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# Guidelines for Monthly Statistics Data Collection

Final version

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## 2. Remarks

- “ENTSO-E EMR definition” means definitions, which could be found in ENTSO-E Metadata Repository (<https://emr.entsoe.eu>) as of end of December 2014. These definitions can be changed continuously.
- “EMFIP” (European Market Fundamental Information Platform) means the platform in relation with COMMISSION REGULATION (EU) No 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 internal document of ENTSO-E explaining the methodology for the elaboration of monthly statistics, including data definition and collection process through the related inquiry mask of the data portal.

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.

The main reason for this evolution is as follows:

- As the new transparency platform (EMFIP) in accordance with Commission Regulation (EU) No 543/2013 is coming to standard operation in 2015, the opportunity appeared to update data definitions for better consistency and harmonization.

The Monthly statistics is made available 2.5 months after the corresponding month and will be updated if necessary.

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

1. The annotation “n.a.” (i.e. “not available”) 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, undelivered generation, load 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.

## 4. Geographical perimeter and representativity of data

### 4.1. Specific national considerations

The regularly updated document, “[Specific national considerations](https://www.entsoe.eu/data/data-portal/)”, 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 **representativity** 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. Representativity

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.

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In these cases, the data delivered does not represent 100% of the geographical perimeter but only a part of it. The **representativity factor** is the estimation of this part.

The representativity factor 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 representativity factor 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 representativity is increased to 100%, or to deliver raw data and mention the representativity factor under 100%. In this case, the representativity factor 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% representativity.

## 5. Specification On Data Collected

### 5.1. Monthly hourly load values

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 [EMR definition](#): Total Load<sup>1</sup>, 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 storage<sup>2</sup>.

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.

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 below.

Time stamps for monthly hourly load values are expressed always in Central European Time (CET=UTC+1) in winter and in Central European Summer Time (CEST=UTC+2) in summer with the „Universal Time, Coordinated“ UTC.

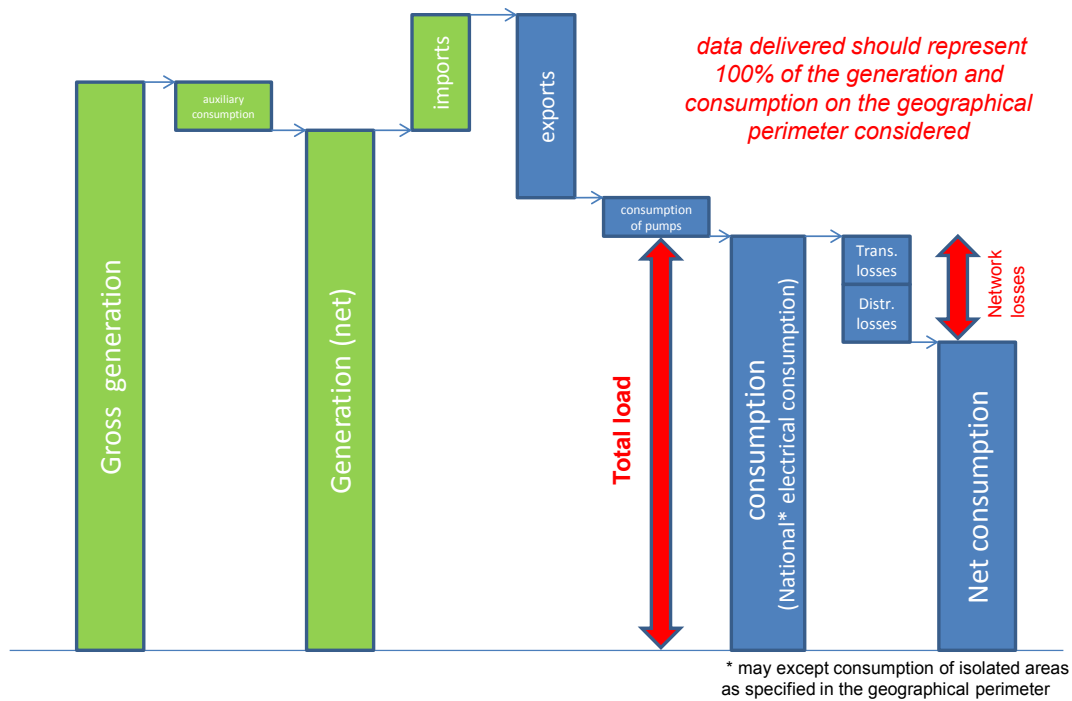
The hourly load value is the average value of the power measured during the preceding hour, e.g. the hourly load at 3 pm is the average power measured between 2 and 3 pm.

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<sup>1</sup> Load is a generic term and is used within ENTSO-E publications as a synonym for “total load”.

<sup>2</sup> Definition in accordance with EC 543/2013

## Generation, consumption and load calculation



### 5.2. Monthly domestic values

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.

#### 5.2.1. Net generation

Net generation values correspond to the ENTSO-E [EMR definition](#): Net generation: The gross generation less the electrical energy absorbed by generating auxiliaries and the losses in the main generator transformers.

EMFIP requirements (from January 2015 on) are as follows (stated in Article 16(1) of regulation 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”<sup>3</sup>.

