
Guidelines for Monthly Statistics Data Collection

Public version

Data Expert Group

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2. Remarks

- “ENTSO-E EMR definition” means definitions, which could be found in ENTSO–E Data Portal Glossary (<https://www.entsoe.eu/data/data-portal/glossary/>) as of end of December 2016. These definitions can be changed continuously.
- ENTSO-E Transparency Platform (ENTSO-E TP) means the platform in relation with COMMISSION REGULATION (EU) No 543/2013 (EC 543/2013) of 14 June 2013 on submission and publication of data in electricity markets.

3. Introduction

The present “Guidelines for Monthly Statistics Data Collection” is the reference document of ENTSO-E explaining the methodology for the elaboration of monthly statistics, including data definition and collection process through the XML files created from the Excel templates.

It replaces the last version “Guidelines for Monthly Statistics Data Collection” published in May 2015, as decided by ENTSO-E Data Expert Group (DEG) in December 2015.

It is completed by an external document called “[Specific national considerations](https://www.entsoe.eu/data/data-portal/)”, published on ENTSO-E website (<https://www.entsoe.eu/data/data-portal/>) which gives explanations concerning monthly statistics to all statistical data potential users.

All monthly statistical data should be delivered (as described in details below) in the text as soon as possible but not later than two months following the end of the corresponding month (M+2 for the corresponding month M).

The monthly statistical data is made available online at least 2.5 months after the corresponding month.

In case data of a specific country has not been delivered in time:

1. The annotation “n.d.” (“not delivered”) will replace the undelivered data in the tables presenting data country per country.
2. For the calculation of generation and consumption of overall ENTSO-E in monthly and yearly statistical publications undelivered generation, load, exchange or consumption data will be replaced by the equivalent data of the same month and country from previous year. In the report, a foot note will mention the use of data from Y-1 for at least one country.

In case data of a specific country is unknown or cannot be mapped to a specific energy source, the data correspondent will deliver “n.a” (“not available”) and should give a comment in the respective field.

In case data of a specific country does not exist in the corresponding category or sub-category (e.g. Hydro Marine production in inland countries) “n.e.” (“not expected”) will be used.

4. Geographical perimeter and coverage ratio of data

4.1. Specific national considerations

The regularly updated document, “[Specific national considerations](#)”, is made available for all statistical data users on <https://www.entsoe.eu/data/data-portal/>. Each NDC (National Data Coordinator) and STC (Statistical Data Correspondent) must describe here, in detail, all cases in which the specific situation of the corresponding country does not fit well with the definitions provided. This is very important for ex-post analyses. The correspondent must guarantee that all data and all the circumstances of deviations from the definitions can be kept track of.

It should include/report on any specific considerations concerning the data reported for each country, especially:

- The **geographical perimeter** covered by the data delivered, in the case that it is not exactly the perimeter of the country;
- Explanation concerning the **coverage ratio** of data delivered.
- Any other consideration concerning quality, availability and interpretation of data.

4.2. Geographical perimeter

The objective of statistics is to deliver values per country, which reflect the activity of the electric system. With this aim, the geographical perimeter covered by data related to a given country may be restricted to the geographical part of the country which is connected to ENTSO-E network. For example, isolated islands which are not connected to ENTSO-E network may be excluded from the perimeter.

In this case, national specific considerations must accurately dictate which geographical areas are *not* taken into account. Once defined, the perimeter should be stable in time and all consumption and generation within it should be reported. The consistency of the geographical perimeter covered by the data delivered should be reported in the publications.

4.3. Coverage ratio

On a given country perimeter, part of the generation / consumption data may be unavailable in compliance with the data collection process, e.g.:

- Unmeasured auto-generation / auto-consumption;
- Generation / consumption not measured in due time;
- Geographical area not observable (although belonging to the geographical perimeter);
- Data from third parties not delivered or not delivered in due time.

In these cases, the data delivered does not represent 100% of the geographical perimeter but only a part of it. The **coverage ratio** (formerly called "Representativity") is the estimation of this part.

