of input XML messages formats, XML scheme files (XSD) are used with code lists.⁵⁸

The platform's start page (dashboard) provides links to different data sections, an overview of recent news, and various diagrams (see Figure 15). Each data section provides suggested data views (already used, for quicker selection of data) and lists all data views in case they are needed. Particular data views could be seen in tabular and graphical mode, with possible selection of country/bidding zone, date (or dates), time zone, and resolution (15, 30, and 60 minutes). It is possible to download tabular data into XML, CSV, Excel (XLSX), and ZIP (XML). Data prior to January 5, 2015, can be accessed from the separate table with links to files in XML and Excel format by clicking on the particular link (i.e., different, limited manner than the rest of the platform data).

⁵⁷ Developed according to Article 5 of the EU Transparency Regulation ("Manual of Procedures." ENTSO-E.).

⁵⁸ Contains the description of all the codes that may be used in the XML messages/files.





1.2. Separate national TSO transparency platform

In addition to the legal framework (see section 2.2.1), the provision of data are also regulated by the Transmission Network Code as part of the long-term planning, operational planning, or operational control processes run by the TSO. Despite the commitments toward the ENTSO-E transparency platform, the TSO may decide to establish a separate national TSO transparency platform. Requirements regarding such a platform could be specified in the Transmission Network Code or even in separate rules.⁵⁹

In this sense, the national TSO transparency platform needs to cover defined minimum transparency data (see section 2.2.1) with the possibility to extend the data set with additional TSO-related market data (e.g., Interconnection Flows). This national platform would typically be administered and owned by the TSO, who would be the main data provider and primary owner of data. For other primary owners of data, the TSO may either allow data entry into the platform or request the data submission to the TSO. In the latter case, the TSO would be responsible for the data entry into the platform.

A national TSO transparency platform should meet the following requirements:

1. Compliance with the EU Transparency Regulation and related national legislation
2. Data entered only by defined data providers

⁵⁹ For example, in Serbia, energy law obliges Serbian TSOs to adopt the rules on the publication of electricity market fundamental data, which are approved by the NRA.

3. Required data sets should also be submitted to the ENTSO-E transparency platform (from the national platform or directly by primary owners of data)
4. The platform may contain additional market data reflecting characteristics of the national electricity sector
5. Data delivery time frames are the same as for the ENTSO-E transparency platform
6. Data quality and submissions should follow national TSO specifications
7. Data in the national transparency platform is public and free of charge

The main differences between ENTSO-E and the national TSO transparency platforms are the country range covered and the data requirements. Specifically, a national TSO transparency platform covers only one country, and the data requirement is at least equal to the minimum requirements contained in the EU Transparency Regulation, but it can be more extensive.

Text box 6: Decision point—Establishment of the national TSO transparency platform

Key question: Is it required to establish a national TSO transparency platform in parallel to TSO support to the ENTSO-E transparency platform?

Option 1: It is not required because data are already entered in the ENTSO-E transparency platform.

- Pros: Simplification, because establishment of the platform is complex and demanding.
- Cons: The ENTSO-E platform does not provide significant flexibility and is not tailored in accordance with specific need of a particular TSO. The existing thresholds for data reporting in the ENTSO-E transparency platform hinders the transparency for smaller sized markets.

Option 2: It is necessary to establish the national TSO transparency platform.

- Pros: Provide possibility for stakeholders to get additional market information, which will improve overall transparency of the electricity market.
- Cons: It is required to invest additional resources to develop a national TSO transparency platform and manage the additional market data.

Recommendation:

Option 2 should be considered in case the TSO is legally obliged or plans to publish additional data that surpasses the minimum transparency data set defined in EU Transparency Regulation. This choice provides better flexibility for management of transparency data and also fits well with the concept of a one-stop-shop national transparency platform. During development of the electricity market, it is necessary to monitor and review or amend (if applicable) additional market data.

Option 1 could be implemented if it is estimated that introduction of additional market data will not bring significant added value to the electricity market transparency.

2. National market data and REMIT platform

Although a market data platform and REMIT platform may be separated and operated by different entities, it is common to have a single national market data and REMIT platform.⁶⁰ Typically, this joint platform is owned and operated by the MO and covers centralized market data for a particular market segment. For this purpose, the MO collects REMIT data as well as additional relevant market data (which the MO deems necessary). Usual market data contained in the platform is listed in the following:

⁶⁰ Transparency platform of PXs.

1. Public hourly and daily market data published each day
2. Public data comprising aggregated market data, published during a longer period
3. Public inside information data—UMMs, published as they appear (instead of MO, a third party may own a second data platform for UMM)
4. Private daily market data over a longer period, available for a certain fee (optional)
5. Private reports for NRA with relevant market data, submitted by the schedule or on NRA demand, according to national legislation or regulations, and subject to confidentiality policy
6. Additional market data in accordance with peculiarities and specifics in the national electricity sector, available free of charge (if applicable)
7. Private REMIT data for NRA

National REMIT (or UMM) platforms contain inside information (see 0). Market participants submit inside information that is stored into a centralized (web-based and certified) platform. Data are published and accessible from the UMM platforms free of charge. Availability of historical inside information data should be at least five years. A UMM platform is commonly governed by the responsible MO.

ACER maintains the register of inside information (UMM) platforms based on their compliance with the minimum quality requirements defined in the ACER Guidance upon the application of REMIT.⁶¹ Table 12 presents a list of inside information platforms as presented on the ACER website.⁶²

⁶¹ ACER Guidance on application of REMIT 6th edition (“ACER Guidance on the application of Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency 6th Edition.” ACER. July 2021. https://documents.acer-remit.eu/wp-content/uploads/ACER_Guidance_on_REMIT_application_6th_Edition_Final.pdf).

⁶² Status as of November 30, 2021, ACER REMIT Portal, list of UMM platform (“List of Inside Information and Transparency Platforms.” ACER. <https://www.acer-remit.eu/portal/list-inside-platforms>).