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 [EMR](#), Sub-categories, and corresponding EMFIP Terms are described in more details in the table featured below:

| Fuels in ENTSO-E Statistics versus EMFIP requirements                                    |                       |                           |                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------|-----------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Categories                                                                               | Sub-categories        |                           | EMR examples / remarks                                                                                                                                                                                                                   |
|                                                                                          | Statistical data term | EMFIP Term                |                                                                                                                                                                                                                                          |
| <a href="#">Nuclear</a>                                                                  |                       | Nuclear                   |                                                                                                                                                                                                                                          |
| Fossil fuels<br>(originally<br><a href="#">Thermal</a><br><a href="#">Conventional</a> ) | Lignite               | Fossil Brown coal/Lignite |                                                                                                                                                                                                                                          |
|                                                                                          | Hard coal             | Fossil Hard coal          |                                                                                                                                                                                                                                          |
|                                                                                          | Gas                   | Fossil Coal-derived gas   |                                                                                                                                                                                                                                          |
|                                                                                          |                       | Fossil Gas                |                                                                                                                                                                                                                                          |
|                                                                                          | Oil                   | Fossil Oil                |                                                                                                                                                                                                                                          |
|                                                                                          |                       | Fossil Oil shale          |                                                                                                                                                                                                                                          |
|                                                                                          | Mixed fuels           |                           | 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 fossil fuels    | Fossil Peat               |                                                                                                                                                                                                                                          |
|                                                                                          |                       | Waste                     | Non-renewable part only                                                                                                                                                                                                                  |
|                                                                                          |                       | 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                                                                                    |
| <a href="#">Renewable</a><br>(other than<br>hydro)                                       | Wind                  | Wind Offshore             |                                                                                                                                                                                                                                          |
|                                                                                          |                       | Wind Onshore              |                                                                                                                                                                                                                                          |
|                                                                                          | Solar                 | Solar                     |                                                                                                                                                                                                                                          |
|                                                                                          | Biomass               | Biomass                   |                                                                                                                                                                                                                                          |
|                                                                                          | Other renewable       | Geothermal                |                                                                                                                                                                                                                                          |
|                                                                                          |                       | Marine                    | Wave, tidal                                                                                                                                                                                                                              |
|                                                                                          |                       | Waste                     | Renewable part only (e.g. 50% of the plant total generation as proposed in some national                                                                                                                                                 |

<sup>3</sup> Chapter 8. Classification of Production Types

|                                          |                |                       |                                                                                                                                                                                                                                                                                    |
|------------------------------------------|----------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                |                       | legislation)                                                                                                                                                                                                                                                                       |
|                                          |                | Other renewable       | E.g. Hydro-wind, landfill gas, sewage treatment plant gas and biogases                                                                                                                                                                                                             |
| <a href="#">Hydro</a>                    | Renewable part | Hydro Run-of-river    | Renewable part only, i.e. excluding pumped storage.                                                                                                                                                                                                                                |
|                                          |                | Hydro Water Reservoir |                                                                                                                                                                                                                                                                                    |
|                                          | Other hydro    | 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)                                                                                                          |
| <a href="#">Non-clearly identifiable</a> | ---            | 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 fossil” or “other renewable” or “other hydro”). |

### 5.2.2. Exchange balance

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

ENTSO-E [EMR 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

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

### 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 [EMR 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)

ENTSO-E [EMR definition](#): National electrical consumption<sup>4</sup> 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.

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

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

ENTSO-E [EMR definition](#) (of Physical Energy Flows): It represents 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 (exports and imports) of the month between neighboring countries;
- Power flows (exports and imports) between neighboring countries each 3<sup>rd</sup> Wednesday from 02:00 to 03:00 and from 10:00 to 11:00 (hourly averages).

### 5.4. Network reliability (Energy not supplied)

A definition of [network reliability](#) is too general (and complicated). Therefore statistical information concerning “energy not supplied” (ENS) is collected.

ENTSO-E [EMR definition](#): Energy not Supplied: An estimation of the energy not supplied to final customers due to incidents in the transmission network.

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

Explanation: Information of all unplanned incidents in the transmission network (lines, transformers, substations), which simultaneously fulfills **all three** following conditions:

1. They have originated in the transmission system. In this case the origin and corresponding item in the pull-down menu [System] in the form could be only as follows:
  - i. T – incident originated in the own transmission system
  - ii. E – incident originated outside of the TSO control area
2. They have produced supply interruption. Only the incidents with ENS > 10 MWh are taken into account and
3. The incident has produced a permanent breakdown (i.e. longer than 3 minutes).

Reasons are as follows:

- R4 overload (also: calculated break)
- R5 false operation
- R6 failure in protection device or any other element
- R7 outside impact (animals, trees, fire, avalanches etc.)
- R8 very exceptional conditions (weather, natural disaster etc.)
- R9 other reasons
- R10 unknown reasons

Loss of power in this case always means the eventual estimated loss of generation (in MW) which is caused by the abovementioned incidents. Incidents with loss of power only (i.e. ENS = 0) should not be reported.

## 5.5. Unavailability of international tie lines

An ENTSO-E EMR definition does not exist.

Explanation: Unavailability in this case means a line or circuit switched off, except in case of automatic re-closure.

Considered lines are as follows: Tie lines with a rated voltage of  $\geq 110$  kV corresponding to the table "characteristics of the cross-frontier transmission lines" of the YS&AR of ENTSO-E (i.e. only lines which are a part of the transmission system).

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Reasons are as follows:

- R1 maintenance
- R2 repair
- R3 new constructions
- R4 overload (also: calculated break)
- R5 false operation
- R6 failure in protection device or any other element
- R7 outside impact (animals, trees, fire, avalanches etc.)
- R8 very exceptional conditions (weather, natural disaster etc.)
- R9 other reasons
- R10 unknown reason