The coverage ratio should account for the part of generation / consumption which is missing in the data delivered. By definition, this part is relatively unknown, yet it should be roughly estimated taking into consideration other information issued by third parties (e.g. government, national statistics, DSO, other operators). Information may, for example be accessible, but not in compliance with the schedule of the monthly statistics collection process. For example, the part of auto-consumption may have already been known from the previous year, and not updated since then. The explicit calculation of the coverage ratio is on NDCs/STCs own responsibility and should be explained in the "Specific national considerations" document.

The Data Correspondent should decide whether to extrapolate data before delivering it, so that coverage ratio is increased to 100%, or to deliver raw data and mention the coverage ratio under 100%. In this case, the coverage ratio will be applied to extrapolate delivered data in the consolidation process of data before the publication of overall statistics.

It is recommended to deliver data directly with 100% coverage ratio.

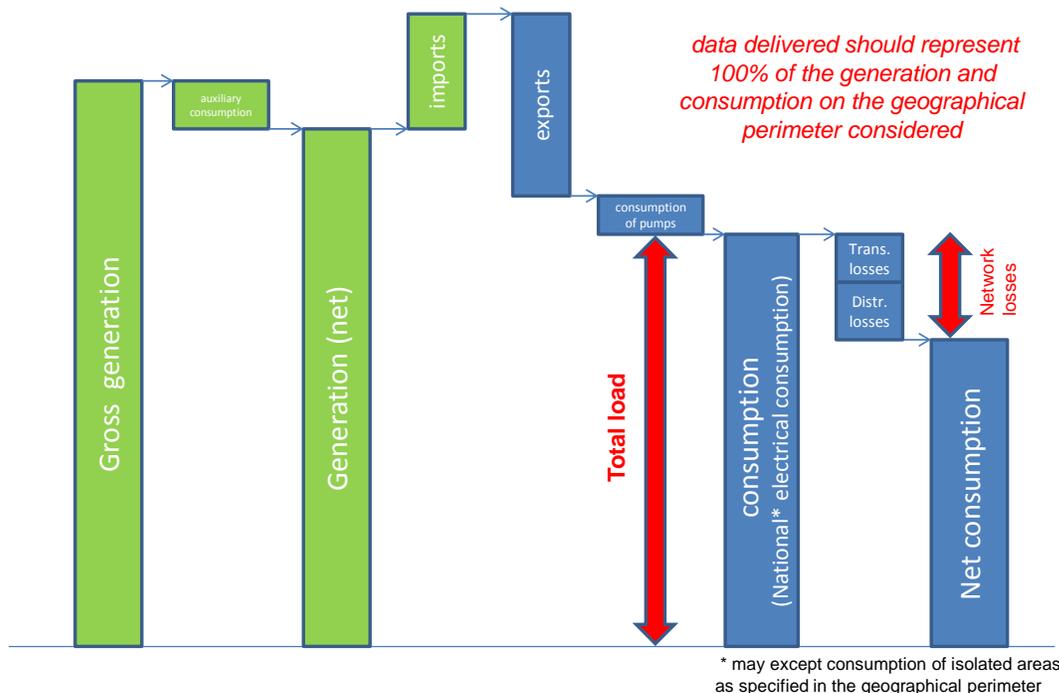
5. Specification On Data Collected

5.1. Monthly hourly load values (MHLV)

The scope of the data is to deliver detailed information about the temporal development of the generation and consumption for each country. This is related to the power that is fed-in and simultaneously consumed at each point in time averaged over one hour.

Monthly hourly load values correspond to the ENTSO-E [Glossary definition](#): Total Load¹, including losses without power used for energy storage, means a load equal to generation and any imports deducting any exports and power used for energy storage².

Generation, consumption and load calculation



Note: Generation to be considered within this calculation to be net generation

- should include all types of connected generation, including auto-generation (e.g. solar panels for own use of households connected to the network) whether estimated or measured and
- should exclude the consumption of power plant's auxiliaries.

¹ Load is a generic term and is used within ENTSO-E publications as a synonym for "total load".