Table 12: List of IIPs

Name of the Platform	Electricity	Natural Gas	Status of Application
Balkan Gas Hub EAD	No	Yes	Under evaluation, first phase
Central European Gas Hub AG	Yes	Yes	IIP assessment successfully completed
European Energy Exchange AG	Yes	Yes	IIP assessment successfully completed
Gestore dei Mercati Energetici S.p.A.	Yes	Yes	IIP assessment successfully completed
Hungarian Power Exchange	Yes	Yes	IIP assessment successfully completed
JAO	Yes	No	Under evaluation, first phase
Nord Pool AS	Yes	No	IIP assessment successfully completed
OMI, Polo Español S.A. (OMIE), MIBGAS S.A.	Yes	Yes	IIP assessment successfully completed
PRISMA European Capacity Platform GmbH	No	Yes	IIP assessment successfully completed
SEEBURGER AG	Yes	Yes	IIP assessment successfully completed
Solien, s.r.o.	Yes	Yes	IIP assessment successfully completed
Towarowa Giełda Energii S.A.	Yes	No	IIP assessment successfully completed
UAB GET Baltic	No	Yes	IIP assessment successfully completed
Webware Internet Solutions GmbH	Yes	Yes	IIP assessment successfully completed

Source: DNV

As an example, the following text box introduces the Nord Pool REMIT UMM platform and describes its functionality.

Text box 7: Nord Pool REMIT UMM platform

REMIT UMM (website <https://umm.nordpoolgroup.com/>) is Nord Pool's solution for market participants to disclose market information according to REMIT and EU Transparency Regulations, as well as ACER Guidance on the application of REMIT. The platform provides access to information about production, consumption, and transmission outages along with other relevant market information for multiple countries.

Access to the platform to look into and search for market information is free of charge and open to the public. Registered publishers have regulatory reporting services of REMIT Article 4 and EU Transparency Regulation available. Both reporting services can be subscribed individually by registered companies. UMMs are automatically reported to the ACER's REMIT platform in correct format. Nord Pool can be selected as a service provider for primary owners of data, according to EU Transparency Regulation, to forward data published in the UMM system to the ENTSO-E platform. Companies that are using the REMIT UMM system for publishing or reading information

must give consent to the General Terms.⁶³

The platform start page gives an overview of the UMMs (see Figure 17). On the right side of the page, filters are located. Here users can select a time period, areas, statuses (active, cancelled), types of unavailability (planned, unplanned), stations, fuel types (biomass, fossil brown coal/lignite, fossil coal/derived gas, fossil gas, etc.), connections, publishers, market participants, and so on. Data about production, consumption, and/or transmission can be viewed in tabular form, graphical form, or as a Gantt chart (select List/Graph/Gantt).

The screenshot shows the 'REMIT UMM' platform interface. At the top, there's a header with 'NORD POOL REMIT UMM', a clock showing '14:19 CEST', and a 'Login' button. Below the header is a navigation bar with 'MESSAGES' and '613 Messages'. On the left, there's a sidebar with various filters: Publication date, Event date, All Areas, All Statuses, All Types of Unavailability, All Stations, All Fuel Types, All Connections, All Publishers, All Market Participants, All Message Categories, and All Message Types. The main area displays a table of messages with columns: Event, Infrastructure, Available, Unavailable, Event Start, Event Stop, Duration, Fuel Type, Assets, Published, and Remarks. The table lists several events, including 'Other market...', 'Unavailability...', 'Production', 'Consumption', 'Transmission', and 'Unavailability... Transmission', with details on infrastructure, available/unavailable capacity, event start/stop times, duration, fuel type, and published status.

Event	Infrastructure	Available	Unavailable	Event Start	Event Stop	Duration	Fuel Type	Assets	Published	Remarks
Other market...	NO5			from 27.09.2021 09:00	to 29.09.2021 15:00	2 days 6 hours		Hove Refstøl	11:58:32	Outage of 300kV Modalen-Refstøl-Hove-Sogndal. Power plants are isolated.
Unavailability...	DK2 Avedørevarmekraft - A/V2	350 MW	198 MW	from 26.09.2021 01:30	to 26.09.2021 15:00	13 hours 30 minutes	Biomass		11:39:13	
Unavailability...	LV HPP Riga - G01	0 MW	67 MW	from 27.09.2021 09:00	to 27.09.2021 15:00	6 hours	Hydro Run-of-river and poundage		10:35:39	
Unavailability...	FI Rauma Paper Mill / PM	50 MW	135 MW	from 28.09.2021 05:00	to 28.09.2021 23:00	18 hours			10:27:44	
Unavailability...	LV → RU RU → LV	463 MW 193 MW	507 MW 777 MW	from 27.09.2021 00:00	to 27.09.2021 23:59	23 hours 59 minutes			08:47:28	
Unavailability...	FI Kaukaan Voima	0 MW	125 MW	from 27.09.2021 21:00	to 28.09.2021 21:00	1 day	Biomass		08:10:11	Updated event start time.
Unavailability...	LT → PL PL → LT	485 MW 492 MW	15 MW 8 MW	from 27.09.2021 00:00	to 27.09.2021 23:59	23 hours 59 minutes		Alytus-Elek Bie 2	07:39:02	
Unavailability...	PL → SE4	600 MW	0 MW	from 27.09.2021 08:00	to 27.09.2021 19:00	11 hours		Grudziądz-Gdańsk Bionia	07:20:22	
Unavailability...	PL → SE4	0 MW	600 MW	from 03.08.2021 12:00	to 31.10.2021 18:00	2 months 28 days		Zydowo Kierzkowo - Słup...	07:20:22	
Unavailability...	PL → SE4	600 MW	0 MW	from 27.09.2021 09:00	to 27.09.2021 19:00	10 hours		DUN25-ZYD25	07:20:21	
Unavailability...	SE4 → PL	600 MW	0 MW	from 27.09.2021 09:00	to 27.09.2021 19:00	10 hours		DUN25-ZYD25	07:20:16	

Figure 17: REMIT UMM platform overview

By clicking on the individual UMM rows, participants can overview detailed data for that message as can be observed in Figure 18.

⁶³ REMIT UMM Services General Terms ("REMIT UMM Services General Terms Nord Pool AS." Nord Pool. <https://www.nordpoolgroup.com/4975a5/globalassets/download-center/remit/remit-umm-services-general-terms-valid-from-15.05.21-.pdf>).

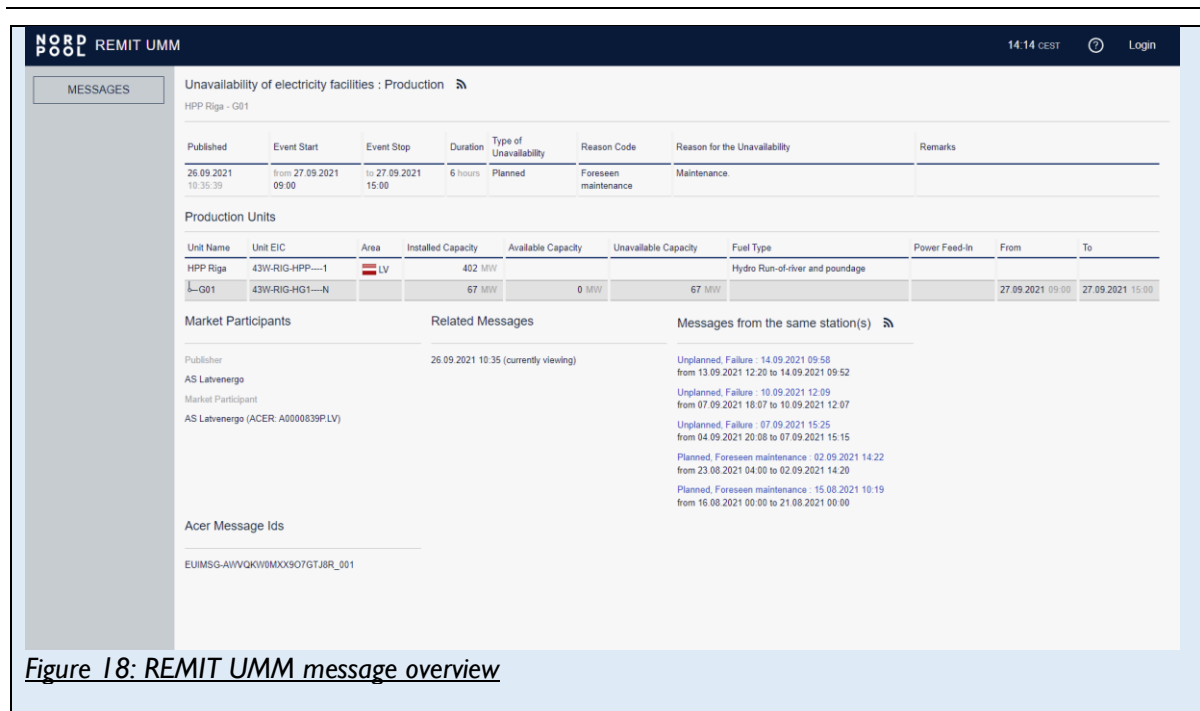


Figure 18: REMIT UMM message overview

Another example of an inside information platform publishing UMM is managed by the Hungarian Power Exchange (HUPX). This power exchange is very relevant in Central, Eastern, and South-eastern Europe. HUPX trades all traditional electricity market products and is expanding its portfolio regularly to satisfy demand for electricity trading. Its transparency platform is a source of electricity market-related data. Data access to the UMM transparency platform is free of charge. However, data providers (registered HUPX market participants) are requested to pay a fee for data entry access. Operation of HUPX, including its transparency platforms, is regulated by the Hungarian NRA. More details about the HUPX UMM is provided in the following text box.

Text box 8: HUPX UMM platform

HUPX, Hungarian Power Exchange Ltd., operates the IIP for enabling Hungarian participants⁶⁴ to report their inside information as required under REMIT. HUPX's inside information web page is listed as an official IIP on the ACER website and therefore open to market participants from all over Europe to report their inside information as required under REMIT.

Primary data owners that publish information pay fees determined annually by the NRA. There are two types of fees:

- An annual subscription is a fee paid annually to cover operational and development costs of the inside information website.
- The registration fee is a one-off fee to be paid following successful registration, with separate fees to be charged for the first three users and for each additional platform user.

At the top of the main page, there are web controls for log in/registration, filter buttons (electricity, natural gas, and other), and links to access documents and contact pages as well as a search box, as can be observed in Figure 19.

⁶⁴ See "ENERGY MARKETINSIDE INFORMATION WEBSITE." HUPX.
<https://www.insideinformation.hu/en/pubpages/newslistmain.aspx>.

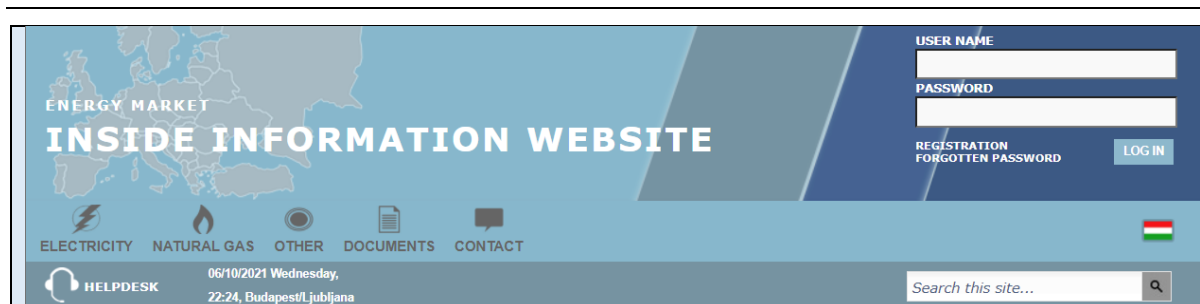


Figure 19: HUPX UMM platform—Top of the page

The information can be seen in English and Hungarian (see Figure 20), with the possibility to change a number of items in the table (10, 25, 50, or 100), to navigate through table rows and to export data into Microsoft Excel file format (XLSX).