² Definition in accordance with EC 543/2013

From this calculation, losses both in the transmission and distribution network are included in the total load value. For more details, see the image featured above.

The hourly load value is the average value of the power measured during the preceding hour, e.g. the hourly load at 3 am is the average power measured from 2:00 to 3:00.

5.2. Monthly domestic values (MDV)

The aim of this data collection is to delineate a complete image of the electricity generation and consumption of each country. All countries are to submit monthly energy data concerning mainly:

- net generation
- exchange balance
- consumption of pumps

From these data, the consumption is being calculated.

All categories of monthly domestic values mentioned in this chapter are sent via one template into the ENTSO-E extranet. Monthly amounts of energy in GWh (and corresponding coverage ratio) are collected in this chapter only.

5.2.1. Net generation

The net generation is defined as the [gross generation](#) less the electrical energy absorbed by generating auxiliaries and the losses in the main generator transformers.

ENTSO-E TP requirements (from January 2015 on) are as follows (stated in Article 16(1) of EC 543/2013):

- Aggregated generation output per market time unit and per production type;
- Actual or estimated wind and solar power generation in each bidding zone per market time unit.

The production types are classified in the “Manual of Procedures for the ENTSO-E Central Information Transparency Platform”³.

³ Chapter 8. Classification of Production Types

The generation values are presented by categories (according to the type of production) and subcategories (according to the fuel type or technology used). The Categories with its corresponding definitions from the Glossary (if exist), Sub-categories, and corresponding ENTSO-E TP Terms are described in more details in the table featured below:

Fuels in ENTSO-E Statistics versus EC 543/2013 requirements: Non-renewable part			
Categories	Sub-categories		EMR examples / remarks
	Statistical data term	ENTSO-E TP Term	
Nuclear		Nuclear	
Non-renewable Hydro	Pure pumped storage	Pumped storage	Energy produced from pumped water. Its amount is often estimated on the basis of pumping consumption multiplied by an efficiency coefficient (e.g. 0.7 in some countries)
	Mixed pumped storage		Non-renewable part only
Fossil fuels	Lignite	Fossil Brown coal/Lignite	
	Coal-derived gas	Fossil Coal-derived gas	
	Gas	Fossil Gas	Nature gas mainly
	Hard coal	Fossil Hard coal	
	Oil	Fossil Oil	
	Oil shale	Fossil Oil shale	
	Peats	Fossil Peats	
	Mixed fuels	<i>All fossil fuels</i>	All generation from co-fired fossil fuels, where it is not possible to assign generated electricity to one primary energy source type. (Usage of this category should be restricted to actually mixed fuel and not to unidentified fuel)
	Other	Other	
Waste		Waste	Non-renewable part only
Other non-renewable		Other	Generation from fossil fuels, but not assignable to any other sub-category, i.e. if being aware of fossil fuel generation, but unclear what fuel type

Fuels in ENTSO-E Statistics versus EC 543/2013 requirements: Renewable part			
Categories	Sub-categories		EMR examples / remarks
	Statistical data term	ENTSO-E TP Term	
Wind	Wind Offshore	Wind Offshore	
	Wind Onshore	Wind Onshore	
Solar	Solar PV	Solar	
	Solar Thermal		
Bio	Biomass	Biomass	Burning of solid pieces
	Biogas		Producing and burning of gas
Geothermal		Geothermal	
Renewable Waste		Waste	Renewable part only (e.g. 50% of the plant total generation as proposed in some national legislation)
Renewable Hydro	Pure storage	Hydro Water Reservoir	
	Run-of-river and pondage	Run-of-river and poundage	Pondage is the correct English term for this category.
	Mixed pumped storage	Hydro Pumped Storage	Renewable part only
	Marine	Marine	Wave, tidal
Other renewable	Other renewable	Other renewable	E.g. Hydro-wind, landfill gas, sewage treatment plant gas

Fuels in ENTSO-E Statistics versus EC 543/2013 requirements: Non identified part			
Categories	Sub-categories		EMR examples / remarks
	Statistical data term	ENTSO-E TP Term	
Non identified (originally Non-clearly identifiable)		Other	If it is not possible to determine the primary energy source used for electricity generation, the energy should be assigned to this category (It is firmly recommended to minimize usage of this category: at least prefer “other non-renewable” or “other renewable”).