Export		
Item count: <input type="text" value="25"/> / page		1/290 >>>
OCTOBER 06. 2021. 19:33 UTC +2:00		
Unit 4. Capacity change		IV. blokk kapacitás változás
TYPE OF EVENT: Production unavailability EVENT START (UTC): 10/06/2021 12:00 EVENT STOP (UTC): 10/06/2021 17:00 AFFECTED ASSET OR UNIT: Unit 4. UNAVAILABLE CAPACITY: 19 MW Closing date changed.	MVM Mátra Energia Zártkörűen Működő Részvénytársaság A0000091L.HU HISTORY	ESEMÉNY TÍPUSA: Termelés kiesése ESEMÉNY KEZDŐ IDŐPONTJA (UTC): 2021.10.06. 12:00 ESEMÉNY ZÁRÓ IDŐPONTJA (UTC): 2021.10.06. 17:00 ÉRINTETT LÉTESÍTMÉNY / EGYSÉG: IV. blokk KIESŐ KAPACITÁS: 19 MW Záró időpont változás.
More >>>		Tovább >>>
OCTOBER 06. 2021. 16:12 UTC +2:00		
Unit 4. Capacity change		IV. blokk kapacitás változás
TYPE OF EVENT: Production unavailability EVENT START (UTC): 10/06/2021 12:00 EVENT STOP (UTC): 10/07/2021 22:00 AFFECTED ASSET OR UNIT: Unit 4. UNAVAILABLE CAPACITY: 19 MW -	MVM Mátra Energia Zártkörűen Működő Részvénytársaság A0000091L.HU	ESEMÉNY TÍPUSA: Termelés kiesése ESEMÉNY KEZDŐ IDŐPONTJA (UTC): 2021.10.06. 12:00 ESEMÉNY ZÁRÓ IDŐPONTJA (UTC): 2021.10.07. 22:00 ÉRINTETT LÉTESÍTMÉNY / EGYSÉG: IV. blokk KIESŐ KAPACITÁS: 19 MW -
More >>>		Tovább >>>

Figure 20: HUPX UMM platform overview

Data users (who do not need to register with the platform and are exempt from any fees) can open new web pages with detailed UMM data as presented in Figure 21.

2021.10.06. 09:02:58 - MVM Paks Atomerőmű 017347_003
PA_gép4 planned overhaul

Market Participant	MVM Paks Atomerőmű Zártkörűen Működő Részvénytársaság		
Market Participant Code	A0000167A.HU		
Event Status	Active		
Type of Unavailability	Planned		
Type of Event	Production unavailability		
Affected Asset or Unit	PA_gép4		
Affected Asset or Unit EIC Code	15WPAKS-----PPL		
Unit of measurement	MW		
Unavailable Capacity	241		
Available Capacity	0		
Installed capacity	253		
Reason of Unavailability	PA_gép4 planned overhaul		
Event start (UTC)	10/15/2021 22:00	Event stop (UTC)	12/08/2021 10:00
Remarks, additional information	PA_gép4 will be shut down from electrical network 16/10/2021 00:00 Date of parallel connecting: 14:00 07/12/2021		
Fuel Type	Nuclear		
Bidding Zone	10YHU-MAVIR----U		

Figure 21: HUPX UMM platform—Message overview

3. National joint transparency platform

One single national platform (one-stop shop) combines features and data of a market data and REMIT platform and a TSO transparency platform. It should meet the following requirements:

1. Owned and operated by MO or NRA
2. Represents the unified national market (including UMM) and national transparency platform
3. Requirements specified for these two platforms are applicable for corresponding parts of the joint national platform
4. It may contain additional market data in accordance with peculiarities and specifics in the national electricity sector
5. It may contain other energy data (natural gas, renewable energy, hydro reservoir data, etc.)
6. NRA should get private market reports and private REMIT data

Under this concept, not only electricity market data, but also data from other defined industries/markets are concentrated in one place and managed by one platform owner. The implementation is complex and requires coordination efforts and establishment of mutual relationships between primary data owners and data providers from various sectors throughout the creation and operation of the platform.

Text box 9: Decision point—Organization of national transparency platform(s)

Key question: Should national transparency platforms be structured as a single joint platform or as separate national platforms?

Option 1: Implementation of a one-stop-shop transparency platform, which covers all electricity market data and, eventually, other energy data.

- Pros: Availability of all electricity market data in one place enhances overall transparency. Implementation and operation of the platform is potentially less costly than having two platforms.
- Cons: More complex to implement and necessary to involve different parties. More issues may arise, such as responsibility and confidentiality on data exchanges, platform data management, and so on.

Option 2: Implementation of the national TSO transparency platform and the national market data and REMIT platforms.

- Pros: Development of individual transparency platforms is less complex than a joint platform and has a clear delineation between data. It is not necessary to enter into complicated legal, organizational, and other arrangements.
- Cons: Duplication of necessary resources and resulting additional burdens for market participants. Stakeholders need to access two transparency platforms to get the full picture of information.

Recommendation: Option 1 is recommended in case complexities, and specific obstacles are not expected during its implementation, and in case there are no existing national transparency platforms⁶⁵ (i.e., start from scratch). Otherwise, Option 2 could also be considered.

⁶⁵ Even in cases where transparency system operations and transparency market platforms exist and operate separately (Option 2 is achieved), integration into a single platform is the possibility.

Appendix 4. Data process technicalities

1. Control message

After (non)successful entry of data from business messages, the receipt platform may send a return message to the sender platform with information about (un)success of the receipt—a so-called “control message.” We can differentiate between the following messages:

- Business messages—contain data about business process, messages/files that are exchanged.
- Control messages—contain data about flow of messages, which facilitates identification of problems with data exchange:
 - Acknowledgement messages—Sent from receiver to sender in case message passed verification and/or is accepted by the system.
 - Error messages—Sent from receiver to sender in case of error during sender’s message processing.

Introduction of control messages is not mandatory for business processes to function successfully. Within this approach, usage of hard copy documents should be avoided/reduced to a minimum.

Text box 10: Decision point—Usage of control messages for automated data exchange

Key question: Should control messages be used within automated data entry?

Option 1: Do not use control messages.

- Pros: Business process without control messages is simpler (and cheaper) for set up and maintenance.

Cons: Problems may appear with control of business messages flow, especially in the beginning of the automated data exchange. Acceptance of some business messages/files depends on their arrival time (i.e., if it is before a certain deadline), so this may create disputes between parties and problems in operation. Insufficient info may cause greater involvement of employed personnel and overall expenses of the operation.

Option 2: Use control messages.

- Pros: Control flow over business process allows supervision over messages/files/data exchanges, identifying all messages that are accepted or rejected by involved IT platforms. This helps in case of erroneous and extraordinary situations that require intervention of human factors.
- Cons: Complexity (expansivity) of the system and its maintenance.

Recommendation: In the beginning of the automated data entry and for complex business processes, Option 2 is recommended. This applies for specific data entries (if applicable) where message may be rejected or accepted depending on the time of its arrival. In case of simple and straightforward business processes, Option 1 could be considered (for all or for some of data exchanges).

2. Usage of data formats

For facilitating the data collection process, usage of data formats (standardized files with predefined structure in which data are “placed” or “packed”) is recommended. These formats are based on detailed data definition specifications. They are used in semi-automated and automated data entry. In case of automated data entry, it is required that all participants accept usage of such formats.

Data formats could be classified as either:

- Standard⁶⁶ data formats—Developed by an organization or association for usage in a certain domain, or
- Custom data formats—Developed especially for a particular purpose by an entity doing data collection.

Data formats could be XML,⁶⁷ JSON, Excel, CSV, United Nations/Electronic Data Interchange for Administration, Commerce, and Transport (EDIFACT), GSI, or other files, which are exchanged between electricity sector stakeholders within a single business process. In the latest period XML-based file formats gain prominence because they are used for exchange of messages in the transmission domain (ENTSO-E) and distribution domain (European Forum for Energy Business Information eXchange, EBIX⁶⁸).

Text box 11: Decision point—Standard or customized format for data collection

Key question: What type of data format should be used?

Option 1: Standard format.

- Pros: Formats are already developed, so there will not be a development phase. This means that the standard format is already in use, experience has been built, and related documentation and (eventually) available software tools have been developed. As it is a standard format, it may be already known to concerned stakeholders, domestic or foreign.
- Cons: Some standard formats are complex and demanding for introduction. If applicable, a certain adaptation of standardized formats may be needed, which would require additional efforts and resources.

Option 2: Customized format.

- Pros: Formats could be tailored to the real needs of a particular institution, without redundant or unnecessary data. Also, the involved institution is free to select the format that is familiar to its personnel and/or well known in the country/region.
- Cons: It is necessary to develop format, which may be a demanding and time-consuming activity, with several iterations. At the end of the day, the developed format may enter into service with flaws and inconsistencies. It is a small probability that such formats will be used by a wider audience in the region or internationally.

Recommendation: Option 1 is recommended in case large data entries are well covered by standard format. Option 2 may be considered in case a simple data entry is required. It is worth to mention that some formats are fitting well with particular communication means. For example, XML format is applicable for web services; Excel is not. It is advisable to make comparative cost-benefit analysis of potential solutions.

⁶⁶ Standard formats usually have a fix and well-defined structure and syntax. Still, some standard formats (especially if they are developed for more countries with different conditions) allow certain adaptations and modifications (especially in areas that are not yet covered by the format). An example is the EBIX format for distribution-related business processes.

⁶⁷ XML message validation is done using corresponding XML schemes and the transparency platform.

⁶⁸ EBIX is a European platform in which TSOs, DSOs, suppliers, and regulators work together to advance, develop, and standardize the use of electronic information exchange in the energy industry ("Welcome to the website of ebIX." ebIX. <https://www.ebix.org/>).

3. Communication means

Next to the definition of message (i.e., data) formats, a typical EDI solution encompasses the definition of communication means/protocols and the definition of identification schemes (e.g., EIC codes). There are commonly main and backup communication means/protocols:

- Main/primary mean—Messages in proper format are commonly submitted over this protocol
- Backup/reserve mean—Messages in proper format are submitted to this solution in case the main solution is not available

In addition, contact details (a dedicated email and phone number) should be provided by the participants in EDI.

For communication means, standardized protocols are commonly in use. Some of them are listed below:

- Web services
- FTPS (secured File Transfer Protocol (FTP), or other FTP derivative)
- Single Mail Transfer Protocol (SMTP; email)
- Applicability Statement protocols: AS1, AS2, AS4

In the latest period, web services are gaining prominence. Web service is a service (software, program) that is offered by an electronic device to another electronic device, communicating via world wide web. It supports computer-to-computer interaction over network sending (usually via XML or JSON) messages using different protocols.⁶⁹

Choice of communication means/protocols depends on many factors. Centralized solutions data hubs use web services, which are nowadays prevalent solutions for data management in the energy sector. For bilateral data exchanges, email is commonly used. It is a convenient and well-known protocol that may be used as a backup communication mean—for sending of message files and/or for exchanging other nonstructured information between involved parties. It is also necessary to provide phone communication options, in case of certain issues that cannot be resolved via email. It is recommended to do comparative cost-benefit analysis that would indicate proper solution for a concerned institution.