Remark: In case there is no detailed information concerning splitting into renewable and non-renewable part in the “Hydro mixed pumped storage” categories is available, the following rules should be applied:

- Renewable part of energy = 100% of the total generation – 70% of the consumption of pumps
- Non-renewable part of energy = 70% of the consumption of pumps

The usage of the calculation methodologies must be mentioned in the “Specific national considerations”.

5.2.2. Imports and exports

To image the countries' complete electricity record, the exchange balance needs to be calculated.

ENTSO-E [Glossary definition](#): Exchange balance is the difference between the import and export physical flows on each interconnection line of a country.

Explanation: Physical flows (imports and exports) are metered at agreed accounting points taking into consideration the meters' indexes on both sides. Physical flows shall include all voltage level lines of the country. The calculated value has to take all lines into account to ensure a complete view on the network.

The exchange balance then is calculated as:

$$\text{exchange balance} = \text{imports} - \text{exports}.$$

Remark: The exchange balance in MDV template is not harmonized. It is used for national consumption calculation only. Therefore it may differ a bit from the published harmonized energy flows as described in details in the chapter 6.3.

5.2.3. Consumption of pumps

The consumption of pumps needs to be provided as the calculation of the national electrical consumption does not include this energy contribution. (see figure in chapter 4.1)

ENTSO-E [Glossary definition](#): The electrical energy absorbed by the motor pumps in raising the water into the upper reservoir for the generation of electrical energy. It should include the electrical energy consumed by the auxiliary equipment and transformer losses during pumping.

5.2.4. National electrical consumption (calculated value)

National electrical consumption⁴ means national net electrical consumption plus network losses.

Explanation: The estimated values of national electrical consumption (representing 100% of national values) are calculated automatically by the ENTSO-E database as follows:

$$\begin{aligned} \text{National electrical consumption} \\ = \text{net generation} + \text{imports} - \text{exports} - \text{consumption of pumps}. \end{aligned}$$

Values according to the formula above include network losses, this means both transmission and distribution losses.

⁴ Consumption is a generic term and is used within ENTSO-E publications as a synonym for “National electrical consumption”.

Consumption should not be confused with load: while load is always a snapshot of one single moment (power in GW), consumption describes a time period (energy in GWh). Nevertheless, both quantities are related by the sum over the hourly load values.

5.3. Physical energy and power flows (PEF)

The aim of this data collection is to visualize the movement of energy between countries.

Physical Energy Flows represent the real movements of energy between neighboring countries metered in cross-border tie lines in both directions, in the system and out of the system.

Explanation: Physical energy and power flows are following measured or estimated exchange data on each interconnection line of a country. All physical exchange values should include all voltage levels (including distribution network).

- Energy flows (total exports and total imports) of the month between neighboring countries in GWh;
- Power flows (sum of exports and sum of imports) between neighboring countries each 3rd Wednesday from 02:00 to 03:00 CET/CEST (marked as 3 a.m.) and from 10:00 to 11:00 CET/CEST (marked as 11 a.m.) This is due to the possibility to harmonize data values from the countries which are located in the different time zones. Power flows are counted as hourly averages in MW.

Description: Monthly energy and power flows values are inserted via one template into the ENTSO-E extranet. Corresponding values of both neighboring countries are always compared and harmonised. The average values are calculated afterwards only if the difference is not too big (either $\Delta \leq 5\text{GWh}$ or $\Delta \leq 5\%$ for monthly exchange values, either $\Delta \leq 5\text{MW}$ or $\Delta \leq 5\%$ for the power exchange at the 3rd Wednesday). In the other case the correspondents are informed about the problems. The values have to be corrected by sending the new XML file from the correspondent.