The role of NRAs is to monitor the establishment of data collection process and to approve rules for data collection for national transparency platforms that will be drafted by platform operators.

⁶⁹ Basic types are Simple Object Access Protocol (SOAP) and Representational State Transfer (REST) web services.

Appendix 5. Market transparency country examples

This appendix aims to discuss real-world examples from countries and their experience in implementing market transparency and transparency platforms. In particular, this appendix focuses on experiences of Greece and Turkey. Common transparency issues are also presented in a separate section. The objective is to add practical knowledge on different transparency methodologies and reflect on the NRA role in the implementation and operative process. As mentioned before, each transparency methodology can be adapted to the objectives of each country. Thus, these country experiences should be taken as examples.

I. Greece

Since November 2020, Greece has a new model in place for the operation of the electricity markets in line with the EU Target Model. Therefore, the electricity markets include an energy derivatives market, and three spot markets (DAM, an intra-day market (IDM), and a balancing market). There is also the possibility of bilateral contracts (OTC) between market participants. Greece was the last EU Member State to introduce all the main principles of the European Target Model and set the focus on increasing market transparency after the market launch. The transparency rules in place are fully in line with the EU framework to allow for competition and market well-functioning, and positively reflect on the performance of the entire energy sector.

In this regard, Hellenic Energy Exchange (HEnEx) is obliged to provide timely information on DAM and IDM. Transparency regulations require HEnEx to set up an archive with actual DAM and IDM data for at least five years, and all market participants and/or interested parties have access to the archive. Due to confidentiality rules, details about market participant positions cannot be provided. Data are instead aggregated and presented in figures and an easy-to-process format.

The energy trading system is the main tool for running the DAM and is also used for registration of energy quantities resulting from energy financial instrument transactions, that is, energy derivatives traded in HEnEx and OTC wholesale energy products. This also covers products subject to the REMIT regulation. According to the legislative framework, the sell orders of generators in the DAM are required to cover the remaining available capacity that has not been committed for energy financial instruments, that is, products through physical delivery that are traded on HEnEx's energy derivatives market, as well as those concluded bilaterally, which are registered on the energy trading system of HEnEx. For now, most of the trades (liquidity) occur in the DAM (approximately 90 percent) because not much liquidity has been observed in the energy derivatives market.

For the **DAM** and **IDM**, HEnEx publishes information on three categories in the form of tables and graphs:

- **Pre-Market Data:**
 - DAM: Forward Market positions for delivery/offtake and relevant nominations made available prior the execution of the DAM auction, and a day-ahead pre-market report.
 - IDM: DAM results and/or previous local IDM results.
- **Market Results:**
 - DAM: Market prices and aggregated volumes per market time unit and technology portfolio of each delivery day published 15 minutes after the DAM results publication time. In addition, weekly information is provided.
 - IDM: Market prices and aggregated volumes per market time unit and technology portfolio. Market results are published by 14:00 CET of day D+1. In addition, a market weekly outlook is provided.

- **Post-Market Data:**

- DAM: Anonymous aggregated buy/sell curves, block order results, and market statistics.
- IDM: Anonymous aggregated buy/sell curves.

For the **balancing market**, the TSO shall comply with all the rules regarding transparency and disclosure of information of transactions carried out in the context of the balancing market.⁷⁰ This includes information on unit availability that is also made public and provided to market operators. Figure 22 illustrates an example of DAM and IDM data accessible via the HEnEx platform.

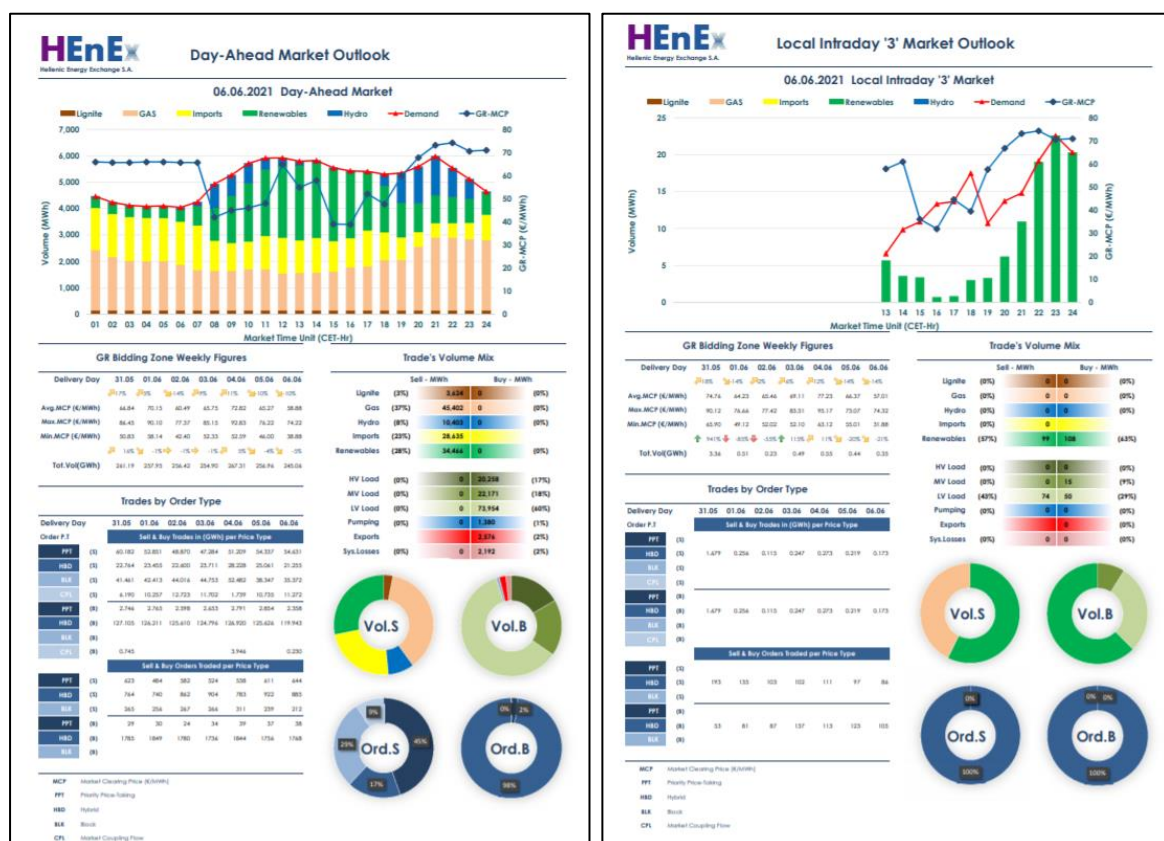


Figure 22: HEnEx data publication DAM and IDM

Source: NARUC webinar—Ensuring Market Transparency and Transparency Platforms: RAE Presentation—New Electricity Wholesale Markets in Greece

2. Turkey

Turkey is not a member of the EU or the EC. Nevertheless, Turkey has implemented its own transparency rules to improve the functioning of the market and to limit abuse of market power. The need for improved transparency surfaced after the implementation of the organized wholesale market in 2006. Since then, the regulator has kept pushing for market transparency pursuing the following objectives:

- Consumers and other market participants need to have confidence in the integrity of the markets.

⁷⁰ The key provisions follow Regulation (EU) 1227/2011, Regulation (EU) 1348/2014, Commission Regulation (EU) 543/2013, and Commission Regulation (EU) 2017/2195.

- The prices reflect a fair and competitive interplay between supply and demand.
- No profits can be drawn from market abuse and no market power is exercised.

In this context, the transparency platform was implemented to disclose complete, timely, high quality, and easily digestible information related to supply and demand fundamentals and market activities. It contains elements from REMIT and elements from the EU Transparency Regulation.⁷¹ Initially, the rules were set through the Balancing and Settlement Regulation (the regulation for DAM, IDM, balancing market). But after, transparency rules were developed as an annex to the regulation (through an enabling article in the regulation). Two basic mechanisms can be distinguished:

- **The procedures and principals document** approved by the board (a two-page document) contains the procedures for data acquisition, including institutions and organizations that are not market participants, and publication of data as well as the protection of commercially sensitive data. In this document, the following aspects are defined:
 - The platform ownership that is assumed by the market operator.
 - Stakeholder engagement including an annual workshop in which MOs, regulators, and different associations (generators, traders, suppliers, etc.) participate.
 - The regulatory authority's (EMRA) and the MO's (Enerji Piyasaları İşletme A.Ş., EPIAŞ) role is defined in the procedure document. In this regard, EPIAŞ compiles the data template consisting of a list of data to be published and submits for EMRA's approval. In addition to market participants, TSOs, and DSOs, EPIAŞ is also empowered to gather data from third-party data providers and other government institutions.⁷² On top of the regulatory data requirements, EPIAŞ can publish further data without breaching confidentiality rules.
- A separate **board decision for the data to be published** includes an Excel table with minimum data requirements (appendix I.4). In this respect, it is important to note that the transparency platform is constantly developing. This is reflected in the increase of data points reported, which increased from 36 data points in 2016 (start of transparency platform operation) to 134 data points in 2021 (whereas the minimum required data consists of 83 data points). Data are structured by headers with the first header being the data class. The different headers and data classes are presented in Figure 23.

⁷¹ Besides the transparency platforms, the TSO also published data about system operation and usage.

⁷² Such as YEGM (Renewable Energy General Directorate), DSI (General Directorate Hydraulic Works), and EİGM (General Directorate of Energy Affairs).

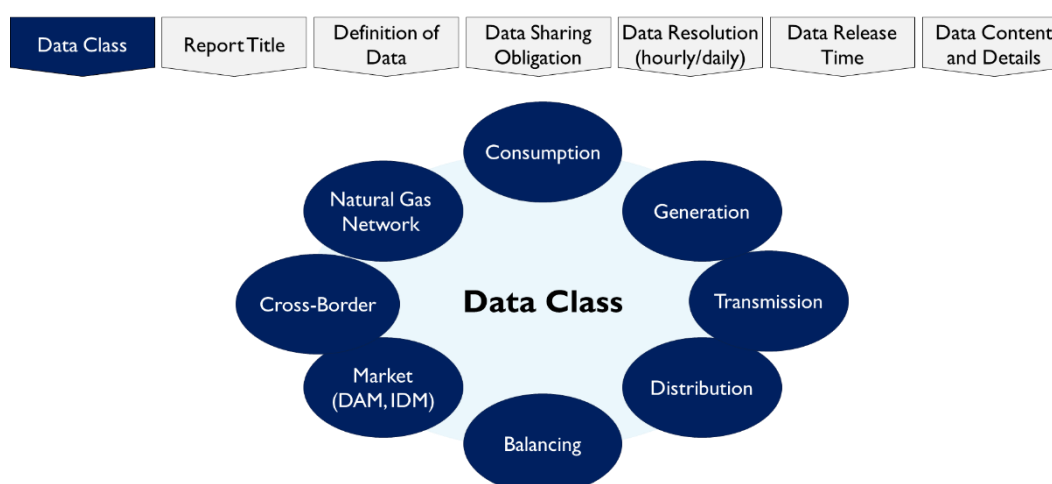


Figure 23: Data headers and data classes Turkish transparency platform

Source: DNV

Text box 12: Turkish platforms⁷³

There are three relevant platforms that contain energy data in Turkey:

- Energy Exchange Istanbul (EXIST⁷⁴) market transparency platform, responsible MO (EPIAŞ)
- TEIAS Market Management System (TPYS)—electricity, responsible TSO TEIAS
- EBT Electronic Bulletin Table platform—natural gas, responsible TSO BOTAS

The most important one is the market transparency platform, which is a one-stop-shop type of platform, owned and operated by EPIAŞ. It is built with the objective to bring trust to market participants and increase their confidence in the proper market operation. In the beginning, rules for transparency were set through the Balancing and Settlement Regulation (i.e., the regulation for the DAM, IDM, and balancing market), which were indeed stringent, but adaptation and amendment of rules was hard due to constantly increasing demand. For this reason, rules for transparency are later developed as an annex to the regulation.

Platform stakeholders participate in an annual workshop organized by the MO. The NRA and representatives of sector associations can attend unconditionally and without fees. Others (market participants, observers) could participate upon sending requests and fulfilling certain requirements.

EPIAŞ is collecting data from licensees, in accordance with the legal and regulatory framework. In addition, EPIAŞ is authorized to sign agreements with third-party data providers and other government institutions where applicable. Renewable Energy General Directorate (YEGM), General Directorate Hydraulic Works (DSİ), and General Directorate of Energy Affairs (EİGM) are among those who provide data to the platform. The EXIST platform became operational in March 2016 when it started with 36 data points. This number was gradually increased and reached 134 data points in 2021. The highest number (more than 17 million) of hits was also achieved in 2021 from which a majority were related to generation nominations and real-time production of generations (67 percent of all hits). Free access to all data in the platform is guaranteed by the NRA through the regulatory framework.

⁷³ Source: NARUC presentation “Ensuring Market Transparency and Transparency Platforms: A Case Study of Turkey” on July 13, 2021.

⁷⁴ EXIST or Turkish EPIAŞ is an energy exchange company legally incorporated under the Turkish Electricity Market Law and enforced by the Energy Markets Operation License granted by the EMRA of Turkey. EPIAŞ is responsible for managing and operating energy markets, including power and gas commodities.

Appendix 6. A regulatory framework sample from Turkey

1. Enabling article from the market rules regulation

ELECTRICITY MARKET BALANCING AND SETTLEMENT REGULATION

Data to be submitted to market participants

ARTICLE 136 – (1) The data and information in relation to and supporting the organized wholesale electricity market activities and increasing predictability therein, must be published on the transparency platform, which is under the responsibility of the market operator. The information and data to be published on the transparency platform, their publishing periods, and data sharing obligations of relevant license holder legal entities, shall be determined by the Procedures and Principles for Ensuring Transparency in Organized Wholesale Electricity Markets, to be prepared by the Authority and to enter into force upon approval by the Board.

(2) Matters considered as trade secrets within the scope of the Law on Right to Information No. 4982 dated September 10, 2003, shall be out of the scope of this provision.

2. The procedures and principles document approved by the board of NRA according to the enabling article from the market rules regulation

BOARD DECISION

In the Energy Market Regulatory Board meeting dated May 13, 2016, it has been resolved to approve the attached “Procedures and Principles for Ensuring Transparency in Organized Wholesale Electricity Markets” and to publish these Procedures and Principles in the Official Gazette.

PROCEDURES AND PRINCIPLES FOR ENSURING TRANSPARENCY IN ORGANIZED WHOLESALE ELECTRICITY MARKETS

Purpose

ARTICLE 1 – (1) The purpose of these Procedures and Principles is to designate the data sharing procedures, reporting procedures, and the obligations of market participants for ensuring transparency in organized wholesale electricity markets.

Legal basis

ARTICLE 2 – (1) These Procedures and Principles have been prepared based on the Article 136 of the Electricity Market Balancing and Settlement Regulation.

Reporting principles

ARTICLE 3 – (1) EPIAŞ shall be obliged to operate a central data and analysis platform named the transparency platform in markets it operates or performs the financial settlements thereof, in order to enable market participants to carry out their market activities within the framework of equal opportunity, prevent information asymmetry among market participants, and ensure that market participants are able to access the information necessary to make correct decisions with regard to their activities and their purchases in the organized wholesale electricity markets.

(2) EPIAŞ shall organize a workshop in October every year to determine and update the data and analyses to be published in the aforementioned transparency platform. It shall be ensured that the representatives of sector associations and the Authority, as well as market participants and observers who request to attend and fulfill the conditions of the workshop participate in the workshop. The data

and analyses designated for publication during the workshop shall be submitted to the Authority and shall be included in the transparency platform following the approval of the Board.

(3) EPIAŞ shall also be obliged to publish the reports designated by the Authority in the transparency platform, regardless of the workshop process.

Procurement and publication of data

ARTICLE 4 – (1) The data determined within the scope of Article 3 shall be requested by EPIAŞ from the organizations that store the data in question by citing this legislation.

(2) EPIAŞ shall adopt the necessary measures to protect the data that shall constitute the basis for the analyses to be published in the transparency platform, but are considered as trade secrets in their raw forms.

Data sharing obligation

ARTICLE 5 – (1) The relevant license holder legal entities shall be obliged to share the data listed in the List of Data to be published in the transparency platform, which is approved by a board decision, on the transparency platform in a timely manner, in the format specified, and with the accurate content.

(2) In case of any violations of the data sharing obligation, EPIAŞ, responsible for operating the transparency platform, shall prepare a report containing the details of the violation and submit it to the Authority.

(3) Sanctions shall be imposed on market participants who violate the data sharing obligation, pursuant to Article 16 of the Law.

Procurement of data from non-market participant institutions and organizations

ARTICLE 6 – (1) EPIAŞ shall be authorized to sign protocols to obtain data from relevant institutions and organizations that are not market participants.

Enforcement

ARTICLE 7 – (1) These Procedures and Principles shall enter into force on January 6, 2016.

Execution

ARTICLE 8 – (1) The provisions of these Procedures and Principles shall be executed by the President of the Energy Market Regulatory Authority.

*For questions regarding this publication, please contact
Erin Hammel (ehammel@naruc.org),
Kristina Boichuk (kboichuk@naruc.org)*

National Association of Regulatory Utility Commissioners (NARUC)

1101 Vermont Ave, NW, Suite 200

Washington, DC 20005 USA

Tel: +1-202-898-2210

www.naruc.org